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NO. 401

A CASE STUDY OF THE USE OF ACTIVITY-BASED ANALYSIS  
AS AN INFORMATION RESOURCE MANAGEMENT TOOL

DISSERTATION

Presented to the Graduate Council of the  
University of North Texas in Partial  
Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

By

Charles A. Arnett, Jr., B.A., M.S., M.P.A.

Denton, Texas

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The purpose of the study was to investigate a modification of a managerial accounting technique, Activity-Based Costing (ABC), as a tool for addressing Information Resource Management (IRM) concerns within business processes. To indicate that ABC has been adapted for the IRM context, this study called the tool "Activity-Based Analysis" (ABA). ABA includes ABC's costing methodology as well as additional methods to address broader issues.

The research method was a single-site case study at a property and casualty insurance company. The unit of analysis was a business process consisting of activities needed to provide claims handling services for workers' compensation insurance. Four questions guided the study:

1. Did ABA identify management information required to monitor process effectiveness and efficiency?
2. Did ABA support outsourcing decision making by identifying IRM cost components within business processes?

3. Did ABA identify information resources that are sharable?
4. Did ABA identify differences between Company organizational characteristics and IRM department organizational characteristics?

For each question, IRM literature was used to predict the results that should be obtained if ABA were successfully applied. ABC literature was used to determine a technique that could produce these results. Predefined research protocols guided the collection and analysis of data that were obtained from multiple sources. The data were organized in a case study database using predefined forms. The data were then analyzed to answer each of the four research questions. A chain of evidence was developed to support the research conclusions. Key employees at the research site reviewed the reasonableness of the predicted outcomes.

The study found ABA able to provide the results suggested by the research questions. Thus, ABA is useful for requirements analysis, outsourcing decision making, identifying information resources to share, and IRM organizational analysis. The success of ABA suggests further research. The study identified key variables to guide such research.

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## CHAPTER 1

### PURPOSE, PROBLEM, AND SIGNIFICANCE

This study investigated the adaptation of a managerial accounting tool to Information Resource Management (IRM). This accounting tool is Activity-Based Costing (ABC). ABC differs from conventional costing in that it avoids combining costs in pools and making overhead allocations that obscure true product costs. Instead, it identifies the company actions, or "activities," needed to produce the product and, where causal relationships exist, traces organizational costs to these activities. Activity costs are then traced to the product based on measures of the use of the activities in producing the product. As a result, management has a more accurate picture of actual product costs (Cooper and Kaplan 1991b).

IRM is concerned with "the policies, procedures, and actions concerning information systems" (March and Kim 1988-89, 6). In this research "IRM" is used as a synonym for "management of information systems" (Dickson and DeSanctis 1990, 45). This research investigated the effectiveness of a modification to ABC called "Activity-Based Analysis" (ABA). ABA includes ABC's costing

methodology as well additional methods to address issues broader than costing.

The organization-wide analysis of operations required to implement ABC parallels approaches taken by IRM professionals. They view the organization in terms of business processes (Boynton et al. 1992; Davenport 1993; Davenport and Short 1990; Hammer 1990; IBM 1984; Keen 1991; Rockart and Hofman 1992; Scott-Morton 1992). Activities are the building blocks of processes and represent what an organization actually does and hence what must be managed and improved upon (Brimson 1991; Cooper et al. 1992; Davenport 1993). Thus, by analyzing an organization's Activities, IRM can contribute to the improvement of the corresponding processes.

The research methodology was a single-site case study performed at a property and casualty insurance company that implemented ABC. This study addressed only a part of a complete program of investigation. A complete program would include four steps:

1. Implementation of ABC for the entire research site by research site personnel
2. Beginning with data generated by step 1, investigation of the application of ABA to IRM issues at the research site
3. Implementation by the research site (and possibly others) of the IRM applications identified in step 2

#### 4. Investigation of the implementation in step 3

Personnel at the research site performed step 1. The researcher performed step 2 for this study. Steps 3 and 4 could be subjects of future research.

#### Purpose

The purpose of this research study was to investigate the proposition that ABA can improve the management of information resources that support business processes. Examples of improvements include providing information not otherwise available and presenting information in ways that enhance decision making. This study provides a foundation for further research in ABA by demonstrating that ABA can provide insights not otherwise available and by identifying ABA variables.

The proposition was investigated by answering four questions:

1. Did ABA identify management information required to monitor process effectiveness and efficiency?
2. Did ABA support outsourcing decision making by identifying IRM cost components within business processes?
3. Did ABA identify information resources that are sharable?



4. Did ABA identify differences between Company organizational characteristics and IRM department organizational characteristics?

As chapters 2 and 3 discuss, these four questions address significant problems of interest to IRM researchers.

Four questions were selected for this study, instead of one, for two reasons. First, most of the research effort was gathering the data. To a large extent, the data gathered for any one of these questions are sufficient to address all four. Second, because the research is exploring the use of a tool, it is best to investigate as many uses of the tool as possible for the data collected.

#### Problem

The problem motivating this study is the need for IRM to focus on business processes. Increasingly, business organizations are being viewed from the standpoint of the processes constituting them rather than from a functional viewpoint (Hammer and Champy 1993; Harrington 1991). This has the advantage of focusing on how work is done rather than what work is done and also connects the work to the customer (Davenport 1993). This emphasis on process helps organizations reduce costs, streamline operations, improve quality, and improve customer service (Hammer 1990; Harrington 1991). IRM contributes to improving these processes by automating them and by adding information to

them. But IRM is itself a cost within business processes and so its costs, like other process costs, must be evaluated and, where possible, reduced.

Because IRM is pervasive in the firm, to make decisions regarding IRM requires looking at the processes in which information resources are embedded. This suggests the usefulness of an analytical tool that is process oriented. This study investigated whether ABA was such a tool.

#### Significance

ABA is of interest to professionals in two disciplines: managerial accounting and IRM. For managerial accounting professionals, ABA provides additional uses for the ABC methodology that they are currently applying. In addition, the use of ABC for IRM can guide implementors in making choices when implementing an ABC system. The expense of developing an ABC system suggests the value of gaining leverage by finding additional uses for the system.

For IRM professionals, this tool should prove useful for dealing with business process improvement. ABA's usefulness would be especially desirable if much of the expense had already been borne by the development of an ABC system.

### Definitions

The following terms are used in this research report.

Activity - A unit of work in an organization. Appendix D gives examples of Activities in an insurance organization.

Activity-Based Analysis (ABA) - The adaptation of Activity-Based Costing to Information Resource Management.

Activity-Based Costing (ABC) - A managerial accounting method for tracing an organization's costs through its Activities to the organization's cost objects.

Activity Driver - Method used to trace Activity costs to a cost object. For example, the Activity of investigating a claim might involve the costs of three resources: automobile, telephone, and adjuster time. The total cost of investigations might be driven (or traced) to a group of claims by the amount of adjuster time spent on each claim.

Bill of Activities - A business process. The collection of Activities whose costs are traced to a cost object. Appendix D gives the Bill of Activities investigated in this research.

Business Process - A series of steps that use the organization's resources to achieve an organization objective.

Cost Driver - A factor that affects the amount of resources required by an Activity. For example, the number of people involved in an insurance claim would affect the

amount of effort, and hence cost, required to settle that claim.

Cost Object - The organizational objective to which Activity costs are traced. Examples include a product, a department, or a customer.

Information Resource Management (IRM) - Functions required to manage an organization's information. These functions include plans and procedures related to management of the organization's data, computer hardware, and computer software.

Performance Measure - A financial or nonfinancial indicator of the effectiveness and efficiency of an Activity. A nonfinancial measure of the effectiveness of a claims investigation Activity might be the number of policyholder complaints.

Resource - Production factors traced to an Activity. Examples are salaries, materials, and information resources. The sum of the associated costs constitute the cost of the Activity. Appendix H illustrates how salary costs might be traced to Activities.

Resource Driver - Method used to trace resource costs to an Activity. For example, salary costs may be traced to an Activity based on the number of hours performed on that Activity.

Figure 1 illustrates the relationships between key terms by presenting two views of ABC. The cost assignment view is concerned with tracing costs to cost objects (products, for example) and hence with costing. Costs are traced in two stages (Cooper and Kaplan 1991a). In the first stage, resource costs are traced to Activities. This provides Activity costs. In the second stage, Activity costs are traced to cost objects.

The process view in figure 1 uses ABC to improve the business process of which the Activities are a part. The process view is concerned with management issues--cost and performance--and hence with ABM. Attention to cost drivers permits reducing costs and hence increasing efficiency. Attention to performance measures allows management to determine how well an Activity serves its customers and thus how effective the Activity is.

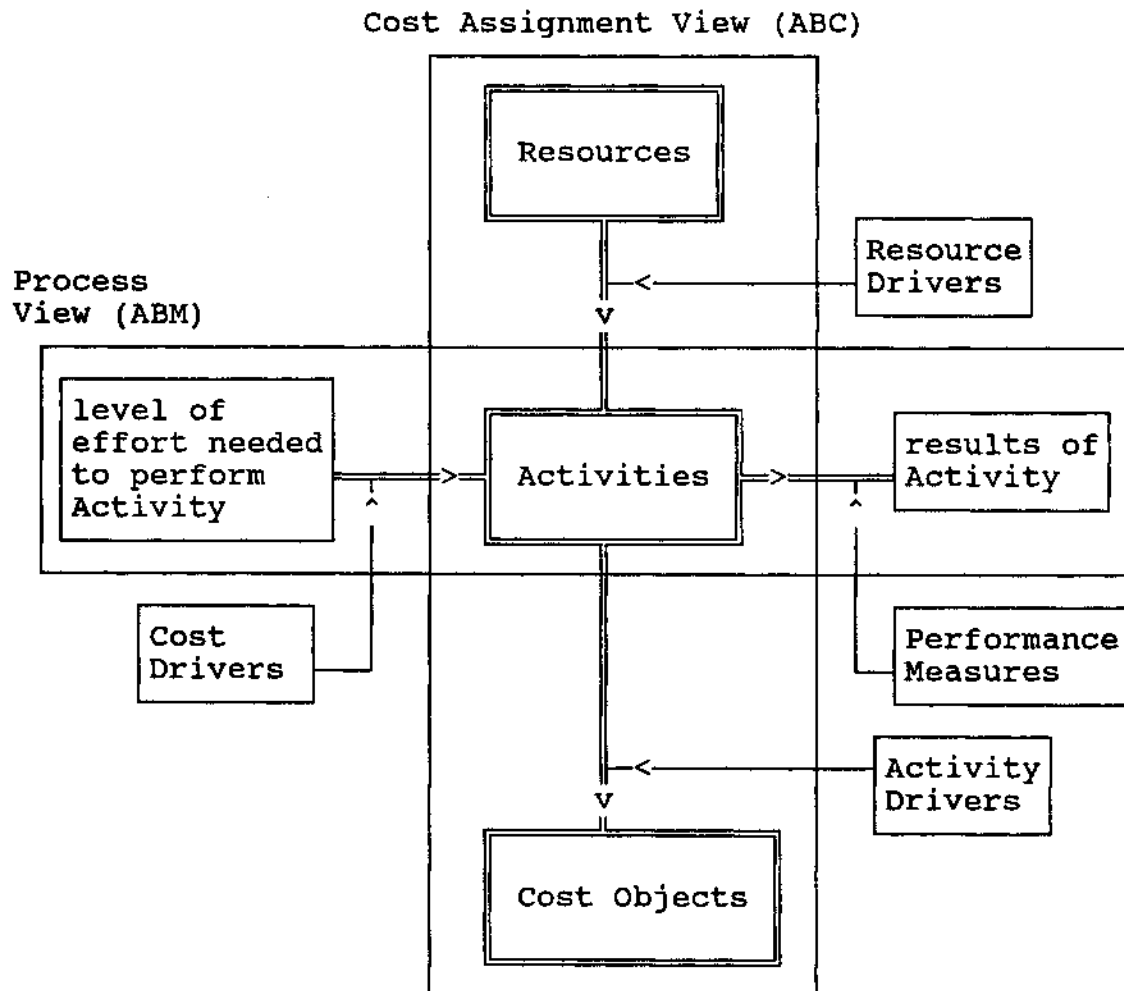


Figure 1. Two-dimensional view of ABC (adapted from Turney 1991, 96).

### Organization of the Study

The research study is presented in the following order. Chapter 2 summarizes the prior research that is relevant to this study. Chapter 3 describes the theoretical framework that guided the study and shows the relationships of the research variables within the framework. Chapter 4 describes how the case study methodology was used to achieve

the research study's purpose. Chapter 5 describes the research site. Chapter 6 analyzes the data collected during the research study. Chapter 7 presents a review of the predicted outcomes by key company personnel. Chapter 8 presents the findings of the study, the significance of the study's results, and a direction for future research.

## CHAPTER 2

### PRIOR RESEARCH

This study was based on two bodies of literature, that associated with managerial accounting and that associated with Information Resource Management (IRM). The managerial accounting literature provided a description of the Activity-Based Costing (ABC) method and the solutions it offers. The IRM literature helped identify IRM issues and hence potential applications of Activity-Based Analysis (ABA).

#### Managerial Accounting Literature

The literature of managerial accounting reveals a rebirth in that field in the late 1980s (Cooper and Kaplan 1991a; Cooper et al. 1992). Traditional management accounting is, under certain conditions, seen to provide management with cost information that may result in incorrect decisions (Johnson and Kaplan 1987). The problem with the traditional approach is that it combines costs and then allocates them to products using volume-based measures such as direct labor hours. But this obscures the identity of the causes of costs. Also, this approach provides misleading information when a product's actual consumption of resources is unrelated to volume.



As a result, ABC was developed to improve the analysis of product costs and profitability (Cooper and Kaplan 1991a). ABC identifies the Activities that contribute to products and traces the costs of these Activities to the products. ABC has been applied not only to manufacturing but also to purchasing (Roehm, Critchfield, and Castellano 1992). And it has been applied both to government and service operations (Antos 1992; Chaffman and Talbott 1991; Harr 1990). In addition, ABC has been used to trace costs to objects other than products (Brimson 1991; Cooper et al. 1992).

Research on ABC includes the investigation of implementation issues, effectiveness of management information, and behavioral issues (Bhimani and Pigott 1992). For example, researchers note that ABC information permitted sales personnel to make profitability decisions by order and customer, but production management viewed the approach more as a way of shifting focus rather than improving accuracy (Gietzmann 1991). ABC caused the perception of accountants to change as they became more involved in factory operations, and ABC increased profit consciousness on the part of factory managers (Bhimani and Pigott 1992).

The usefulness of ABC has been expanded beyond its original purpose of accurate costing. Since ABC divides business operations into work units and highlights their

costs, researchers note that ABC provides a method for identifying opportunities for reducing resource consumption and improving operations (Cooper and Kaplan 1991b; Cooper et al. 1992). From this viewpoint, Activities are seen as the building blocks of business processes and ABC appears useful for business process improvement (Brimson 1991; Cashell and Presutti 1992; Collins and Werner 1990; Cooper et al. 1992; Moravec and Yoemans 1992; Morrow and Hanzell 1992; Ostrenga and Probst 1992; Steimer 1990; Turney 1991). This kind of analysis leads to eliminating unnecessary Activities, redesigning the work flow, reducing causes of Activity costs, and improving customer quality. When expanded beyond its costing function and used to improve operations, ABC is called "Activity Based Management" (ABM) (Morrow and Hanzell 1992; Turney 1991).

Attention to cost drivers permits reducing costs and hence increasing efficiency. Attention to performance measures allows management to determine how well an Activity serves its customers and thus how effective the Activity is.

#### IRM Literature

The Ives-Hamilton-Davis framework (1980) organizes IRM responsibilities around development and operation of the information subsystem. Development topics include methods, personnel, organization, and management. Operation topics

includes the IRM components, personnel, organization, and management.

The Ives-Hamilton-Davis framework is modified by Barki et al. (1988) to provide categories for classifying IRM research. Dickson and DeSanctis (1990, 46) make minor modifications to these categories to construct the following classification scheme for IRM:

1. Data Resource Management
2. Administration of Computer Centers
3. Hardware Resource Management
4. Software Resource Management
5. Project Management
6. Planning
7. Organizing IRM
8. Staffing
9. Evaluation
10. Control
11. Security
12. Management Issues

IRM researchers provide lists of IRM tasks. March and Kim (1988-89, 8) list seven IRM functions:

1. Data planning
2. Capacity planning
3. Application selection
4. Information systems development
5. Project management
6. Hardware and software acquisition
7. Data administration

Davis (1989, 3) lists five roles and tasks of the information management function:

1. Development and maintenance of the corporate-wide management plan
2. Development and operation of major corporate information systems and databases
3. Management of information technologies and development and management of infrastructures

4. Providing information technology expertise and education
5. Providing standards and quality control

Boynton, Jacobs, and Zmud (1992, 36) give five processes for managing information technology:

1. Setting strategic direction
2. Establishing infrastructure systems, including establishing standards
3. Scanning technology
4. Transferring technology
5. Planning, building, and running application systems

The four questions selected for this research lie within the IRM categories described by these writers. Each of these categories has been the subject of IRM research.

#### Use of IRM to Improve Business Processes

IRM literature reports a growing interest in using IRM to improve business processes. Often the term "reengineering" is used to suggest that processes should not merely be automated but rather should be redesigned. Davenport and Short (1990) note that the process view revolutionizes the perspective of a business. They describe nine ways in which IRM can support the redesign of business: automational, informational, sequential, tracing, analytical, geographical, integrative, intellectual, and disintermediating. Davenport (1993) expands that article into a book in which he provides a process innovation framework in which IRM plays a key role. He discusses sixteen general processes, categorized as product

development, order fulfillment, and logistics, that IRM can transform. There is a need for a new form of IRM planning that focuses on business processes in order to make customer satisfaction a part of planning (Keen 1991).

The focus on process in order to improve customer service has impacted the IRM environment (Rockart and Hofman 1992). IRM will change the way production, coordination, and managerial work are done (Scott-Morton 1992). Boynton (1993) describes "systems of scope" that rapidly provide knowledge across boundaries to allow managers of processes to know about markets, products, and process capabilities. IRM permits information to be viewed by many workers at once thereby allowing tasks to be performed simultaneously instead of sequentially (Schnitt 1993). Venkatraman (1991) incorporates business process and business network redesign into a larger model of business reconfiguration enabled by IRM. This model also includes localized exploitation, internal integration, and business scope redefinition.

The literature discusses the effects of applying IRM to business process improvement. MacDonald (1991) and Short and Venkatraman (1992) report on the use of IRM to redesign not only internal processes but also the business network in which the firm resides. A life insurance company used personal computers to alter the process of issuing a policy in a way that reduced both the number of people and the number steps involved (Cliff 1992). Reengineering with IRM

expands beyond process design and leads to expanding the range of products and services the firm offers (Davidson 1993). IRM has a "disruptive" power because of its ability to alter the rules assumed to govern work (Hammer and Champy 1993). Hammer and Champy cite several examples: telecommunications permits businesses to partake of the advantages of both centralization and decentralization; shared databases permit information to be at more than one place at once; expert systems permit generalists to do the work of experts.

The literature also discusses techniques for applying IRM to business process improvement. Teng, Kettinger, and Guha (1992) propose a technique for linking the information architecture to process redesign using Business Systems Planning. Process modeling methods can be used to redesign business processes involving automation (Curtis, Kelner, and Over 1992). The technique applies, in particular, to the process of software development. Ludenberg (1992) developed a framework for recognizing opportunities for improving processes. His framework combines three dimensions of situations (levels of abstractions, perspectives, and points in time) with three dimensions of processes (levels, focus, and phases). There is a need to transfer IRM responsibilities to line managers in order to link IRM with business processes (Boynton, Jacobs, and Zmud 1992). Data planning presents the opportunity to rethink business

processes (Goodhue et al. 1992a). Hammer (1990) notes how IRM assists in redesigning business processes by supporting the eight reengineering principles he describes. Scherr (1993) proposes a new method for modeling business processes that can be incorporated into the software design process. His method addresses the people involved (customers, suppliers, salespersons, etc.,) and their accountability to one another.

#### Activity-Based Costing

Information resource professionals have noted the usefulness of ABC. Stuchfield and Weber (1992) report the successful use of Activity-Based Costing as a customer profitability information system in the financial services industry.

Davenport (1993) compared ABC to other methods of business process improvement. He concluded that ABC had provided incremental rather than radical improvements but that ABC had the potential for providing the cost information necessary for performance-measurement systems.

#### Requirements Analysis

A number of methods have been developed for identifying a firm's information needs. In lists that overlap, Boynton and Zmud (1987) discuss eleven methods; Lederer and Sethi (1988), seven methods; and Byrd, Cossick, and Zmud (1992), eighteen methods. These methods identify corporate

objectives, identify information needed for decision making and for automating operations, and allocate resources to implementing the corresponding systems (Bowman, Davis, and Wetherbe 1983; Davis and Olson 1985).

The methods differ in the organizational issues to which they direct attention as well as in the kinds of planning interactions they cause (Boynton and Zmud 1987). They also differ in how well they cope with communication obstacles and in the kinds of information they provide about the problem domain, such as information requirements, understanding of the process and behaviors, and understanding of the system's context (Byrd, Cossick, and Zmud 1992). Within the problem domain, the methods differ in the kinds of information and level of detail they provide about the structure and flow of data, inputs and outputs, and procedures and functions (Colter 1984).

The methods for identifying information needs have met with varying degrees of adoption by practitioners (Jones and Arnett 1993; Necco et al. 1987). Research suggests that the methods may have different degrees of effectiveness, but this is not clear (Mahmood 1987; Mantha 1987; Necco, Gordon, and Tsai 1987; Yadav et al. 1988). Researchers have investigated failed attempts to implement requirements planning projects (Goodhue et al. 1992a; Lederer and Mendelow 1987; Lederer and Sethi 1992). Reasons for



failures include excessive costs, attempting too much, and lack of organizational support.

Part of the reason for the failure to identify needs properly may be that users lack the familiarity with their operations needed for eliciting information requirements (Wetherbe 1991; Zmud et al. 1993). Wetherbe (1991) suggests focussing first on business issues and then identifying information that can assist with the business issues. A laboratory experiment by Zmud, Anthony, and Stair, Jr. (1993) suggests that where user operations are ill-structured, leading the user to develop mental pictures of system needs is effective in eliciting information requirements.

### Outsourcing

The literature notes that the boundaries between the IRM department and its environment, both internal to the firm and external, are disappearing (Boynton, Jacobs, and Zmud 1992; Loh and Venkatraman 1992a; Loh and Venkatraman 1992b; Rockart 1988; Zmud, Boynton, and Jacobs 1986). IRM work is being done both by the traditional IRM department as well as by other organizations both internal and external to the firm. There are many variations. A variation investigated by this research is "outsourcing," subcontracting IRM functions to an outside vendor.

This practice is followed in other business areas (Quinn, Doorley, and Paquette 1990; Clemons and Row 1992).

Outsourcing is discussed both in practitioner and in research literature. Practitioner literature reports on experience with outsourcing and makes recommendations for determining when to outsource and how to manage the process (Benko 1992; Lowell 1992; Rochester 1990; Sinensky and Wasch 1992).

The research literature discusses the organizational context of outsourcing. Integer programming used to investigate the outsourcing bidding process provides evidence that outsourcing users need to award incentives and levy penalties to cause bidders to act truthfully (Chaudhury, Nam, and Rao 1992). Klepper (1993) develops a contingency framework for analyzing the kind of contractual arrangements needed that depends on the frequency of contracting and the specificity of the information resource being outsourced. Investigating the relationship between options for acquiring information resources, intervening variables, and success of IRM, Livari and Ervasti (1993) conclude that success was associated with outsourcing complex systems after design. Saaksjarvi (1993) reports differences in perceptions of managers of the business and managers of the information function. He describes a framework for analyzing different IRM functions with outsourcing alternatives.

The research literature also addresses the results of outsourcing. Comparing the outsourcing experience of two wood-working firms, Saarinen and Saaksjarvi (1993) conclude that keeping an IRM function internal rather than outsourcing all IRM permitted better reaction to changes in the firm and in the environment. A positive relationship with business and IRM cost structures and a negative relationship with IRM performance have been noted (Loh and Venkatraman 1992a). Loh and Venkatraman (1992b) studied how outsourcing by one firm induces other organizations to outsource. They concluded that outsourcing is an administrative innovation that is communicated to other firms. Outsourcing contributed to positive stock market returns (Loh and Venkatraman 1993). But Windsor and Peak (1993) report that outsourcing does create risks and developed a taxonomy for analyzing these risks.

Lacity and Hirschheim (1993) conclude that firms outsource to obtain a cash infusion, to improve perceptions of the IRM function, and to permit focussing on strategic issues. They noted that the outsourcing process was both rational and political. The results of outsourcing in the long term are speculative: There may be a loss of competitive advantage, vendors may take advantage of the client, and cost savings could possibly have been generated internally.

### Sharing Information Resources

Another perspective on outsourcing is that instead of seeking external information resources, a firm may decide to offer its information resources to others. The firm might share these resources either with external parties or with other internal organizational units. The literature reports several reasons.

Sharing information resources externally. Firms might share information resources externally with customers or suppliers in order to gain competitive advantage (Feeny and Ives 1990; Porter and Millar 1985). Also, firms may determine that they can sell information resources. An insurance company, for example, might develop software for claims management and then lease or sell the software as a risk management tool (DeBow 1991). This is an extension of the idea of viewing IRM as a profit center (Allen 1987; Cash, McFarlan, and McKenney 1988). Further, for technical or economic reasons firms might enter into "cooperative arrangements" or develop "interorganizational information systems" in order to share systems and systems development with other organizations (Clemons and Row 1992; Elam 1988; Johnson and Vitale 1988; Konsynski and McFarlan 1990).

Sharing information resources internally. Firms might share information resources internally in order to reduce costs. The reuse of resources is one way of sharing. This should improve productivity.

Software is one information resource that has been shared internally. Productivity gains have been obtained from the use of computer-aided software engineering to develop software components that can be reused in other applications (Banker and Kauffman 1991). One organization modeled its software development process after product engineering (Swanson, Smith, and McCubbrey 1991). This produced reusable modules that reduced development time for two applications while improving their quality.

Corporate data are another information resource that have been shared internally. To do this requires emphasis not so much on the data but on the data standards, common definitions, and codes (Goodhue, Wybo, and Kirsch 1992b). These considerations make sharing data across information systems possible. Being able to share data improves coordination. However, sharing data increases coordination overhead and implementation costs (Goodhue, Wybo, and Kirsch 1992b). Efforts at data planning have produced subject-area databases, common systems, information databases, and data access services (Goodhue, Quillard, and Rockart 1988). Goodhue et al. (1992a) present case studies of largely unsuccessful attempts at planning for integrating data and present fifteen propositions to guide further research on the subject.

Because of the advantages of sharing information resources internally, some firms have viewed information

resources as assets and have developed systems to catalog them. GTE Data Services (GTEDS) developed such a system and categorized the resources as user interfaces, system software, data, network gateways, and end user computing facilities (Prieto-Diaz 1991; Swanson and Curry 1989). A bank identified as reusable information resources not only application components but also components that appeared in other parts of the system development life cycle (Apte et al. 1990). These supported testing, adherence to standards, and managing the development process. Karmi (1990) proposes a scheme for identifying abstractions to guide the design of application assets and data assets so the application and data assets can be classified and reused. Krueger (1992) analyzes research on software reuse along the dimensions of abstraction methods, methods for locating and selecting, the role of specializing generalized software artifacts, and frameworks for integrating software artifacts into systems.

### IRM Organizational Design

The literature on IRM organization addresses both the organizational structure of the IRM department and the fit between the IRM organizational structure and the organizational structure of the remainder of the organization. With respect to the organizational structure of the IRM department, Zmud (1984) presents options for

designing organizations based on how tasks are partitioned, patterns of authority and responsibility, and coordination mechanisms. A survey by Roger, Vogel, and Wetherbe (1987) suggests that IRM functional classifications include systems development, computer operations, administration, technical services, support center, planning, telecommunications, quality assurance, security, information center, and database administration. Swanson and Beath give evidence supporting putting systems development and maintenance in separate organizational units (1989; 1990).

In comparing the IRM organization with the firm's organization, a number of structural parameters have been investigated. Examples are centralization of authority, standardization and formalization of procedures, and functional specialization (Ein-Dor and Segev 1982; Olson and Chervany 1980; Weill and Olson 1989). However, findings are limited and contradictory (Lee and Leifer 1992; Weill and Olson 1989). One problem may be that the research focuses on too high a level in the organization (Lee and Leifer 1992). A more fundamental problem could be that the underlying assumption of this approach, contingency theory, is inappropriate (Weill and Olson 1989).

Of the parameters investigated, centralization attracts the most attention. Olson and Chervany (1980) detect a correlation between the organizational environment and the decentralization of the IRM organization.

Ein-Dor and Segev (1982) report a correlation between organizational centralization and several IRM characteristics. Tavakolian (1989) detects a correlation between IRM centralization and the firm's competitive strategy. Kim (1990) finds decentralization to be more effective than centralization in obtaining user satisfaction for unpredictable tasks. Hodgkinson (1992) extends the concept of centralization to management style and notes a correlation between management styles of the firm and the IRM organization. In summary, both centralized and decentralized IRM have both advantages and disadvantages (Allen and Boynton 1991). Possibly, firms need characteristics of both (von Simon 1990).

The research on IRM organizational structure addresses not only the traditional IRM department but also end-user computing. Alavi, Nelson, and Weiss (1987-8) describe a strategy for fitting information centers with needs of their environments. Research by Brown and Bostrom (1989) provides guidelines for determining when the parameters of centralization, formalization, and complexity are appropriate for managing the phases of end-user computing.

Also of interest is how organizational structure relates to the distribution of computer hardware. Leifer (1988) suggests a fit between the IRM architecture and the firm's organizational structure. In investigating the relationship between the distribution of computer hardware



resources and the organizational variables of structure, size, and distribution of decision-making, Ahituv, Neumann, and Zviran (1989) find that the only determinant is the organization's decision-making process.

In addition to those already noted, other impacts of organizational parameters are investigated. Srinivasan and Kaiser (1987) find that the organizational variables human resources, financial resources, external influences, and system exposure influenced the quality of the system development process. Lee and Leifer (1992) provide an analysis of the relationship between organizational and IRM structures based on how the relationship affects information sharing. Blanton, Watson, and Moody (1992) find that integrating mechanisms within the IRM department impacts the effectiveness of IRM support in environments that are complex, changing, and uncertain.

#### Summary

In summary, two bodies of literature are relevant to this research study. Managerial accounting literature describes the ABC managerial accounting technique and suggests that it might be applied not only to costing procedures but also to improvement of management of business processes. Within IRM literature, the five topics that continue to attract the interest of researchers served as the basis for the four research questions investigated in

this study. These topics are business process improvement, requirements analysis, outsourcing, sharing information resources, and IRM organizational design. The next chapter discusses how the literature provides the direction for this research.

## CHAPTER 3

### THEORETICAL FRAMEWORK

The theoretical framework that guided this research study is presented in figure 2. The framework was developed for this study to summarize Information Resource Management (IRM) functions for the purpose of identifying a domain of potential applications for Activity-Based Analysis (ABA). The framework is an adaptation of the Ives-Hamilton-Davis framework (1980). That framework includes the information subsystem, its development, its use, and the environment in which it functions. A key difference between the two frameworks is that the framework developed for this study does not assume that the information subsystem, its development, or its use are necessarily internal to the company. The reason for this difference is explained in this chapter.

#### Description of the Research Framework

The framework for this study has three major components:

1. The Organizational Environment of the IRM Function
2. The IRM Function
3. The Benefits of the IRM Function to the Organization

These three components have the following relationship: the IRM Function operates within an organizational environment and produces benefits to the organization.

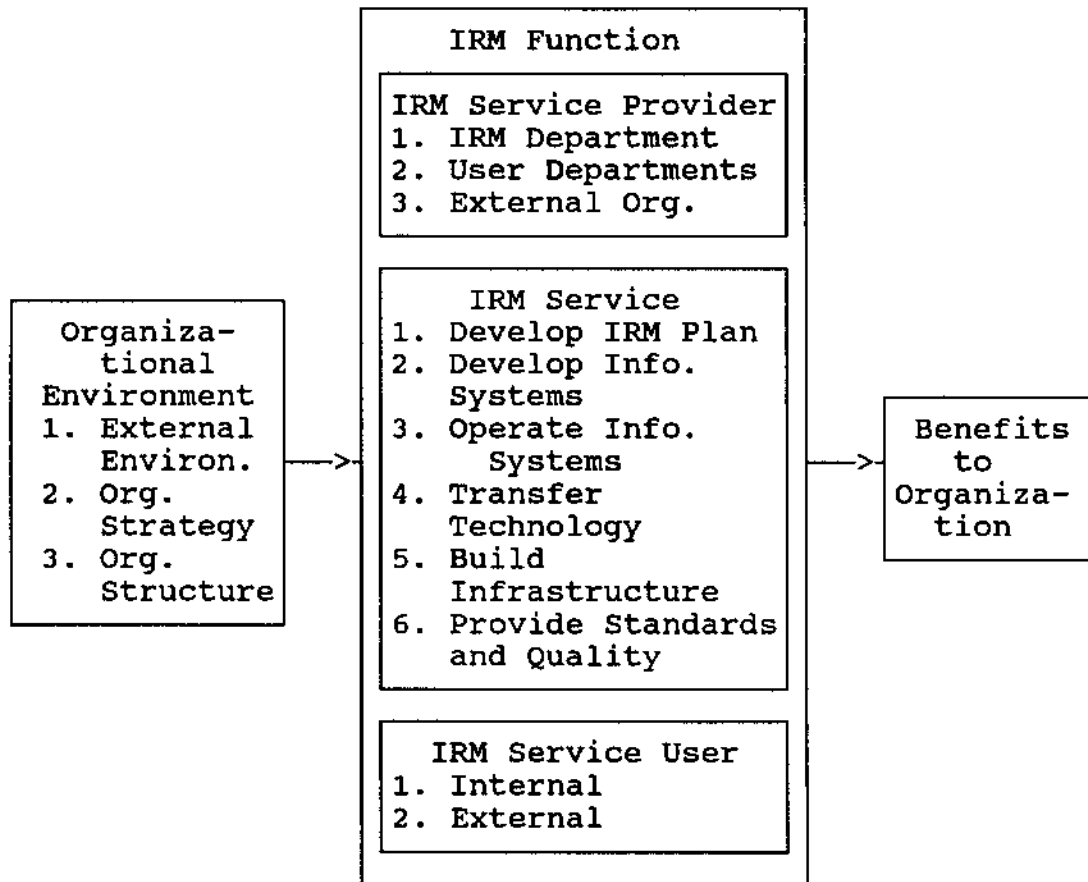


Figure 2. Research framework for this study.

### Organizational Context

In the framework for this research study, the IRM Function operates within the context of its Organizational Environment (Ives, Hamilton, and Davis 1980). IRM researchers have investigated various components of the IRM environment: the organization's environment, strategy,

structure, size, technology, task, and the individual worker (Weill and Olson 1989). The research framework summarizes those components that constitute the Organizational Environment of IRM: the external environment of the organization, the organization's strategy, and its structure (Blanton, Watson, and Moody 1992).

### IRM Function

The IRM Function in the research framework has three components: the IRM Service Provider, the IRM Service, and the IRM Service User. The IRM Service Provider, the first component of the IRM function, can be the IRM department, user departments, or external parties. The IRM department has been the traditional provider of these services. However, user departments in the organization are now playing a larger role (Boynton, Jacobs, and Zmud 1992; Rockart 1992; Zmud, Boynton, and Jacobs 1986). In addition, some services are being provided by other cooperating organizations and by contractors (Elam 1988; Loh and Venkatraman 1992a).

The six IRM Services, the second component of the IRM Function, are adapted from the works of March and Kim (1988-89, Davis (1989), and Boynton, Jacobs, and Zmud (1992). Their contributions were described in chapter 2.

The third component of the IRM Function is the IRM Service User. Possible users range from the user

departments of the company to external parties (Johnson and Vitale 1988; Keen 1993).

#### Benefits to the Organization

The organization's IRM Function provides certain Benefits to the Organization (DeLone and McLean 1992; Weill and Olson 1989). The benefits, not examined in this study, constitute the dependent variable.

#### Research Questions

To analyze how ABC could be applied to IRM, this research addressed four questions:

1. Did ABA identify management information required to monitor process effectiveness and efficiency?
2. Did ABA support outsourcing decision making by identifying IRM component costs within business processes?
3. Did ABA identify information resources that are sharable?
4. Did ABA identify differences between Company organizational characteristics and IRM department organizational characteristics?

#### A Note on Internal Validity

In investigating each of the four research questions, this study did not make use of the research framework's dependent variable, "Benefits to Organization." This did

not affect the internal validity of the research. Internal validity is concerned with establishing causal relationships between dependent and independent variables (Yin 1989). The framework was developed for this study to summarize the domain of applications for ABA. Consequently, in the present study, tests of internal validity were not applied to the relationships between the dependent variable of the IRM research framework and its independent variables. Rather, these independent variables, for purposes of this research, became dependent variables, and the ABA technique was the independent variable. That is, the question studied was the impact of the ABA technique on the independent variables of the framework, "Organizational Environment," "IRM Service Provider," "IRM Service," and "IRM Service User." Thus, the relationships studied were between the ABA technique and the independent variables, not between the independent variables and the dependent variable. How internal validity was maintained is discussed in chapter 4.

#### Research Question 1

The first research question was: Did ABA identify management information required to monitor process effectiveness and efficiency? Identifying such management information is a topic within the first IRM Service in the research framework, "Develop IRM Plan." IRM planning involves three phases: strategic planning, organizational

information requirements analysis, and resource allocation (Bowman, Davis, and Wetherbe 1983; Davis 1989; Davis and Olson 1985). Requirements analysis, the second IRM planning phase, continues to be a critical problem in IRM planning (Byrd, Cossick, and Zmud 1992; Zmud, Anthony, and Stair, Jr. 1993). Consequently, the present study investigated the use of ABA for requirements analysis.

IRM issue addressed by research question 1.

Requirements analysis involves analyzing the decisions and operations of the business to assess information needs (Bowman, Davis, and Wetherbe 1983). A number of requirements analysis methods have been defined (Byrd, Cossick, and Zmud 1992). The current focus by IRM researchers on business process improvement suggests the need for requirements analysis methods that specifically address process improvement issues. However, the existing methods do not specifically view a company in terms of business processes.

A way to adapt these methods to a process orientation is to view requirements analysis as being composed of two elements: the requirements analysis methods and the problem domain on which the methods are used (Vessey and Conger 1993). This permits altering the way the problem domain is viewed so that requirements analysis methods can be adapted to it. The problem domain can thus be viewed from the perspective of business processes rather than from the



perspective of functional organizational units. However, there has been little research to determine the characteristics of problem domains and how to associate requirements analysis methodologies with a particular problem domain (Vessey and Conger 1993).

An important element in the problem domain is cost information. Cost information is necessary for process improvement and for giving priorities to IRM projects (Davis and Olson 1985; Harrington 1991). However, as the survey of managerial accounting literature suggests, traditional cost allocation techniques are unable to provide accurate information about the problem domain.

In summary, two problems are associated with current requirements analysis methods. First, there is no research to indicate how to view the problem domain in business process terms so that existing requirements analysis techniques can be applied. Second, cost information about the problem domain is not reliable.

ABC principles applicable to IRM issue. Using ABC in requirements analysis addresses both of these problems. The IRM focus on improving business processes shares the objective of ABC writers who also focus on business process improvement (Brimson 1991; Cashell and Presutti 1992; Cooper et al. 1992; Moravec and Yoemans 1992; Morrow and Hanzell 1992; Orstrenge and Probst 1992; Steimer 1990; Turney 1991). These writers note that breaking business processes into

Activities and assigning cost and performance data to these Activities permits raising questions that suggest ways of improving business processes. Activities facilitate understanding of the business (Bhimani and Pigott 1992; Brimson 1991; Moravec and Yoemans 1992). Thus, ABC provides a way of viewing the problem domain in terms of business processes. Because Activities facilitate understanding and improvement of business processes, using ABA for requirements analysis will provide a means for adapting existing requirements analysis methods to business processes improvement concerns. Further, ABC also provides the required cost information about Activities within the problem domain.

Research framework variables selected for research.

The shaded area in figure 3 indicates the portion of the research framework used for question 1. A number of variables make up the IRM Service that is the subject of research question 1, "Develop IRM Plan." Requirements analysis was the IRM planning variable selected for research. Requirements analysis is also made up of a number of variables.

The objectives of requirements analysis are to improve management information and to automate processes (Bowman, Davis, and Wetherbe 1983; Boynton, Jacobs, and Zmud 1992; Scott-Morton 1992; Zuboff 1985).

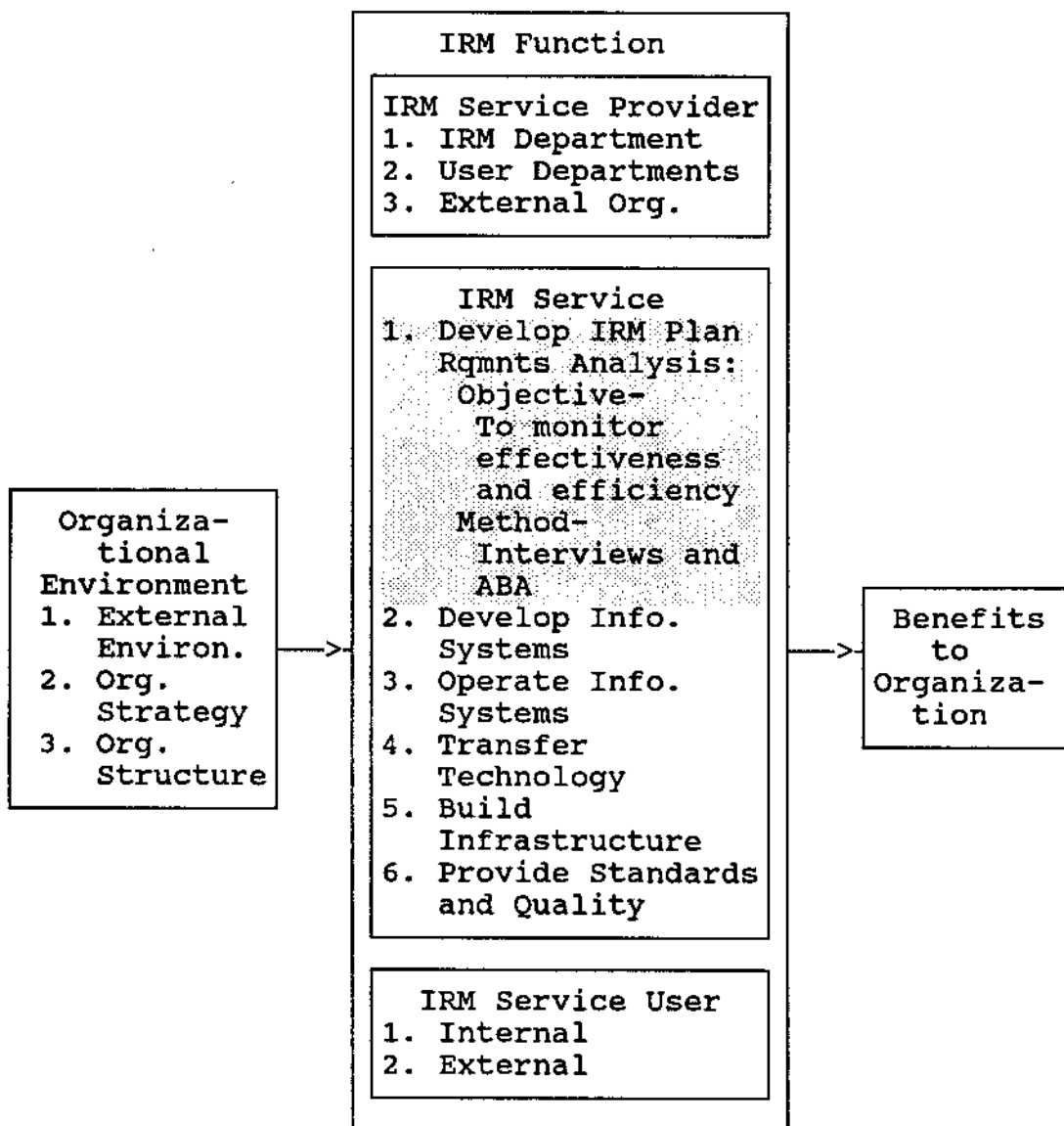


Figure 3. Research framework variables used in question 1.

Improving management information is concerned with information for solving problems, making decisions, investigating critical success factors, and monitoring effectiveness and efficiency (Wetherbe 1991). Information about the effectiveness and efficiency of processes is

needed for process improvement (Teng, Kettinger, and Guha 1992). Because this research focuses on process improvement and because ABC addresses the variables "effectiveness" and "efficiency," these variables were selected for investigation. In summary, the problem domain consists of business processes for which information is needed to allow monitoring effectiveness and efficiency.

As chapter 2 indicated, there are many methods for requirements analysis that can be applied to this problem domain. For this research, the requirements analysis method used was to interview Activity personnel about effectiveness and efficiency needs (Davis and Olson 1985; Wetherbe 1991). This permitted gathering data to answer question 1 that could also be used to answer the other research questions.

### Research Question 2

Research question 2 is: Did ABA support outsourcing decision making by identifying IRM component costs within business processes? This question and the next were concerned with the involvement of an External party. In the second question, the IRM Service Provider was an external party. In the third question, the IRM Service User was an external party.

IRM issue addressed by research question 2. To reduce the costs of IRM services, companies have considered outsourcing, that is, hiring outside companies to provide

the services (Clemons and Row 1992; Windsor and Peak 1993). A company can approach reducing IRM costs from two viewpoints, a functional viewpoint and a process viewpoint. The functional viewpoint investigates IRM services directly and determines that their costs are excessive (Lacity and Hirschheim 1993).

The process viewpoint does not begin with the objective of outsourcing all IRM resources. Rather, it brings together the two concepts of business process cost reduction and IRM outsourcing. This viewpoint focuses on reducing product costs and hence the costs of the process producing the product. The objective of reducing process costs leads to reducing costs of elements making up the process (Porter 1985). These costs include IRM costs within the process (Keen 1993; Loh and Venkatraman 1992a). To implement this process viewpoint requires measuring IRM costs within the business process and comparing these to outsourcing costs (Rochester 1990). Measuring IRM costs in a process is not a straightforward procedure for two reasons: It is necessary to identify the information resources, and it is necessary to determine their costs.

Identifying the information resources that support the process is difficult because IRM pervades business operations (Loh and Venkatraman 1992a; Porter and Millar 1985). An information resource may serve the entire company or it may serve a specific domain (Loh and Venkatraman

1992a). If an information resource serves processes other than the one being investigated the analysis is complex because it requires determining how much of the cost of the information resource is associated with each process. It must also be determined whether to outsource part or all of the information resource. Thus, to reduce IRM costs within a business process by outsourcing certain IRM resources requires determining two things: (1) the information resources within the process and (2) the domain that these information resources serve. The IRM literature does not discuss how to perform either of these.

A second difficulty in measuring IRM costs within a business process is accurately calculating the cost of the information resources that have been identified. IRM commonly uses a costing method called "chargeback." The chargeback method allocates IRM operations costs to users based on measurements of resource usage and charges development and maintenance costs to users based on a fixed price (Cash, McFarlan, and McKenney 1988; Davis and Olson 1985; McKinnon and Kallman 1987; Olson and Ives 1982).

There are two problems with the chargeback method. First, it typically traces costs to users rather than business processes (Bergeron 1986; Pliskin and Romm 1990). Second, because chargeback allocates overhead items (e.g., management, development software tools, research and development, etc.), it has the same cost accounting

problems that ABC was developed to circumvent. It is common, for example, to allocate IRM costs based on computer utilization (Cash, McFarlan, and McKenney 1988). This method is a volume-based measure. But a large volume of computer resources might be used for production systems that require little use, for example, of management time. Thus, using the conventional chargeback method could lead to erroneous outsourcing decisions.

In summary, there are two difficulties with outsourcing IRM from the process viewpoint. First, although the literature shows interest in both process improvement and in outsourcing IRM costs, it does not address how to identify the IRM resources within the process. Second, it does not provide an accurate means for determining IRM costs within business processes.

ABC principles applicable to IRM issue. ABC writers suggest using ABC for outsourcing decisions (Cooper et al. 1992; Turney 1991). ABC can alleviate the two difficulties of measuring IRM costs described in the prior section. As an aid to identifying information resources within processes, a key strength of ABC is its ability to trace resource costs to the appropriate cost object (Cooper and Kaplan 1991a; Cooper and Kaplan 1991b). It does this by tracing resource costs to Activities within business processes and then tracing Activity costs to cost objects.

Thus, given an IRM cost traced to an Activity, moving backward to the source of the cost would identify that portion of the information resource traced to the business process. Then, analysis of how that resource's costs are driven to other Activities would provide a basis for identifying the overall resource. Thus, ABC provides data both for identifying information resources within processes and for determining the costs of the information resources.

Research framework variables selected for research.

The IRM issue addressed by research question 2 involves two topics in the research framework: "IRM Service Provider" and "IRM Service." Within the six IRM Services of the research framework, three were selected for this study because the research site was involved with them. These are "Develop Information Systems," "Operate Information Systems," and "Build Infrastructure." These three services are shaded in the framework in figure 4 together with the other portions of the research framework used in question 2.

In the framework, outsourcing is concerned with the IRM Service Provider being an External party. Chapter 2 identified a number of issues concerning outsourcing. These issues include the impetus for outsourcing, the contractual arrangements, the organizational focus of the outsourcing decision, and the implementation process. This research study addresses variables associated with two important



issues, the impetus for the outsourcing decision and the organizational focus.

"Impetus" is concerned with the motivation for using external parties rather than the other IRM service Providers. Companies have sought numerous benefits from outsourcing (Benko 1992; Lacity and Hirschheim 1993; Loh and Venkatraman 1992a; Rochester 1990; Sinensky and Wasch 1992).

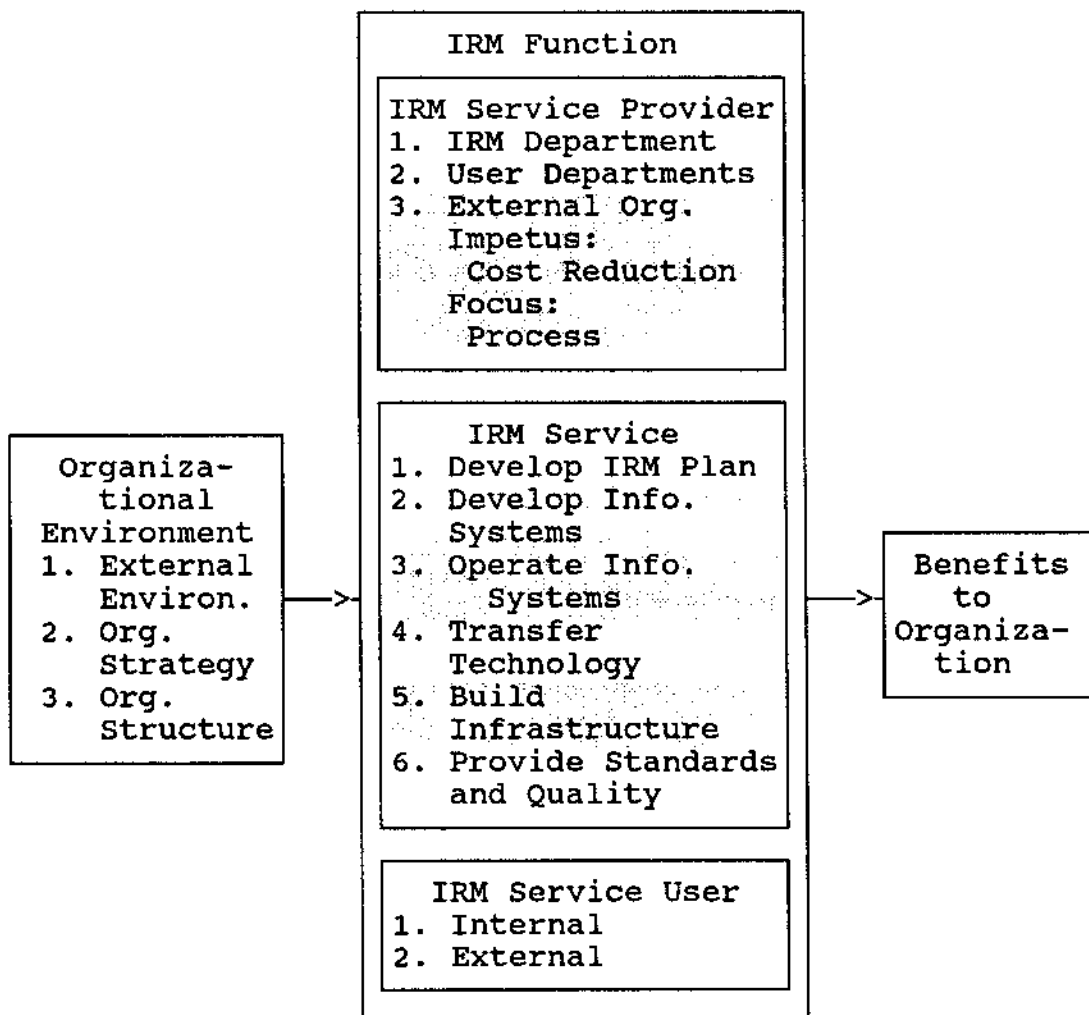


Figure 4. Research framework variables used in question 2.

These can be classified as economic benefits or operational benefits. Economic benefits include reducing expenses, obtaining a cash infusion from the vendor, and converting fixed costs to variable costs in order to better match information costs with the company's growth, thereby freeing capital for other uses. Operational benefits for outsourcing include gaining expertise not available in the company and releasing resources for other uses. Expense reduction was selected for research for the reason that cost reduction has been shown to be a critical determinant of outsourcing (Lacity and Hirschheim 1993; Loh and Venkatraman 1992a). The importance of expense reduction suggests the need for an accurate costing methodology, which in turn suggests the use of ABC.

The organizational "focus" of the outsourcing decisions refers to the portion of the organization targeted for outsourcing. This study identified two viewpoints for focus: functional and process. The functional viewpoint is the more common viewpoint for outsourcing decisions and is not addressed in this study. The process viewpoint is concerned with reducing the costs of the product supported by the process. Reduction of product costs has been identified as a determinant of outsourcing IRM (Loh and Venkatraman 1992a). ABA is particularly appropriate for reducing IRM costs within business processes because ABA can

rely on ABC's ability to trace IRM costs to the Activities that constitute processes.

### Research Question 3

Question 2 addressed the use of external providers of IRM services to reduce costs. However, the organization may itself become the external provider for IRM services, leveraging its investment in information resources by finding additional uses for them. By doing this, the organization might reduce organizational costs, gain competitive advantage, or generate revenues. Research question 3, which addressed this issue, was: Did ABA identify information resources that are sharable?

IRM issue addressed by research question 3. As the research framework indicates, information resources can be shared within the organization or externally. Sharing resources internally will reduce redundancy. To share resources in this way requires identifying common tasks and then determining if applicable and sharable IRM resources are available to address these needs.

To share resources externally, a provider of information resources must identify both the resources available for sharing and the potential user of those services. Identifying such potential external users is similar to the approaches taken to identifying sharing resources in order to gain competitive advantage (Bergeron,

Buteau, and Raymond 1991; Ives and Learmonth 1984; Johnson and Vitale 1988; Porter and Millar 1985). These approaches provide ways of associating external users with a firm's IRM resources. However, these approaches are very general. Some approaches start with the information resource and attempt to determine a potential external user. Other approaches start with the external user and attempt to determine corresponding information resources required. Some search for both information resources to share and for an external party with whom to share them. What is lacking in these approaches is a technique for specifically identifying available information resources and potential external users.

ABC principles applicable to IRM issue. ABC can be used to identify opportunities for sharing resources internally (Turney 1991). This would be accomplished by examining different bills of Activities for the presence of identical Activities. Identifying these would point to the potential excess information resources supporting the Activities.

ABC can also be used to identify opportunities for sharing resources with external parties. Part of the advantage of ABC is its ability to connect Activities with cost objects, those things about which cost information is desired (Brimson 1991; Cooper et al. 1992). Examples of cost objects include products, departments, and customers.

This ability to connect Activities with customers as a cost object (Brimson 1991; Stuchfield and Weber 1992) suggests how ABC principles can be used to assist in connecting IRM resources to customers as potential users of information resources. As was shown for question 2, information resources within Activities can be identified. Then, using customers as the cost object, the corresponding bill of Activities will connect the information resources with the customer. By identifying the customer which the information resources serve, it may be possible to identify uses of those resources by the customer.

Research framework variables selected for research.

The shaded portion of figure 5 indicates the variables within the research framework used in question 3. As the literature review indicates, an organization can develop additional resources for sharing. However, resources already existing could have potential for use by others (Feeney and Ives 1990; Johnson and Vitale 1988). The emphasis of this ABA-based research is examining Activities, so the research focused on those resources that could be discovered during the process of Activity-Based Analysis. Therefore, sharing the operation of already existing information resources was investigated. In the research framework these are associated with the IRM Service "Operate Information Systems."

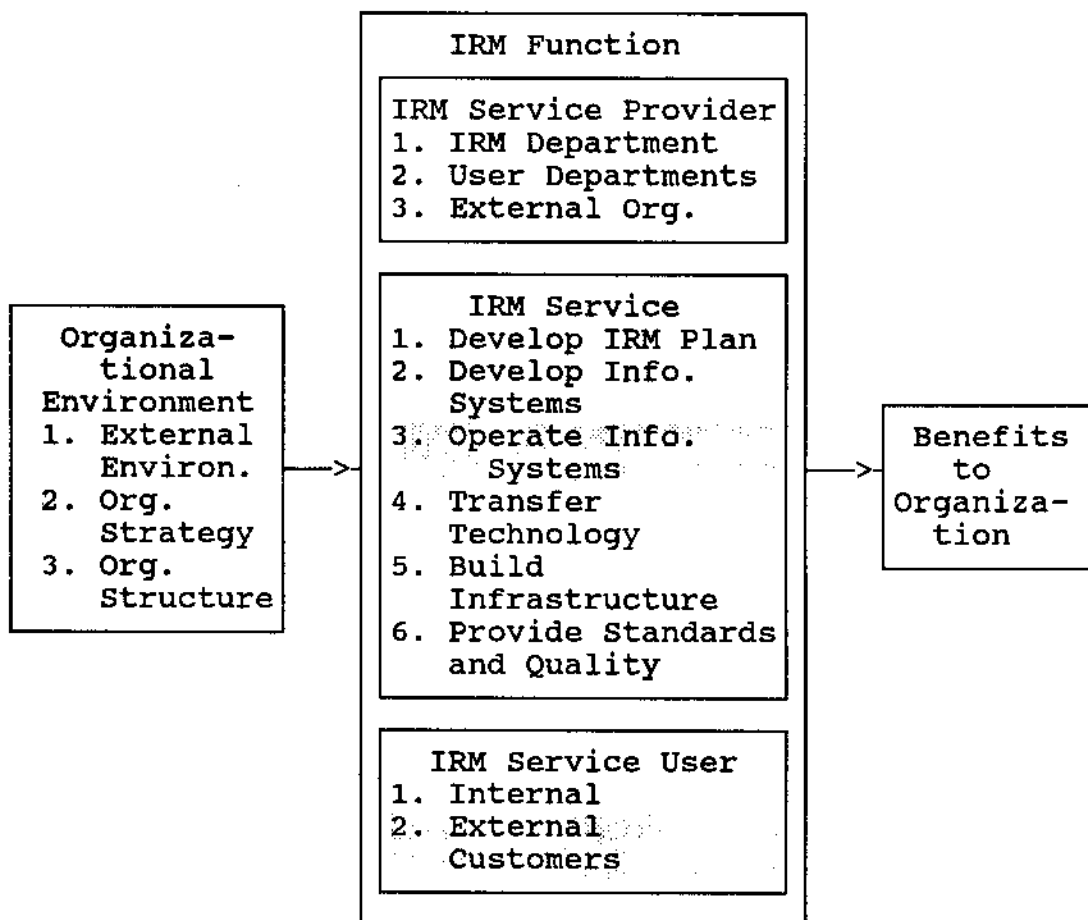


Figure 5. Research framework variables used in question 3.

Since IRM literature emphasizes the importance of sharing information resources among companies, the external dimension of information resource user was selected (Elam 1988; Johnson and Vitale 1988; Konsynski and McFarlan 1990). External parties include customers and suppliers (Johnson and Vitale 1988). The variable "customers" was selected because of ABA's ability to connect Activities with the customer (Brimson 1991; Stuchfield and Weber 1992).

#### Research Question 4

Research question 4 was: Did ABA identify differences between Company organizational characteristics and IRM department organizational characteristics? This question explored the use of ABA to investigate the organization of the IRM effort. The investigation analyzed Activities to see if they were suitable for examining the fit between the IRM department organizational structure and that of the remainder of the Company.

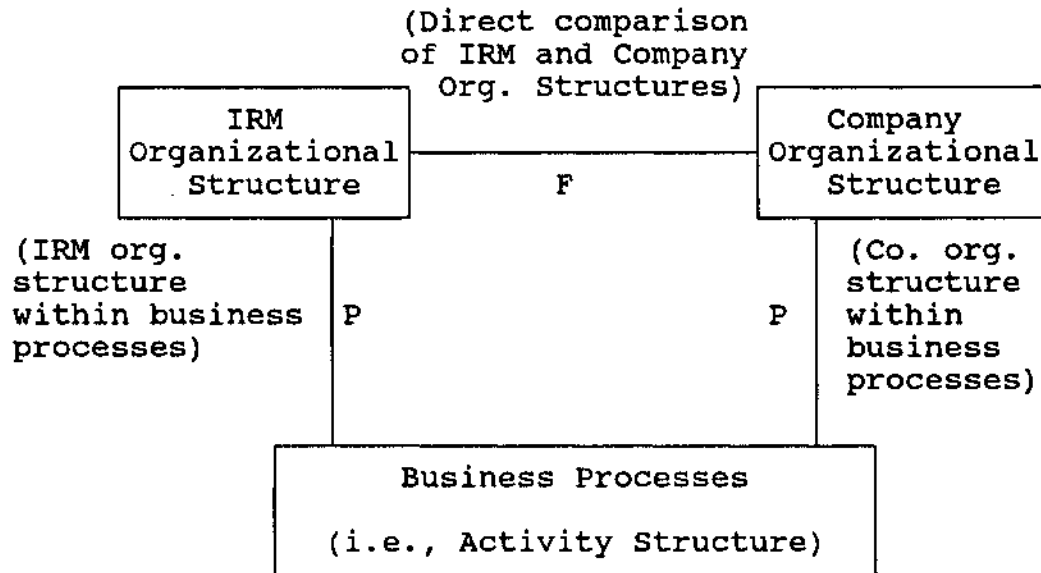
IRM issue addressed by research question 4. As the literature survey on IRM organizational structure indicates, researchers have investigated a number of issues in order to determine the best way to organize the IRM function. One of these is the extent to which the IRM department organizational structure matches the organizational structure of the company (Ein-Dor and Segev 1982; Hodgkinson 1992; Olson and Chervany 1980).

An organization's structure can be viewed from two perspectives: as a static framework defining roles and procedures and as a flow of activities and interactions (Dow 1988; Orlikowski and Robey 1991; Ranson, Hinings, and Greenwood 1980). A similar notion is that an organization can be viewed from the perspective of its functional structure or from the viewpoint of the work flow that crosses functional structures (Harrington 1991).

Thus, as figure 6 illustrates, there are two ways of investigating the relationship between the organizational structures of the company and of the IRM department. First, the relationship can be investigated from the viewpoint of framework, the formal assignment of roles and responsibilities. This is indicated by the letter "F" on the diagram. This is a common approach used in IRM research. Through questionnaires and other means, researchers have classified IRM organizational parameters and company organizational parameters independently of one another (Ein-Dor and Segev 1982; Kim 1990; Hodgkinson 1992; Olson and Chervany 1980). The problem with this approach is that researchers have had limited success in drawing conclusions regarding the effects of either matches or mismatches of IRM department and company organizational structures (Ein-Dor and Segev 1982; Loh and Leifer 1992). The reason for this failure may be that the organization was viewed at too high a level (Lee and Leifer 1992).

A second way of examining the relationship between company and IRM department organizational parameters is to investigate structure at a lower level, from the viewpoint of process. This is indicated by the letter "P" in figure 6. Researchers could then investigate how these organizational parameters interact within a process.





**Legend:**

F - Framework Viewpoint of Organizational Relationships  
 P - Process Viewpoint of Organizational Relationships

Figure 6. Alternative view of organizational structures.

To take this investigative approach requires identifying both the company's and the IRM department's organizational parameters within the process. This is the issue addressed by question 4.

ABC principles applicable to IRM issue. ABC is an appropriate tool for investigating the interaction of company and IRM organizational structures because the installation of ABC requires addressing organizational issues. There are three reasons why the installation of ABC must address organizational issues. First, Activities are usually defined by departments and grouped into Activity

centers (Cooper et al. 1992). Further, the installation of ABC systems causes the re-examination of the organizational environment. Since Activities constitute the building blocks of business processes, viewing the company from the standpoint of Activities causes the re-examination of interdepartmental communications and of the clustering of organizational structures around Activities (Brimson 1991). Finally, the use of ABC raises issues of the kinds of decisions being made and what organizational unit should be making them (Bhimani and Pigott 1992). These three considerations suggest using the Activity structure as the starting point for examining organizational considerations. This would permit examining the IRM department and company organizational structures associated with the Activity structure.

Research variables selected for research. The shaded portions of figure 7 indicate the portion of the research framework involved in answering this research question.

A number of structural variables has been investigated (Weill and Olson 1989). This research investigated five structural parameters that have been of interest to IRM researchers: centralization (which includes organizational location), formalization, cohesion, and coupling (Ein-Dor and Segev 1982; Olson and Chervany 1980; Swanson and Beath 1990; Zmud 1984).

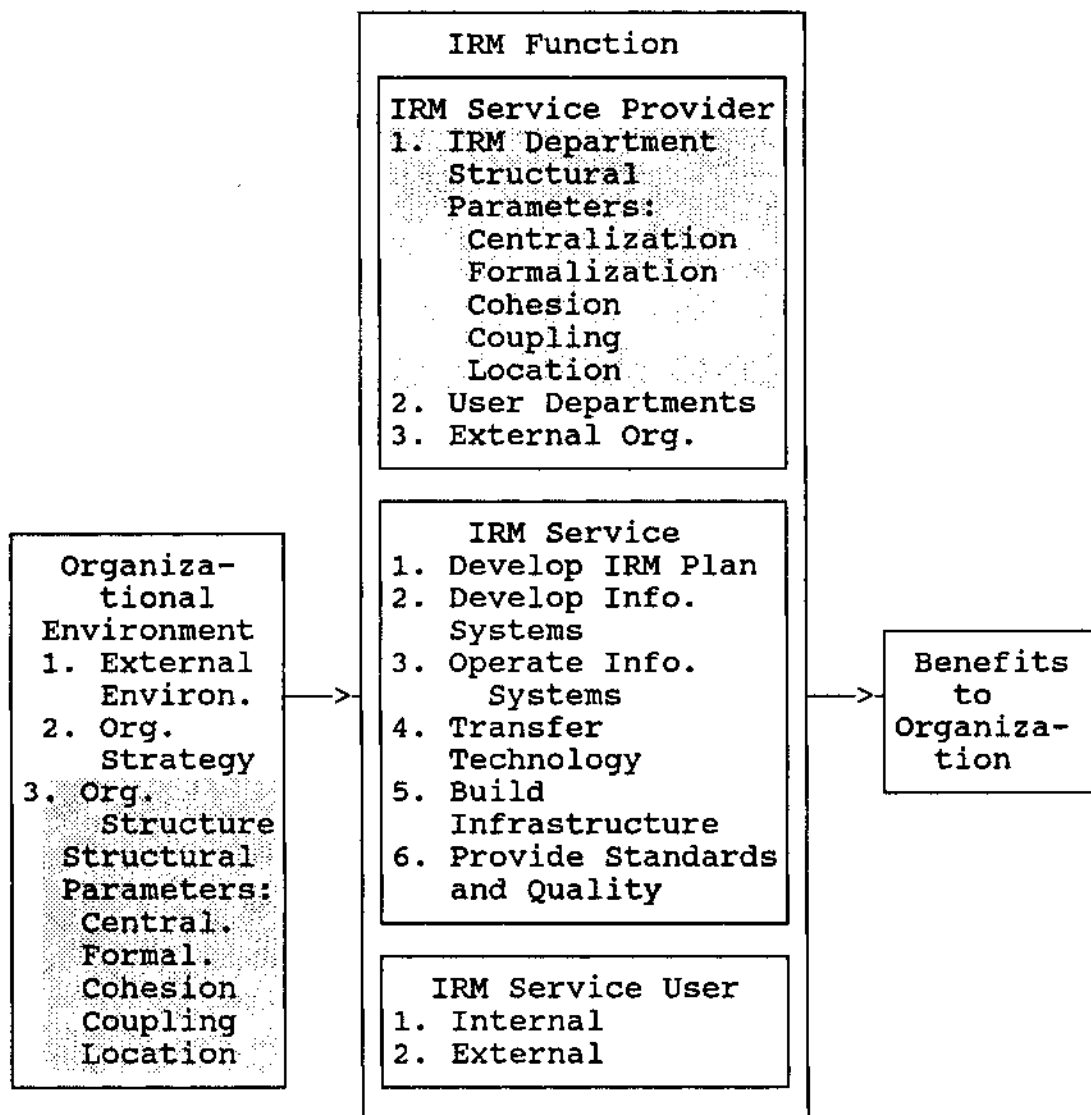


Figure 7. Research framework variables used for question 4.

These structural parameters were selected because investigating them is an extension of the research required to answer the question 1. There, the tasks being performed were examined. A related research step is to investigate the methods for dividing and coordinating those tasks, the essence of organizational structure (Mintzberg 1983).

Following is an example of how these parameters might be encountered during ABA. Each parameter is presented below with its definition:

1. Centralization - the hierarchical location of decision authority.
2. Formalization - the use of written procedures.
3. Cohesion - breadth of function; functional specialization.
4. Coupling - method of coordinating related Activities.
5. Location - whether performed in the home office or district office.

Centralization is addressed during ABA when investigating the decision-making structure in order to develop decision support systems and executive information systems. Formalization is considered because the investigators must utilize what documentation exists to understand the work flow they are trying to automate. Cohesion is investigated to determine the personnel involved in the work and their roles. Coupling is investigated when examining work flows and determining the information needs for coordinating them. Location is considered when determining communication and control needs between dispersed Activities and the central office.

To answer question 4 it was necessary to identify the Company's organizational parameters as they were reflected in the Activities. The next step in answering question 4

was to identify the corresponding IRM department organizational parameters. This would permit comparing Company and IRM department organizational parameters.

#### Summary

This research study addressed four questions:

1. Did ABA identify management information required to monitor process effectiveness and efficiency?
2. Did ABA support outsourcing decisions making by identifying IRM cost components within business processes?
3. Did ABA identify information resources that are sharable?
4. Did ABA identify differences between Company organizational characteristics and IRM department organizational characteristics?

These four questions were based on the theoretical framework introduced at the beginning of the chapter. That framework centered on the IRM Function. The IRM Function consists of three categories of Service Provider that provided six categories of IRM Service to support two categories of Service User. The IRM Function exists within an Organizational Environment and provides Benefits to the Organization.

The research framework introduced at the beginning of the chapter was expanded for each question to show what

variables were investigated to answer each of the four research questions. Figure 8 indicates where the investigated variables of the individual research questions fit within the overall research framework.

The research addressed variables that involve problems which continue to be important to IRM researchers. ABA offers solutions for these problems. Question 1 was concerned with identifying management information needs within business processes. The problems that ABA addressed were the inability of current requirements analysis methods to focus on business processes and the need to obtain accurate cost data about business processes. Question 2 was concerned with measuring costs of information resources. The problem that ABA addressed was the inability of current methods to identify information resources and their costs within business processes in order to support outsourcing decisions. Question 3 was concerned with sharing information resources. The problem that ABA addressed was the inability of current methods to specifically associate information resources with potential buyers of those resources. Question 4 was concerned with identifying organizational parameters.

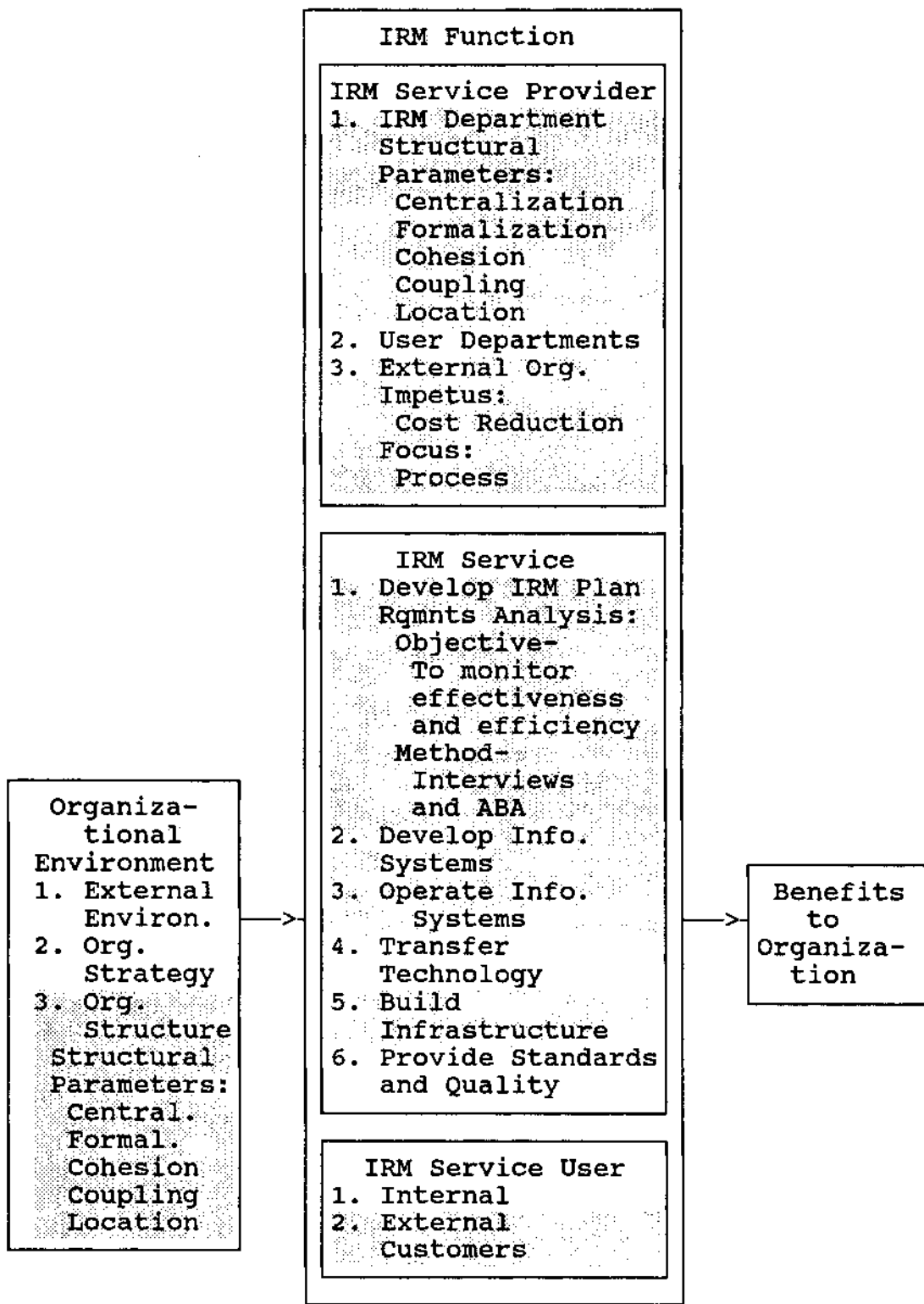


Figure 8. Summary of variables used in research framework.

The problem that ABA addressed was the inability of current IRM organizational research to arrive at conclusions regarding the match or mismatch of company and IRM department organizational parameters.



## CHAPTER 4

### RESEARCH METHODOLOGY

This chapter describes the research methodology used for this study, an initial investigation into the possible uses of Activity-Based Analysis (ABA). It also evaluated the research data collected for possible variables to investigate in future research. The study methodology combined a proof-by-demonstration with a case study using repeated observations.

#### Research Design Justification

Investigating a new solution to an IRM problem as this research did presents a problem. Unless the new solution has been put into practice, no data are available for research. On the other hand, until there is some indication, such as positive research results, that the solution might be useful, it is not likely that the solution would be put into practice.

Nunamaker, Chen, and Purdin (1990-91) have addressed this issue for Information Resource Management (IRM) research by proposing the use of systems development as a research methodology. They argue for the appropriateness of developing a fully-functional system to demonstrate the validity of an IRM solution where that solution "proposes a

new way of doing things." Demonstrating the validity of the solution by developing such a functioning system results in a "proof-by-demonstration." The resulting system can then be studied to gain insight into the solution under study.

Walls, Widmeyer, and ElSawy (1992) have applied the concept of "proof-by-demonstration" to theory related to the design of IRM systems. They argue that an IRM design theory is best validated by building a model that can then be tested to determine whether it achieves its objectives (Walls, Widmeyer, and ElSawy 1992).

The issue these authors address is similar to the research situation relative to ABA. The present ABA research proposed "a new way of doing things," applying the ABC managerial accounting technique to IRM issues. In this research study, ABA can be considered an information systems "design theory" for each of the research questions.

The first research question was: Did ABA identify management information required to monitor process effectiveness and efficiency. This question is concerned with requirements analysis, which is itself part of the design process for information systems.

The second research question was: Did ABA support outsourcing decision making by identifying IRM cost components within business processes? The third research question was: Did ABA identify information resources that are sharable? These two research questions use ABA to

investigate concepts such as products, pricing, and customers that are characteristic of pricing and marketing information systems (Beath and Ives 1986; Li, McLeod, Jr., and Rogers 1993).

The fourth question: Did ABA identify differences between Company organizational characteristics and IRM department organizational characteristics? This question addresses organizational information that is characteristic of human resources systems. Thus, the theory underlying ABA, described in chapter 3, can be considered a "design theory" for an information management system to support IRM managers. Implementing ABA and then investigating the results of this implementation to determine the effectiveness of ABA constitutes a "proof-by-demonstration."

Case study methodology was used as the research technique for investigating the results obtained from this proof-by-demonstration. Case study methodology was adopted for this research because it is useful at the beginning stages of researching a topic to identify variables for further research (Benbasat, Goldstein, and Mead 1987; Eisenhardt 1989; Lee 1989). The research approached the data from the viewpoint of the theoretical framework in order to guide the collection and analysis of data. It investigated particular variables expected to be present based on the literature, as Orlikowski (1988) suggests doing. But although this research anticipated certain

variables in order to focus the study, it did remain open for any other variables that might be discovered.

The results of this research would thus be expected to provide a foundation for further research on ABA by:

1. Demonstrating that ABA shows sufficient potential as an IRM tool to deserve further research;
2. Describing ABA variables; and
3. Indicating the direction the research could take.

To demonstrate that ABA deserves further research, four research questions were investigated:

1. Did ABA identify management information required to monitor process effectiveness and efficiency?
2. Did ABA support outsourcing decision making by identifying IRM costs components within business processes?
3. Did ABA identify information resources that are sharable?
4. Did ABA identify differences between Company organizational characteristics and IRM department organizational characteristics?

A successful application of ABA in these four questions would suggest, subject to the limitations given at the end of this chapter, that ABA could be used in other contexts. Variables identified in answering the four questions provide the basis for future research on the relationships between ABA variables.

The next sections describe the data analysis and data collection techniques as they applied to all of the research questions. Appendices A and B describe how these techniques were applied to the four research questions.

### Data Collection

Data sources used were based on those recommended by Yin (1989) for a case study:

1. Observation of selected activities in the ABC project, of the performing of Activities within the Claims Process, of eight meetings with IRM personnel and users
2. Interviews (unstructured) with fifteen Company personnel from user areas, the Methods and Procedures department, the IRM department, and from the IRM Steering Committee
3. Analysis of Company documentation and archival data associated with the ABC project, IRM systems, handling claims, and business operations

These data were gathered both during the ABC project and during the application of ABA. Appendix B describes the specific data collected for the four research questions and the format for recording them. The collection of these data, together with notes and documentation obtained during the study, constituted the "Case Study Database" recommended by Yin (1988). The steps used to gather the data were designated "research protocols" and are given in appendix A.

### Data Analysis

The research protocols in appendix A also give the particular steps followed to analyze the data for each research question. For this analysis, five methods for data analysis discussed by Yin (1988) for use in case studies were used:

1. Organization of the data for presentation
2. Preparation of a case description
3. Pattern matching using nonequivalent dependent variables
4. Pattern matching using explanation building
5. Developing a chain of evidence

As a preliminary analytic method, the data were organized into matrices and other displays for presentation. The second method used for analysis was to prepare a case description (Yin 1988). This was a summary of the information obtained during the study. The case description served as a basis for chapters 6 and 7. An outline of the case description is given in appendix Q.

For the third method, the research used the pattern matching technique suggested by Yin (1989) to analyze the data. The form of pattern matching used was nonequivalent dependent variables. In this technique, theory is used to predict certain outcomes. Then, if the predicted outcomes occur and alternative outcomes do not occur, the theory is supported. Operationalized in this research, the

predictions took the following form. IRM literature was used to predict the kinds of results that should be available if a technique is successfully applied. ABC theory was used to predict a technique that can be used to obtain these results. Thus, if the steps of the selected technique were carried out and if they led to the predicted results, the finding that ABA was successful would be substantiated. But the failure of the technique to achieve the results predicted or the failure of the technique to collect the appropriate data would result in a finding that ABA was unsuccessful.

This raises the question of how to obtain valid evidence that the steps of the selected technique were actually carried out and that the indicated result actually occurred. The fourth analytic method used was another form of pattern matching, explanation building. Explanation building involves the tracing of causal links in the data (Yin 1989). In this research the causal links to be traced were the steps of the ABA technique that lead to the observed outputs. Data describing each of these steps were collected and recorded in the Case Study Database.

Finally, a chain of evidence procedure as suggested by Yin (1988) was used to connect the research questions with the research protocols, the data, and the analysis. The chain of evidence procedure lists the steps in the researcher's reasoning process. The chain of evidence thus

permitted drawing conclusions and answering the research questions. As a check on the conclusions, the results were reviewed by key Company personnel.

### Validity and Reliability

Because the collection and analysis of the research data were performed by a participant-observer, researcher bias was a particular threat. Three devices were used as a check against this threat: (1) making researcher biases explicit to the extent that they are known, (2) applying the controls appropriate for action research, and (3) applying validity and reliability techniques designed for case study research.

Known researcher biases were made explicit by the form of the research framework, the variables selected for review, the data sought, and the steps identified for collecting and analyzing the data (Orlikowski and Baroudi 1991). The other two devices, action research controls and case study procedures, were used to address unknown researcher biases.

Action research controls were applicable because the present research has properties similar to that form of research. Action researchers are both experts and advocates for the changes they recommend (Seashore 1976). Recommended controls over action researcher bias that were used in this study include: checking the data and conclusions with



others in the organization (Karlson 1991; Whyte, Greenwood, and Lazes 1991); making data available in the research so that informed readers can form their own conclusions (Cole 1991); and both exercising restraint in generalizing and encouraging repetition (Antill 1985; Cole 1991).

Action research controls were integrated with the validity and reliability techniques used in this study. Yin (1989) suggests a number of techniques to increase validity and reliability in a case study. The techniques that were used are described in the next section and summarized in figure 9.

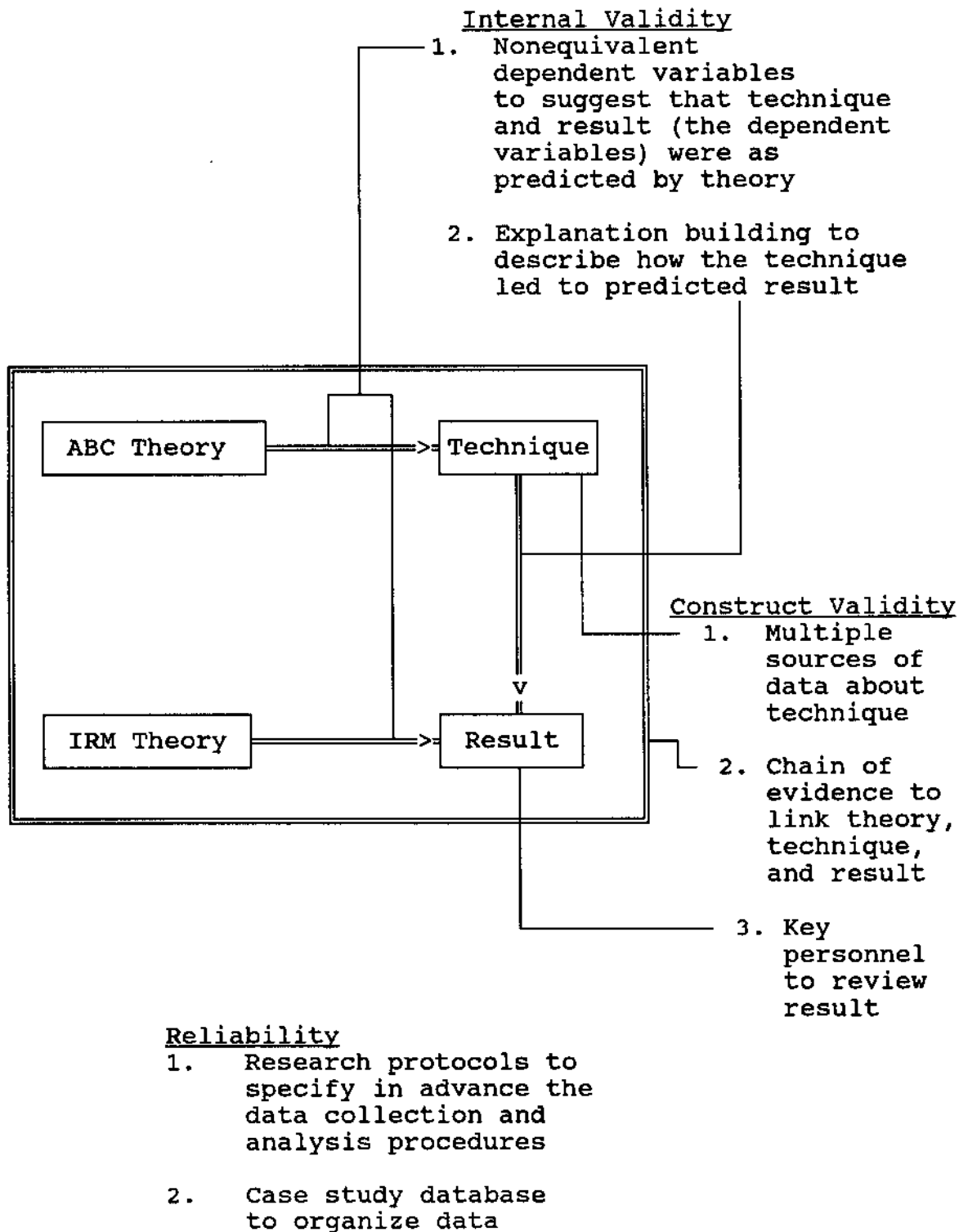


Figure 9. Summary of validity and reliability techniques.

### Construct Validity

Construct validity is concerned with "establishing correct operational measures for the concepts being studied" (Yin 1989). Yin suggests three techniques for construct validity: use of multiple sources of evidence (triangulation), establishing a chain of evidence, and having key research site personnel review the draft case study report.

The multiple sources of evidence used by the researcher were described during the data collection and analysis discussion: observation, interviews, documentation, and archival data. These were obtained for multiple Activities.

A chain of evidence is provided to allow tracing the reasoning from the research questions to the study's conclusions (Yin 1989). This technique and the review by key personnel permit the reader of the research to analyze the adequacy of the conclusions, as is suggested for action research controls. This research study established the chain of evidence by defining steps in reasoning that would support the conclusion. This involved showing that the results predicted by ABC and IRM theory were obtained. Explanation building was used within the steps of the chain of evidence to justify each step's conclusions. The chain of evidence is presented, as Yin suggests, in the description of the results reported in chapter 7. The chain

of evidence for each research question is described in a subsequent section in this chapter.

The key Company personnel that reviewed the report included a Senior Vice President (who was also Chairman of the IRM Steering Committee) and the Manager of the Methods and Procedures department.

### Internal Validity

Internal validity is concerned with establishing causal relationships between dependent and independent variables (Yin 1989). This topic was briefly discussed in the description of the research framework in chapter 2. To achieve internal validity, Yin (1989) recommends nonequivalent dependent variables, explanation building, and time-series analysis.

The use of nonequivalent dependent variables was described in the discussion of data analysis methods. This method addresses causal relationships by using theory to predict outcomes.

Explanation building was described as a data analysis method for explaining how ABA leads to eliciting the predicted information. Explanation building analyzes causal relationships by identifying the steps in a chain of causes and effects.

Time-series analysis was not utilized in this research because the focus is on a limited time frame.

### External Validity

External validity, concerned with generalizing the research's findings, was not addressed by this study. According to Yin (1989), external validity in a case study requires replication to show that the results apply in more than just a single situation. This research was designed to be a single-site case study performed during one time interval. As part of the cautions recommended by action research controls, the results of this research were not generalized. In chapter 8, further research is encouraged and suggestions are given to guide future research in order to provide the required replication.

### Reliability

Reliability is concerned with being able to repeat the research method and obtain the same results. Yin (1989) suggests defining a case study protocol and developing a case study database. Because the case study protocol identifies the steps taken in a research study, another researcher could repeat this study by following the same steps. Having the case study database available permits comparing the results of the repeated study with the results of the original study.

The case study protocols are given in appendix A. These were specific ways of carrying out the steps that were

described in general in the discussions of data collection and data analysis.

The case study database refers to the organization of the collected data. The specific data gathered and the format for recording them are given in appendix B. These data were integrated with the case study protocols (appendix A).

#### The Unit of Analysis

The unit of analysis was the business process. To keep this research project to a manageable size, one business process was selected for investigation. This will be referred to as the "Claims Process." This particular process was selected for review because it involves providing claims handling services, the primary business of the Company during the research study.

The Claims Process consisted of Company Activities needed to support a contract providing the claims handling services for worker's compensation insurance. This requires investigating the accidents, establishing the amount of weekly compensation that should be paid to injured workers until they return to work, reviewing and paying the associated medical bills, establishing and continually updating the total amount expected to be paid (called "loss reserves"), and negotiating with injured workers and their attorneys. If the contract specified that claims payments

were made from the customer's bank account, there were associated accounting functions for reconciling the bank account, informing the customer of amounts needed to fund the account, and providing various reports. (The contract associated with the Claims Process had the provisions which are listed below.

Appendix D lists the Activities in the Claims Process. These Activities provided for claims handling for a customer, management of the customer's bank account from which the claims were made, and the associated marketing and billing. The Activities belonging to the Claims Process were defined by ABC project personnel and by Activity personnel. In ABC, the term "Bill of Activities" is used. The Claims Process Contract has the following provisions:

1. Claims would be paid by the Company using the Customer's bank account.
2. The claims adjuster would investigate the claim and make recommendations for settlement values, future reserves, and reporting to the customer's insurance carrier.
3. Upon approval from the customer, the Company would negotiate settlements, obtain closing papers, pay outstanding expenses, and issue the settlement check.
4. The Company would provide accounting procedures to validate accounts, transfer funds, reconcile claims

payments against the customer's bank account, and make reports to the customer.

5. The Company would assume supervision of the customer's existing claims.

In describing the present study, the term "process" is used because the study focusses on process improvement. Not all Activities that affect the cost of the end product have been included in the Claims Process. It includes only those Activities whose costs can be traced directly to the end product. In ABC, Activity costs can be traced into various levels in a hierarchy of cost objects, the lowest of which is the product (Cooper et al. 1992; Turney 1991). Examples of higher levels include brand and territory. For this study, Activities whose costs were traced to higher levels in the hierarchy apply to multiple cost objects. These multiple cost objects would have introduced an additional complexity not needed in addressing the research questions.

#### Implementation of Data Collection and Analysis

Prior sections of this chapter described the research methodology and techniques for achieving validity and reliability as they apply generally to all of the research questions. The following sections discuss the specific ways these techniques were developed in the chain of evidence for each of the four research questions.



The pattern matching technique of nonequivalent dependent variables was implemented by predicting, based on ABC theory, that ABA could produce the results required by IRM theory. The place of ABC and IRM theory in predicting the results that should be obtained and the method for obtaining them are described in the steps of the chain of evidence developed. To support the reasoning expressed in the steps in the chain of evidence, explanation building was used. Explanation building took the form of summarizing the data relevant to each step and explaining how these data led to the next step and ultimately to the research study's conclusion.

#### Chain of Evidence for Question 1

Research question 1 was: Did ABA identify management information required to monitor process effectiveness and efficiency? To demonstrate that ABA was able to identify information needed to monitor the effectiveness and efficiency of the Claims Process, the chain of evidence was organized around the following steps in reasoning:

1. As predicted by ABC theory, a business process could be identified by selecting a cost object and identifying the Bill of Activities supporting that cost object.
2. Analysis of each of the Activities led to identifying how effectiveness and efficiency were defined for the Activity and hence for the business process.

3. Analysis of definitions of Activity effectiveness and efficiency led to identifying the corresponding information needed to monitor effectiveness and efficiency as required by IRM theory.
4. Analysis of Activities also permitted identifying information resources already provided for the Activity. Comparison of information needed with information already provided led to identifying additional information needed as required by IRM theory.
5. Analysis of ABC data provided cost information as predicted by ABC theory.
6. The ABC method provided cost information needed for developing priorities for IRM planning as required by IRM theory.

Successful implementation of each of these steps would indicate that ABA was able to identify information required to monitor process effectiveness and efficiency. This would support an affirmative answer to research question 1. Failure at any step would indicate that ABA failed. This would support a negative answer to research question 1. In addition, analysis of the data relevant to each step would provide reasons for the success or failure of ABA and would describe variables for use in further research.

### Chain of Evidence for Question 2

Research question 2 was: Did ABA support outsourcing decision making by identifying IRM component costs within business processes? To demonstrate that ABA was able to measure costs within processes, the chain of evidence was organized around the following steps in reasoning:

1. As predicted by ABC theory, a business process could be identified by selecting a cost object and identifying the Bill of Activities supporting that cost object.
2. Analysis of ABC data led to the identification of information resource costs traced to each Activity in the process and hence to identification of the information resources themselves.
3. Identification of process information resources that were traced to Activities permitted identifying the overall information resource and its costs.
4. As required by IRM theory, identifying the overall information resource provided data for making outsourcing decisions.

Successful implementation of each of these steps would indicate that ABA was able to support outsourcing decisions by identifying information resource costs within processes. This would support an affirmative answer to research question 2. Step 3 utilizes the ABC data from steps 1 and 2 to perform ABA. Failure at step 3 would indicate that ABA failed. This would support a negative answer to research

question 2. In addition, analysis of the data relevant to each step would provide reasons for the success or failure of ABA and would describe variables for use in further research.

### Chain of Evidence for Question 3

Research question 3 was: Did ABA identify information resources that are sharable? To demonstrate that ABA was able to identify information resources to share, the chain of evidence was organized around the following steps in reasoning:

1. As predicted by ABC theory, a business process could be identified by selecting a cost object and identifying the Bill of Activities supporting that cost object. The cost object could be linked to the customer of the business process.
2. As predicted by ABC theory, analysis of ABC data led to the identification of information resource costs traced to each Activity and thus to the information resources themselves.
3. As required by IRM theory, identification of the information resources and of the customer permitted determining if there were information resources within the process to share with the customer of the process. Successful implementation of each of these steps would indicate that ABA was able to determine if information

resources are sharable. This would support an affirmative answer to research question 3. Failure at any step would indicate that ABA failed. This would support a negative answer to research question 3. In addition, analysis of the data relevant to each step would provide reasons for the success or failure of ABA and would describe variables for use in further research.

#### Chain of Evidence for Question 4

Research question 4 was: Did ABA identify differences between Company organizational characteristics and IRM department organizational characteristics? To demonstrate what organizational characteristics ABA was able to identify, the chain of evidence was organized around the following steps in reasoning:

1. As predicted by ABC theory, a business process could be identified by selecting a cost object and identifying the Bill of Activities supporting that cost object.
2. Investigation of the Activities comprising the Bill of Activities permitted identifying the corresponding Company organizational parameters.
3. Investigation of the Activities comprising the Bill of Activities permitted identifying the corresponding organizational parameters of the IRM department.
4. As required by IRM theory, since Company and IRM department organizational parameters were associated

with the same Activities, they could be compared on the basis of organizational characteristics.

Successful implementation of each of these steps would indicate that ABA was able to identify organizational characteristics. Failure at any step would indicate that ABA failed. Analysis of the data relevant to each step would provide a description of the organizational characteristics that ABA was able to identify. The analysis would also describe variables for use in further research.

Measurement of the Company's organizational parameters.

To gather the data about organizational parameters discussed in the chain of evidence for question 4, the research measured organizational parameters for both the Company and the IRM department as they are reflected in Activities. Appendix C summarizes the organizational parameters and the means used for measuring them.

Measuring centralization requires analyzing the Company's decision-making hierarchy (Daft, 1992). The research site classified its hierarchy into the following levels (in ascending order): worker, supervisor, director, manager, vice president, and senior vice president. In addition to these levels, departments had staff positions. To measure centralization of user decision-making authority, the key decisions of the Activities were identified. Then, the managerial level of decision making required for those

decisions was identified. A comparison of all Activity decision-making levels revealed the tendency toward centralization and permitted classifying the Activity structure as centralized or decentralized.

Formalization is concerned with the use of written procedures to define work. To measure formality, Activities within the Claims Process were examined for the presence of written work procedures (Daft 1992). Based on whether the research site tended to provide these, the Activities were classified as formalized or not.

Cohesion is concerned with the division of labor. Cohesion was measured by determining the extent to which the work of the Activity was subdivided. The research determined whether one individual tended to perform the entire Activity. If one did, this indicated less specialization within the Activity (Daft 1992) and hence more cohesion of the Activity.

Coupling is concerned with the how formal are the methods for coordinating Activities. Coupling was classified as informal if done by mutual adjustment between workers or as formal if done by direct supervision or standardization. This research study followed Zmud (1984) in using the two categories "formal" and "informal" to summarize a spectrum of coordinating techniques (Mintzberg 1983).

Activity location was determined by where the Activity work was performed. Classifications were Home Office, District Office, or Mixed.

Measurement of IRM organizational parameters. The structural parameters for both the Company and the IRM department were associated with the Claims Process. The IRM components within each of the Activities were used to identify the organizational parameters of the IRM department. These were determined by review of documentation and by interviews.

#### Limitations and Key Assumptions

Limitations to this research fall into two broad categories. The first category consists of limitations associated with the narrow focus of the research. The research takes place at a single Company. This means that the size of the Company, the industry in which it operated, and the changes the Company was experiencing during the study could be factors that limit generalizing the results to other companies. Another factor that limits generalizing the results is that only one business process within the Company was investigated. A third factor that limits generalizing the research is the methodology that was used, a case study. To recognize these limitations, this research refrained from generalizing. Instead, it identified key variables for further research. It also made the assumption



that the variables identified would provide future researchers with enough information to decide whether ABA merited further research.

The second category of limitations is associated with the status of the ABC project. At the time of this study the ABC project had not been completed. This led to three limitations.

First, the derivation of cost data and cost drivers had not been completed. This presented a problem as to how to perform part of the analysis. To mitigate this limitation, existing Company cost data were used by the researcher to develop estimates of costs of Activities and of information resources. This follows the advice of Laudon (1989) for dealing with research projects that must be completed before all of the data are available. He suggests completing a research study by making predictions based on existing data. To further mitigate this limitation, conclusions relying on these estimates are presented as illustrations of potential relationships rather than as proofs of their existence.

A second limitation is related. Because costing was not completed, some Activities that affected the Claims Process but that were not actually a part of it were not included in the study. These were Activities whose costs would be traced not only to this process but to other processes as well. Activities from the Human Resources department are an example. This issue was addressed in the

previous section that described the Claims Process. A complete ABC project would allocate costs of such Activities to all the processes they served (Cooper et al. 1992). This limitation is mitigated by the methodological assumption that investigating a new technique such as ABA requires simplicity. These missing Activities would have made the analysis more complex. While inclusion of the missing Activities would have provided additional data for analysis, the lack of such data do not undermine the research conclusions.

A third limitation has to do with the nature of the Activities on which the research focuses. Their definition is necessarily subjective. What is defined as an Activity depends on the point of view of the user. In addition, the initial Activities identified by users had to be combined by ABC project personnel in order to make the project manageable. Because the project was incomplete, these Activity definitions were not tested in actual use of costing products. However, because the Activity definitions had been reviewed by supervisors and managers, it was reasonable to assume that the Activities accurately described Company operations.

### Summary

The methodology used by this research was a case study. Procedures for collecting and analyzing the data were prescribed by research protocols. A Case Study Database approach was used to organize the data. Methods for analyzing the data included organizing the data for presentation, developing a case description, pattern matching, and maintaining a chain of evidence. A different chain of evidence was presented for each question. Each chain of evidence described the reasoning process necessary to justify conclusions that would be reached about the effectiveness of ABA for the research question involved.

## CHAPTER 5

### ORGANIZATIONAL CONTEXT OF THE RESEARCH

When this study was undertaken, the Company's product was insurance. Formed in 1920, the Company was licensed to sell both commercial and personal lines of insurance in all states. However, its strength was in commercial lines in a southwestern state.

On February 10, 1992, because of the Company's deteriorating financial condition, the State ordered the Company to stop selling insurance. The Company's insolvency amounted to sixty-three million dollars. One of the state's actions was to dismiss the top management of the Company and to place other employees in charge. The Company attempted to rehabilitate itself as a seller of insurance services. For a fee the Company would sell claims handling, premium audit, or safety engineering services to self-insured companies and to insurance companies lacking these capabilities.

On September 9, 1993, the State gave notice that it was dissatisfied with the Company's situation. There was a ninety-one million dollar insolvency, and the State thought that management was not downsizing the Company quickly enough. The State dismissed the current management and

hired a major accounting firm to manage the Company. The accounting firm's objectives were to determine what parts of the business should be sold and whether there was a possibility for any other parts to continue in operation.

#### ABC Project

The Company began the ABC project because it was concerned about the pricing of its insurance lines, particularly personal lines. The Company hired a major accounting firm to train and supervise an inter-departmental team of Company employees. This firm recommended the use of ABC.

The ABC project followed the fortunes of the Company. The Company had completed the Activity Dictionary by February 10, 1992, the date the Company was ordered to stop writing insurance. The accounting firm then withdrew from the project. As the Company began to rehabilitate, its pricing objectives shifted from the pricing of insurance policies to the pricing of insurance services. The ABC project began again, this time on a less formal basis. Activity definitions were modified to reflect the new direction of the Company. Most of the data for this research came from these first two phases of the ABC project.

The first phase of the ABC project ended on September 9, 1993, when the state appointed the accounting firm to

supervise the Company. Project team members were told that the project was still important because the portion of the Company to be sold would sell insurance services and so would need pricing.

The accounting firm decided to use ABC techniques to downsize the Company. It instructed department managers to provide it with departmental Activities and percentage of personnel hours spent on each. This information corresponded to the Activity Effort Worksheets that would have resulted from the ABC project, but the ABC project had not reached this stage. In order to comply, the department managers used part of the documentation that had been developed during the prior ABC efforts, but also developed new definitions of Activities. Appendix K gives the revised IRM department Activities.

#### Computer System Hardware/Software Environment

The Company's computer hardware was an IBM 3084 mainframe. The computer ran under the MVS operating system and used CICS as its teleprocessing software. Two database management systems were used: System 2000, SAS Institute's hierarchical data base manager, and DB2, IBM's relational data base manager. The central printers were two IBM 4245 line printers and a Xerox 9790 laser printer that was used for printing user reports and for printing claims checks with MICR coding.

Telecommunications took place over leased and dial-up lines. IBM 3270 terminals and printers were connected to the mainframe computer. There were 320 in the Home Office and 200 in remote offices. Generally, personal computers were not connected to the mainframe. They were used more for word processing and spreadsheet applications. The Company had two Local Area Networks.

#### Application Systems Referenced in the Study

Appendix E describes the application systems encountered in this study. Except for the electronic mail system, they were all developed by the Company. There are both on-line and batch applications.

## CHAPTER 6

### DATA ANALYSIS

This chapter presents and analyzes the data collected during the research study. The forms in the Case Study Data Base (appendix B) describe the data that were to be collected. During the study, the Company had not completed the process of deriving all of these data. In particular, cost data were incomplete. Therefore, this study took the approach of projecting the feasibility of Activity-Based Analysis (ABA) based on available data as recommended by Laudon (1989). Available data included Activity definitions, ABC project planning document, examples of departmental costing developed by the project team, data about other outsourcing decisions, current costing procedures, descriptions of information resources, and discussions with department managers. Because estimates of Activity and IRM costs were performed by the researcher, the analysis in this chapter should be considered as an illustration of the kinds of relationships that ABA identifies rather than as a proof of their existence at the site studied.



The data were collected and analyzed for the Claims Process. Chapter 4 describes the rationale for using this one process as the unit of analysis.

#### Research Question 1

Research question 1 was: Did ABA identify management information required to monitor process effectiveness and efficiency? This section describes how ABA was used to identify information needed to monitor effectiveness and efficiency of the Claims Process. Managers of these Activities were asked how they measured effectiveness and efficiency for the Activities. Their answers permitted identifying the corresponding information needs and led to determining whether the required information was available. Identifying information needs provided a requirements analysis for developing information systems.

#### Description of Information Gathered

Appendices F and G summarize the data gathered to determine effectiveness and efficiency of the Activities constituting the Claims Process. The data come from interviews with Activity managers. Following the approach recommended by Wetherbe (1991), Activity managers were asked what constituted Activity effectiveness and efficiency, what data were required to measure effectiveness and efficiency, and what data were available. Within appendices F and G the researcher's analyses of the data are enclosed in

parentheses. The researcher's analyses show how the data were categorized, the number of data items required and available, and the availability of the data.

Appendix H illustrates how costing could be performed for the Claims Department's Activities. It shows two phases of ABC. First, personnel costs are traced to Activities based on the percentage of time the personnel spend on the Activities. Then, other costs are traced to Activities. The sum of personnel costs and other costs constitutes the Activity costs.

Table 1 summarizes information from appendices E and F concerning the basic characteristics of information identified by users to measure effectiveness and efficiency. Several of these characteristics appeared in both effectiveness and efficiency. Promptness was cited most frequently. The next most frequently cited characteristic was "Completing All Required Procedures." "Billing as Many Hours as Possible" was cited frequently. Emphasis on billing as many hours as possible was a result of the Company's new thrust as a provider of claims services, most of which were billed by the hour.

Table 1--Measurements of Effectiveness and Efficiency:  
Number of Activities for Which Used

Measurement	Effect-iveness	Effic-ency	Total
Promptness in Performing Activity	2	10	12
Not an Issue to Management	4	6	10
Completing All Required Procedures	6	3	9
Billing as Many Hours as Possible	8	0	8
Time Expended to Perform Activity	1	3	4
Accuracy of Information Developed	3	0	4
Completeness of Information	2	0	2
Customer Feedback	2	0	2
Amount of Money Expended	0	1	1
Conformity to Requirements	1	0	1
Impact on Other Activities	1	0	1
Use of Automated Tools	0	1	1

#### Potential for Suboptimization in the Claims Process

Two measures, promptness and billing as many hours as possible, illustrate the danger of suboptimization. An emphasis on promptness, for example, could lead to performing tasks too quickly to provide quality. As an example, the Company's internal auditor discovered several errors in paying claims (Activity 3.20). The Company had been hired to settle these claims for the customer and paid them out of the customer's bank account. Because the company overpaid the claims, it had to reimburse the customer. The amount of \$20,000 had been charged to an expense account to reimburse the customer for such errors.

Suboptimization could also result from an emphasis on billing as many hours as possible. Pressure to bill many hours could lead adjusters to overcharge for work and

thereby lead to customer dissatisfaction. This dissatisfaction also could lead to loss of revenues. Under one contract, for example, the Company received payment based on a percentage of the amounts paid for claims. Excessive work performed could lead to expenses greater than the revenues generated.

#### A Measure of the Value of Missing Information

Many of the data required to manage Activity effectiveness and efficiency were not available for the Activity manager. To measure the value of missing information, this study defined effectiveness and efficiency data in terms of the number of items of data involved. This study used a low level of breakdown of data items. In practice, a more detailed breakdown could be performed in order to provide greater precision.

Using ABC data, the significance of the missing data can be measured by the cost of the corresponding Activity. This permits defining the significance of the missing data at the Activity, business process, and organization levels. Knowing the significance of the missing data would assist IRM decision makers in determining whether to allocate resources to provide the missing data.

To measure the significance of the missing data, let

- $r_j$  = Number of data items required to monitor effectiveness and efficiency for Activity<sub>j</sub>
- $a_j$  = Number of data items available to monitor effectiveness and efficiency for Activity<sub>j</sub>
- $c_j$  = Total cost of Activity<sub>j</sub> in dollars.

These variables can be used to develop the metric "Activity Information Gap" (AIG). The term  $(r_j - a_j)/r_j$  provides a ratio that indicates the percentage of data items missing. If this is zero, all data items are available. Multiplying this ratio by the cost of the Activity provides the weight. Thus, for  $j^{\text{th}}$  Activity

$$\text{AIG}_j = [(r_j - a_j)/r_j]c_j \quad (1)$$

Summing the AIG's for each Activity in a business process will give the metric "Business Process Information Gap" (BPIG). Thus, for the  $i^{\text{th}}$  business process,

$$\text{BPIG}_i = \sum_j \text{AIG}_{ij} \quad (2)$$

Finally, summing BPIG for all Business Processes in an organization will give the "Organization Information Gap" (OIG). Thus,

$$\text{OIG} = \sum_i \text{BPIG}_i = \sum_{ij} \text{AIG}_{ij} \quad (3)$$

### Summary of Availability of the Required Data

Table 2 summarizes information from appendices F and G on the availability of the required data. There are six mutually exclusive categories, depending on whether the data were not available, whether they were available but not in useful form for decisionmakers, or whether they were in manually kept records or in computer records. Table 2 also describes how the data items were counted for use in computing the Activity Information Gap.

The last category in table 2 refers to the use of a free-form screen in the claims administration system. During the interviews, claims managers made frequent reference to the "Remarks Screen" in the claims administration system. Claims adjusters and their supervisors used these screens to record narrative information about the progress of settling the claim. A supervisor could thus review the claims status on-line and not need the paper claims file. However, the disadvantages of this form of information were that it was optional and that it was not suitable for analysis by the computer. As a result, for purposes of calculating the Activity Information Gap, this form of information was assumed not to be available.

Table 2--Categories of Missing Data and Method for Counting in the Activity Information Gap

Availability of Data	Number of Activities		How Counted in AIG Metric
	Effective-ness	Efficiency	
Do not exist	5	10	Number of data items involved plus 1.
All Exist in Manual Records But Not All Are in Usable Format	6	3	Number of data items involved plus 1
All Exist in Manual Records and All Are in Usable Format	11	6	Not counted
All Exist in Computer Records But Not All Are in Usable Format	6	3	Number of data items involved plus 1
All Exist in Computer Records And All Are in Usable Format	0	1	Not counted
Could Exist in Computer Records in Text Format	4	2	Treated as 1 data element required but missing

As table 2 indicates, to the number of data elements missing, the number 1 was added. This permitted accounting for situations where the data were available but not utilized. For example, the date a task was required and the date it was actually performed might both be available. Adding 1 provided a way of counting the comparison of two

values and displaying the result. For consistency, 1 was added in all situations where data items were missing.

The quality of the information provided by the remarks screen could be improved upon by the use of indicators that could both be required by the computer and analyzed by the computer. An example of this facility within the claims administration system was an indicator set by the adjuster to indicate that a claim might have potential for subrogation recovery.

Table 3 utilizes information from appendices F and G to demonstrate the calculations for the Activity Information Gap for each Activity in the Claims Process. The data from appendices F and G are in the columns "r" and "a" of table 3. The monetary amounts in the column "Non-IRM Activ. Costs" come from appendix R In table 5, the sum of the Activity Information Gaps is the Business Process Information Gap for the Claims Process, \$110,187.

#### A Note on Activity Cost Drivers

Cost drivers constitute a significant performance measure used by ABC (Turney 1991). As chapter 1 explained, cost drivers are factors that cause the increase of Activity costs. Because of their significance to ABC, they were investigated to determine if they were relevant to monitoring effectiveness and efficiency. Activity managers were asked what factors increased Activity costs.



Table 3--Computation of the Business Process Information Gap for the Claims Process

Activity	Non-IRM Activ. Costs	r	a	(r-a)/r	AIG
1.2 Maintain Bill. Rcds.	\$ 2,546	5	0	1.00	\$ 2,546
1.3 Calc. Amts to Bill	3,872	5	0	1.00	3,872
1.4 Prepare Bill. Stmnts	3,872	5	0	1.00	3,872
1.6 Collect Amounts Due	1,367	2	0	1.00	1,367
1.19 Reconcile Bank Acct	936	3	0	1.00	936
1.20 Transaction Report	375				
1.21 Estab. Bank Account	188				
2.20 Design/Code Programs	5,281	2	2	0	0
3.2 Negotiate with Atty	16,145	9	3	.67	10,817
3.9 Investigate Claims	44,991	7	1	.86	38,692
3.10 Evaluate Claims	10,836	7	1	.86	9,319
3.11 Negotiate Settlement	17,996	6	0	1.00	17,996
3.12 Report to Customer	8,263	4	0	1.00	8,263
3.20 Process Payments	2,589	4	1	.75	1,942
3.21 Approve Claims Pmnts	6,021	5	2	.60	3,613
3.25 Handle Salvage/Subr.	Nominal	5	2	.60	
3.28 Notify Customer	Nominal	3	0	1.00	
3.30 Claimant Inquiries	9,794				
8.4 Develop Proposals	1,452	4	0	1.00	1,452
8.5 Proposal Present.	1,936	2	0	1.00	1,936
8.6 Develop Contracts	484				
15.1 Establish Account	295	4	1	.75	221
15.2 Update Contract DB	Nominal	4	1	.75	
15.3 Maintain Contr. Rcds	Nominal	4	1	.75	
16.1 Legal Review	953	2	0	1.00	953
17.19 Keep Time Records	7,241	3	2	.33	2,390
Claims Process Cost		\$147,433		BPIG	\$110,187
Key:					
r - number of data items required to monitor effective-					
ness and efficiency					
a - number of data items available to monitor effective-					
ness and efficiency					

The cost drivers identified by this procedures are listed in appendix I. They were perceived by Activity managers to be out of the control of the Company. Because Activity

managers did not focus their efforts on them, the researcher did not explore them further with the Activity managers.

#### Summary for Research Question 1

This section described how ABA was used to identify effectiveness and efficiency information needs for the Claims Process. It also used ABC to define a weight that quantifies the significance of the missing data.

#### Research Question 2

Research question 2 was: Did ABA support outsourcing decision making by identifying IRM cost components within business processes? This section describes how ABA was used to identify information resources generating costs within the Claims Process. The purpose of the identification was to provide support for outsourcing decisions.

The research framework in chapter 2 indicates that IRM outsourcing can focus on the entire IRM department or that it can focus on only those IRM components that contribute excessive costs to a business process. The focus of this research was on the latter. To support this kind of analysis, ABA provided two kinds of data. First, ABA directed attention to high cost Activities within the Claims Process. Second, ABA showed how to identify information resources within these Activities and their costs. The next sections discuss both of these. There is also an analysis

of how different ways of defining Activities impact the effectiveness of ABA in outsourcing decisions.

#### Identifying High Cost Activities

High cost Activities in the Claims Process are revealed by examining ABC cost information. Table 4 shows the costs for Claims Process Activities. These costs come from appendix R. To reduce costs of the Claims Process, the high cost Activities shown in table 4 should be examined. As is indicated in table 4, the high cost Activities are those associated with adjusting claims, the most costly being investigating claims (3.9), negotiating with the claimant (3.11), and negotiating with the claimant's attorney (3.2).

#### Identifying High IRM Costs within High-Cost Activities

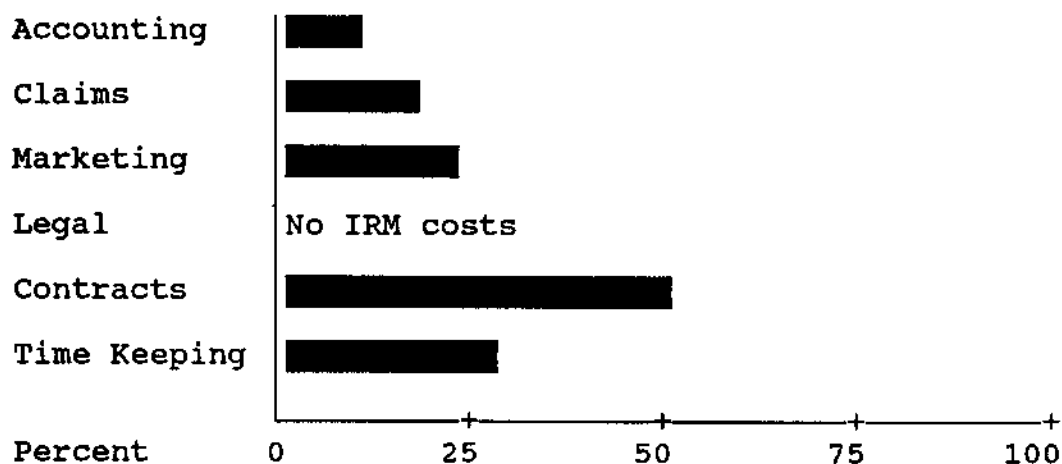
Identifying high-cost Activities within a business process such as the Claims Process could lead to reducing costs contributing to those Activities. For purposes of this question, only IRM costs were considered for reduction. They were being examined to determine if outsourcing IRM components would reduce the corresponding Activity costs. Table 5 is based on appendix S. Table 5 shows the IRM costs traced to Activities. Figure 10 shows the percentage of IRM costs to non-IRM costs within each category of Activity with the Claims Process. For the high cost claims Activities identified in the prior paragraph, IRM costs are approximately 19%.

Table 4--Costs Traced to Claims Process Activities

Activity	Costs
1.2 Maintain Bill. Rcds.	\$ 2,678
1.3 Calc. Amts to Be Billed	4,035
1.4 Prepare Bill. Stmnts	4,035
1.6 Collect Amounts Due	1,425
1.19 Reconcile Bank Acct	1,232
1.20 Transaction Report	645
1.21 Estab. Bank Account	246
2.20 Design/Code Programs	5,281
3.2 Negotiate with Atty	20,897
3.9 Investigate Claims	53,572
3.10 Evaluate Claims	12,553
3.11 Negotiate Settlements	21,428
3.12 Report to Customer	8,263
3.20 Process Payments	4,306
3.21 Approve Claims Pmnts	7,738
3.25 Handle Salvage/Subr.	Nominal
3.28 Notify Customer	Nominal
3.30 Claimant Inquiries	9,794
8.4 Develop Proposals	2,366
8.5 Proposal Presentations	1,936
8.6 Develop Contracts	484
15.1 Establish Account	460
15.2 Update Contract DB	Nominal
15.3 Maintain Contr. Rcds	Nominal
16.1 Legal Review	953
17.19 Keep Time Records	8,066
Total	\$172,393

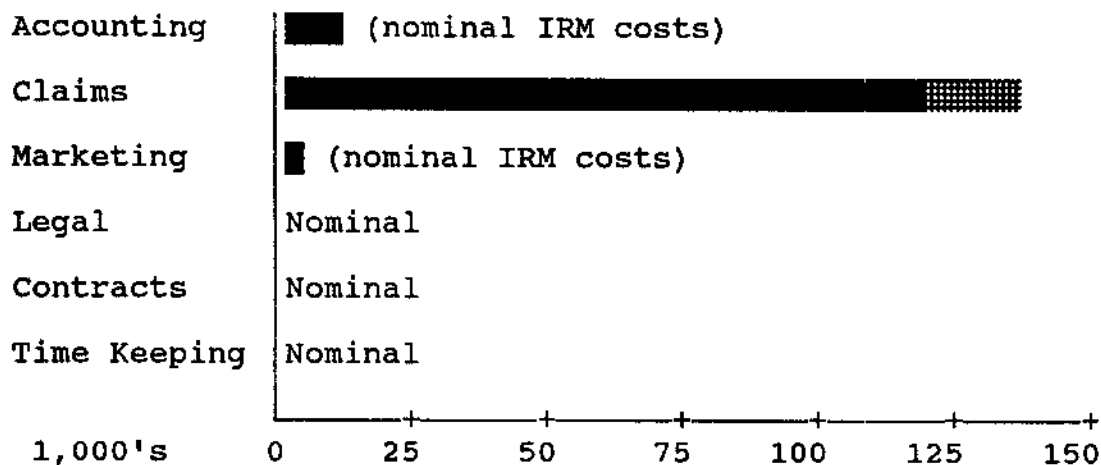
Table 5--Activity Costs Broken Down Between Non-IRM Costs  
and IRM Costs

Activity	Non-IRM Activity Costs	IRM Costs Traced to Activity
1.2 Maintain Bill. Rcds.	\$ 2,546	\$ 132
1.3 Calc. Amts to Be Billed	3,872	163
1.4 Prepare Bill. Stmnts	3,872	163
1.6 Collect Amounts Due	1,367	58
1.19 Reconcile Bank Acct	936	296
1.20 Transaction Report	375	270
1.21 Estab. Bank Account	188	58
2.20 Design/Code Programs	5,281	
3.2 Negotiate with Atty	16,145	4,752
3.9 Investigate Claims	44,991	8,581
3.10 Evaluate Claims	10,836	1,717
3.11 Negotiate Settlements	17,996	3,432
3.12 Report to Customer	8,263	
3.20 Process Payments	2,589	1,717
3.21 Approve Claims Pmnts	6,021	1,717
3.25 Handle Salvage/Subr.	Nominal	
3.28 Notify Customer	Nominal	
3.30 Claimant Inquiries	9,794	
8.4 Develop Proposals	1,452	914
8.5 Proposal Presentations	1,936	
8.6 Develop Contracts	484	
15.1 Establish Account	295	165
15.2 Update Contract DB	Nominal	
15.3 Maintain Contr. Rcds	Nominal	
16.1 Legal Review	953	
17.19 Keep Time Records	7,241	825
Totals	\$147,433	\$24,960



Key:  
 Ratio of IRM Activity Costs to Non-IRM Activity Costs

Figure 10. Ratio of IRM Activity Costs to Non-IRM Activity Costs



Key:  
 Non-IRM Activity Costs  
 IRM Activity Costs

Figure 11. Comparison of Non-IRM Activity Costs and IRM Costs Traced to Activities (in \$1,000's)

Figure 11 shows that although IRM costs may be a large part of the Activity's costs, their absolute amount could be small and therefore the corresponding information resources would not be suitable candidates for outsourcing.

### Identifying IRM Components

If the information resource costs suggest considering outsourcing, figure 12 and its explanation in table 6 show the kinds of analyses required to make an outsourcing decision. In figure 12, the first two levels are Company processes and Activities. The remaining six levels are IRM components supporting the processes and Activities.

Table 6 summarizes the information provided by ABA at each level in the hierarchy. The next sections discuss the implication of these levels for identifying information resources and their costs in support of outsourcing decisions. These discussions will show how ABA led to identifying the IRM components supporting the Claims Process and also how complex the outsourcing decision is because of the interrelationships between IRM components.

### Levels 1 and 2: Company Processes and Activities

Level 1 permits identifying processes for cost reduction. The Claims Process is an example. The Claims Process (Level 1) can be broken into its Activities (Level 2). As was indicated in a prior section, the high costs of claims-handling Activities make them a

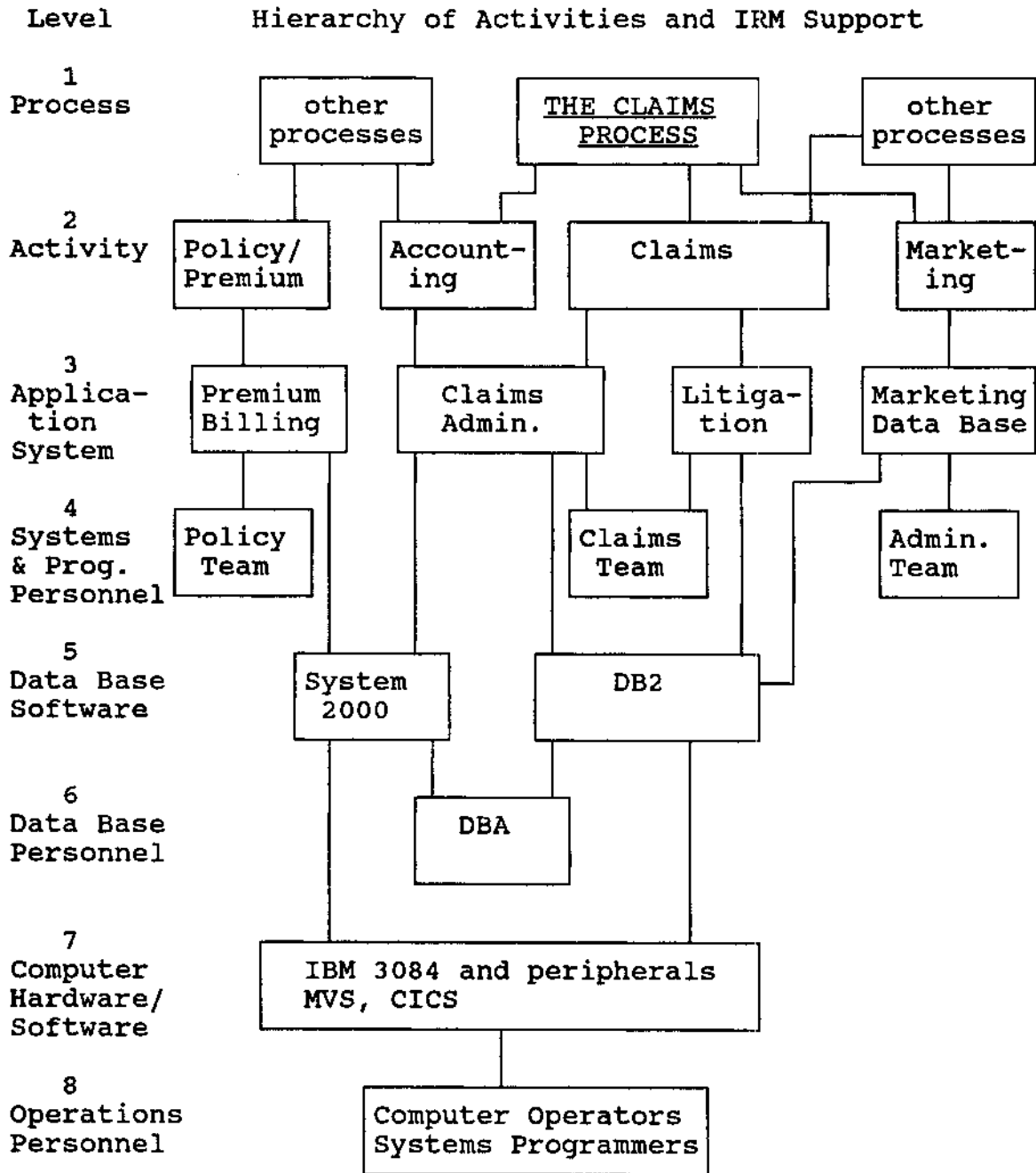


Figure 12. Activity-IRM Hierarchy



Table 6--Use of Activity-IRM Hierarchy for Outsourcing

<u>Level</u>	<u>Significance for Outsourcing</u>	<u>Requires ABC Implementation at this Level?</u>
1	High cost of product triggers effort to reduce process costs.	No
2	Process costs can be subdivided into Activity costs.	Yes
3	Application system is the link between Activities and information resource costs.	Yes
4	Defining Activities in terms of application system support simplifies cost analysis. Maintenance of claims system is a candidate for outsourcing.	No, but would be helpful
5	Data base software supports systems both in and out of the Claims Process. Elimination of Policy/Premium Activities shifts more of System 2000 costs to the Claims Process. DB2 cannot be outsourced without considering outsourcing other applications that support other processes.	No
6	Data Base Administrator (DBA) is part of Data Base costs traced to the Claims Process. Elimination of System 2000 would reduce DBA work and make it a candidate for outsourcing.	No
7	Increase in load on claims system by the Claims Process could cause need for more computer power driving up hardware and software costs.	No
8	Closely related to Level 7, but could be outsourced independently.	No

candidate for cost reduction. Use of ABC is necessary in Levels 1 and 2 to provide the breakdown required for this kind of analysis. Thus, ABC would need to be implemented in the user departments in order to trace Claims Process costs to Activities and to identify the IRM component costs within Activities. As figure 12 indicates, ABC is not essential at the remaining levels because they do not require the breakdown into Activities. However, as the discussion for subsequent levels will point out, the implementation of ABC at these other levels would simplify the analysis.

### Level 3

Application systems were the link between IRM costs and user Activities. Although the current data allocated IRM costs only to departments, the IRM Vice President noted that IRM costs could be allocated to Activities by extending the method currently used. He reasoned that a focus of ABC was to trace costs to products and then to trace product costs to customers. For the IRM department, its products were its application systems. The customers of these systems would be Activity personnel. Because ABC grouped the tasks of these personnel into Activities, the systems would serve the corresponding Activities.

### Level 4

A key issue at this level is how to identify the Systems and Programming components that should be outsourced

in order to support reduction of claims-handling Activities. Systems and Programming costs consisted of several general ledger items, the largest of which was personnel costs. Costs of service departments such as Human Resources were not traced to the Systems and Programming Department.

Personnel costs were allocated to a project based on the number of hours expended on the project. Non-personnel costs were allocated to a project based on project hours. This provided the total cost of the project. The total project costs were then allocated to the particular departments the projects served. This was determined by identifying the users of the application system that the projects served.

System and Programming costs can be traced to particular Activities by determining which Activity was being supported by a programming effort. In some cases it would be possible to trace Systems and Programming costs to a single Activity. In other cases, these costs could support more than one Activity. They could also support Activities both in the Claims Process and in other processes.

Two projects illustrate how project costs could be traced directly to a single Activity in the Claims Process. The first was an enhancement to transfer data between the litigation management system and the claims administration system. The corresponding Systems and Programming costs

could thus be traced entirely to Activity 3.2, which was associated with dealing with claimant's attorneys.

Likewise, a project required adding additional payment codes to provide for reporting 1099 information to the Internal Revenue Service. This project supported Activity 3.20.

On the other hand, some enhancements supported multiple Activities within the Claims Process. One project required enlarging the number of free form lines available for adjuster notes in the claims administration system. This served all of the Activities in which the adjuster was involved.

Tracing costs is more complex when Systems and Programming efforts support Activities both in and out of the Claims Process. For example, costs of the marketing information system under construction could be traced not only to marketing Activities within the Claims Process but also to Activities supporting the marketing effort in general. As a result, to properly determine costs within the Claims Process would also require identifying all other uses of the information resources. Thus, the outsourcing focus could not be solely on the Claims Process. It would be necessary to examine all Activities in which the information resources of interest might be used. Appendix L gives the kind of analysis required. This analysis, obtained from a review of the data in appendices F and G, shows

whether the information resource serves only the Claims Process Activity or whether it serves other Activities.

If an application system served multiple Activities, its costs would need to be allocated among Activities. To do this would require measuring how much each Activity used the system. For example, one measurement the Company had available was on-line transaction counts that could be associated with the user. The Company's teleprocessing monitor, CICS, logged this information. The Activity Effort Worksheet (appendix K) would indicate the percentage of time users worked on particular Activities. Thus, knowing the Activities the resources served, the users of those resources, and the relative amount of time spent by the users on the Activities would permit allocating the on-line system costs to the Activities.

#### Levels 5 and 6

A key issue at these levels is how changes in the pattern of system software utilization could increase the pressure to reduce IRM costs within the Claims Process. One of the system software costs traced to the Claims Process was the monthly lease of the data base management systems. System 2000, a hierarchical data base manager that the company had for nearly twenty years, supported many systems, including the claims administration system within the Claims Process. As long as there were other systems to use System

2000, the costs were shared. But with the company's change in direction, some of these systems were no longer needed. The Commercial Bill Data Base that supported billing commercial insurance policies is an example of a system that was being phased out. Thus, a larger proportion of System 2000 costs were being shared by the claims administration system and hence would be shifted to the claims Activities in the Claims Process. The department was considering converting the claims administration from System 2000 to DB2. This consideration, together with other needed enhancements to the claims administration system, raised the issue of whether it would not be cheaper to outsource the claims administration system or perhaps its maintenance. Vendors had offered both of these services.

On the other hand, some data base costs continued to serve several application systems. The marketing information system under development was a future user. If it were determined that the claims systems supporting the Claims Process should be outsourced, DB2 license fees could only be completely eliminated by making other arrangements for the marketing system. For example, claims systems supporting the Claims Process (e.g., the claims administration system, the litigation management system, and the adjuster time accounting system) all used the relational data base manager DB2.

Levels 7 and 8

The key issue at these levels is identifying the computer hardware and system software resources that support the Claims Process. The major resources of the Operations department were the computer hardware, software, and peripherals; the communications hardware; and the voice hardware. Personnel were divided into functional units: computer operations, voice communications, data communications, and systems programming. The manager used the general ledger for cost information and also kept detailed lists of costs of hardware and software. There was no procedure for charging costs from other departments, such as Human Resources, to the Operations department.

The Operations department allocated the rental, lease, and depreciation expenses of IRM equipment in user departments directly to those departments. The method used to allocate other Operations costs required identifying the costs of major system resources: the CPU, the printer, and disk storage. The costs of each of these resources were allocated to application systems based on their utilization of the resources. All other departmental costs were allocated to systems based on CPU cycles.

These allocations provided the cost of an application system. Although there were over 2000 production jobs, the Company used twenty-one categories of systems to develop cost allocations. Thus, for example, it categorized all

claims supporting systems into one category. These costs were charged to the major user of the system. Using the broad categories of systems permitted developing estimates to trace costs through application systems to the underlying system hardware and software costs. One example noted by the Operations manager was that if the Company's claims-handling business increased, the claims administration system would have to handle additional volume. This could impact the amount of system resources available for other systems. In time, the additional volume might require upgrading the current computer. An upgrade would increase the costs of system software licenses fees. As a result, consideration would have to be given as to whether the claims administration system could be run on an outsourcing vendor's computer. Doing this might release computer resources for the remaining systems or even permit running them on a smaller computer.

#### Defining Activities in the IRM Department

The research required to answer question 2 revealed a problem in how Activities were defined. This is a critical issue for performing ABA. The experience of the Company in defining Activities for the IRM department illustrates how Activities can be defined from different perspectives and how effectively the different ways of defining Activities can support the kind of analysis suggested in this section.



For the Systems and Programming department (Level 4), the Company defined Activities two different ways. These correspond to methods for organizing IRM noted by Swanson and Beath (1989). The first was by system development life cycle functions. Thus, there were Activities associated with analysis, design, programming, and maintenance. Appendix J (IRM Systems and Programming) lists these. It also shows an estimate of how non-personnel costs in the department might be traced to Activities.

As a result of management wanting to downsize, however, the Systems and Programming department redefined the Activities by type of application system: Claims, Financial Reporting, Policy Administration, etc., appendix K (IRM Systems and Programming) lists these.

These two approaches presented different perspectives on costs. For example, the life cycle approach to defining Activities provided analysis on how to improve Systems and Programming. The IRM Vice President pointed out that knowing programming costs would allow him to make decisions on reducing costs by obtaining better development tools such as a fourth generation language. On the other hand, for reducing Systems and Programming costs within business processes, it was more helpful to define Activities in terms of application systems. This would permit tracing Systems and Programming costs through application systems (Level 3) to the corresponding Activities (Level 2).

How Activities were defined was also relevant for the Operations department (Levels 7 and 8). The IRM Vice President pointed out that the use of Activities would have highlighted the costs of operating the laser printer which could have been outsourced. But operation of the laser printer had not been identified as a separate Activity. It was included in Activity 2.17, "Run Mainframe Jobs." Yet, the laser printer required at least ten percent of one operator's time, five percent of the forms designer's time, and the majority of the department's paper costs. This would suggest that the way the Operations department defined this Activity obscured information.

#### Summary for Research Question 2

ABA identified high cost Activities and the corresponding information resources and their costs. The analysis also shows how interrelationships between IRM components can make the outsourcing decision complex.

#### Research Question 3

Research question 3 was: Did ABA identify information resources that are sharable? This section describes how ABA was used to identify information and computing power to share. The research framework in chapter 3 indicated that information resources could be shared either with parties internal to the Company or external to it.

### Sharing with Internal Parties

Following are two examples of how ABA identified information to share internally. The first is based on lists of Activities developed during the accounting firm's management of the company. These Activities were listed in an "Activity Recap." Table 7 was developed from an examination of the Activity Recaps. The Activity Recaps were examined for common Activities. As table 7 indicates, a number of units within the Company listed the same Activities. The Systems and Programming Department's Activity Recap listed information systems it provided and the corresponding user departments. This permitted identifying the IRM support for the common Activities listed on the left side of table 7. These information resources are listed on the right side of table 9 under the title "IRM Support." As an illustration, a part of the Systems and Programming Department's Activity Recap is given in appendix K.

As table 7 shows, three Activities drew on the same kind of information resources: Billing/Collections, Business Development, and Reporting to External Parties. This would suggest investigating the underlying data sources to determine if they could be shared among the common Activities.

Table 7--Common Activities Across Company Sections

Activity: Billing/Collections	
<u>Organizational Units</u>	<u>IRM Support</u>
Individual Risk Rating	Claims information
Engineering	None
Claims Subrogation	None
Premium Control	Amount of premiums due
Reinsurance	Amounts of claims paid
Accounting Services	Amounts of claims paid
Customer Service	Amounts of claims paid
Activity: Secretarial	
<u>Organizational Units</u>	<u>IRM Support</u>
Accounting	None
Engineering	None
Building Maintenance	None
Claims - Administration	None
Claims - Field Offices	None
Claims - Transcription	None
Claims - Services	None
Activity: Business Development	
<u>Organizational Units</u>	<u>IRM Support</u>
Claims Administration	Marketing Data Base Under Development
Engineering	Same
Marketing	Same
Activity: Reporting to External Parties	
<u>Organizational Units</u>	<u>IRM Support</u>
Individual Risk Rating	Claims and premiums
Actuarial	Claims and premiums
Claims - Property/Cas.	Claims
Corporate Accounting	Premium, claims, expenses
Accounting Services	Claims, bank balances
Activity: Training	
<u>Organizational Units</u>	<u>IRM Support</u>
Engineering	None
Training	None

Another example of internal sharing appeared within the Claims Process. This was the reporting of potential excessive losses to the customer's insurance carrier, Activity 3.30. Reporting was the responsibility of the adjuster when the anticipated loss on a claim exceeded a certain threshold. However, the accounting person in charge of one of the claims handling contracts also had this responsibility in Activity 1.20. As a consequence, there was redundancy of analysis about the size of claims and sharing this information will reduce this redundant analysis.

#### Sharing with External Parties

Sharing resources with external parties was a relevant issue to the Company because of its change in direction. No longer permitted to sell insurance, the Company was attempting to rehabilitate itself as a provider of insurance services. Primarily, claims handling services were being sold. But Vice Presidents of all departments were engaged in determining what their departments did that could be sold to outsiders. In the IRM department, for example, there was excess capacity on the laser printer, and the Operations manager had offered this excess capacity for sale to other insurance companies.

The next three sections describe the use of ABA in identifying opportunities to share information externally. ABA was used to identify potential users and their needs and to connect these needs with available information resources within the Claims Process.

#### Using ABA to Identify the Potential Customer

ABA identified potential users by identifying the customer of the Claims Process. The identification was a straightforward process of determining the cost object of the Claims Process, which was the claims handling contract, and the customer of that cost object. The customer's representative in the contract was the Risk Manager. Thus, ABA identified the potential customer to be the Risk Manager for organizations entering into claims-handling contracts with the Company.

#### Using ABA to Identify Customer Needs

Risk Managers make insurance arrangements for their companies. These arrangements include purchasing insurance, or if the company is self-insured, obtaining services for handling claims and for encouraging safety. To investigate the use of ABA, it was first necessary to identify what information the Risk Manager needed.

Information needs for Risk Managers were found in their trade journals, in comments they made to company personnel, and in the requests for proposals that they submitted.

From these sources, it could be seen that Risk Managers needed to:

- monitor the handling of claims
- evaluate the performance of their claims-handling service
- allocate costs to departments within their companies
- evaluate the safety of their companies departments in order to reduce accidents and hence claims costs
- ensure that funds were available to pay claims
- make reports to their management

The use of ABA to identify information for Risk Managers was a very timely consideration for the Company. The competitors of the Company offered Risk Management Information Systems (RMIS) to support Risk Managers in these tasks. A RMIS is a computer system that accepts claims information and other information as inputs and provides the Risk Manager with various analytical and reporting facilities (Tweedy 1991). RMIS on the market had been developed by insurance companies for their own use and developed by software companies.

To meet the competition, the Company had investigated outsourcing its RMIS needs to two organizations that specialized in these systems. However, at the time of this study, the Company's marketing manager reported to the Operating Committee that these systems were costly and more sophisticated than needed by the market. The Company's

larger customers would already have such a system, and the Company's smaller customers would not need the complex functionality of such a system. The marketing manager noted that the Company had information in its computer files that customers needed but that had not been made available to them. He was at that time developing a marketing brochure illustrating the kinds of reports the Company could provide for Risk Managers. By making this information available to customers, the Company was providing its own RMIS for its customers rather than using a vendor's RMIS.

#### Using ABA to Identify Information Resources to Share

ABA offered an approach to discovering what kind of information resources were available for sharing with Risk Managers. ABA was able to do this because the information needed by the Risk Manager could be derived from information generated by Activities associated with handling claims. To carry out their responsibilities, the customer's Risk Managers monitored each of the Company's claims-handling Activities and had corresponding tasks to perform. Thus, identifying information needed to support Activities in the Claims Process also suggested potential information resources available to offer to Risk Managers.

The data in appendices F and G identify the application systems supporting the Claims Process. Information resources to share were identified by asking Activity



Managers what information resources the Activity had to share. Appendix M summarizes the sharable information resources identified by these sources.

Not all Activities in the Claims Process had information to share. Some Activities already existed to provide customer information required by the contract and thus were trivial examples. Examples are providing a banking transaction report (Activity 1.20), reporting claims status the customer (3.12), preparing and giving proposals (8.2 and 8.3), and providing billing information (1.3, 1.4, and 17.19). Other Activities used few information resources and so had little to offer. An example was setting up banking arrangements (1.21). Table 8 classifies the ability of Activities to provide information to share.

Table 8--Categories of Activity Ability to Share Data

Activity Category	Type of Activity						
	Acctg	IRM	Claims	Mktg	Contr Admin	Time	Total
Purpose was to Share	2	1	3	2			8
Supported Sharing Purpose	4			1	3		8
No Data to Share	1				1		2
Has data to Share			7			1	8
Totals	7	1	10	3	4	1	26

The information resources to share came from the claims-handling Activities. Appendix M lists the resources from these sources. This information included the history of payments for a claim, the history of reserve amounts set aside for a claim, engineering statistics to support loss prevention, and information about trials and the attorneys involved. Table 9 summarizes data from Appendix M concerning the potential information to share. Table 9 uses categories found in a Risk Management Information System as noted by Tweedy (1991).

#### A Note on Sharing Information with Other Kinds of Users

In questioning Activity managers about Activity information to share, the discussion focussed on customers of the Claims Process. However, because the discussion was unstructured, a manager of claims Activities addressed other possible customers. He noted that the claims systems would also be useful to attorneys and smaller insurance companies. Thus, additional potential users of the information resources were identified.

#### Summary for Research Question 3

To investigate the ability of ABA to identify information resources to share, this research study took two approaches, sharing information with organizational units internal to the Company and sharing information with organizational units external to the Company.

Table 9--Information to Share by RMIS Facility

RMIS Facility	Number Activities Providing	Kinds of Data Provided
Claims Tracking	7	Adjuster loss reserving performance Facts about the claim Potential for subrogation recovery Adjuster's notes during handling of the claim
Claims Administration	2	History of reserving Payment history (date, amount, payee, purpose)
Insurance Policy Information	0	None
Certificates of Insurance	0	None
Analysis for Control of Accidents	1	Accident description: number, type, amounts location
Control of Medical Costs	0	Note: Company had other Activities to provide
Litigation Management	2	Trial Information Attorney Fees
Cost of Risk Allocation	1	Amount of accident and its location at customer's facility
Loss Forecasting	2	Claims history
Financial Modeling	0	None
Exposure Analysis	0	None

The internal approach identified common Activities and determined the corresponding information resources that could be shared with others in the Company. To identify information to share externally, the study identified the representative of the customer of the Claims Process, the Risk Manager. Because this kind of customer uses a RMIS, information to be shared was associated with RMIS categories.

#### Research Question 4

Research question 4 was: Did ABA identify differences between Company organizational characteristics and IRM department organizational characteristics? This section describes the characteristics that ABA identified.

IRM organizational issues proved to be a timely consideration at the Company. In less than eighteen months the IRM department went through two major reorganizations. While the second reorganization involved downsizing, both reorganizations were related to a lack of IRM responsiveness, a concern expressed by two vice presidents outside of the department.

This section describes how ABA was used to identify organizational structural parameters and to compare the structural parameters of the IRM department with those of the remainder of the Company. The purpose was to determine whether Company and IRM department structural parameters

matched within Activities. To analyze the matching of Company and IRM department structural parameters, the number of matching parameters is compared to Activity costs and to IRM costs using Spearman's rank correlation.

#### Structural Parameters

Appendix C identified the structural parameters investigated and how they were measured. Appendix N summarizes the Company's organizational parameters. Appendix O summarizes IRM department organizational parameters. These appendices summarize discussions with Activity managers and reviews of Activity documents. Activity managers were asked what decisions were made in the Activity and by whom they were made, what written procedures existed, what personnel performed the Activity, and how coordination was performed with other Activities.

To analyze the different kinds of IRM functions in operation, IRM functions were divided into management planning, systems development and maintenance, and operations as suggested by Olson and Chervany (1980). Some of the IRM planning was performed by users.

#### Matching Company and IRM Department Organizational Parameters

Appendix P provides a comparison of the organizational parameters described in Appendixes O and R. Table 10 provides totals of matching and mismatching parameters.

The table was developed from Appendix P by summing the number of activities with matching parameters.

Table 10--Total Number of Activities with Matching and Mismatching of Company and IRM Department Parameters

Parameter Category	Total Number of Activities by IRM Function			Total
	Plan	Develop	Operate	
Centralization				
Match: Centralized	0.5	0.0	0.0	0.5
Match: Decentralized	8.0	8.0	11.0	27.0
Mismatch	5.0	2.0	2.0	9.0
Formalization				
Match: Formal	0.0	0.0	9.0	9.0
Match: Informal	5.5	5.0	1.0	11.5
Mismatch	8.5	5.0	5.5	19.0
Cohesion				
Match: High	3.0	1.0	0.0	4.0
Match: Low	6.0	1.0	4.0	13.0
Mismatch	5.0	9.0	8.0	15.0
Coupling				
Match: Formal	0.0	2.0	4.0	6.0
Match: Informal	10.0	3.0	0.0	13.0
Mismatch	4.0	7.0	11.0	22.0
Location				
Match: Home Office	8.0	4.0	7.0	19.0
Match: District Office	0.0	0.0	0.0	0.0
Mismatch	7.0	7.0	8.0	22.0

Half units were assigned where there was both a match and a mismatch. Drawing inferences from these comparisons is beyond the scope of this research study. However, the case study method provided some data to suggest how the issue of comparable organizational parameters could be addressed in further research. The following discussion

focuses on interaction between Company and IRM department parameters in two ways: the parameters considered individually and the parameters considered in relationship to one another.

#### Influence of Parameters Considered Independently

Centralization is concerned with the hierarchial level at which decisions are made. For the centralization parameter in the Claims Process, the Company and IRM department organizational parameters matched. Both tended to be decentralized. This meant that much of the IRM work was conducted without decision making at the top level of each of the departments. As a result, much decision making, both for planning and development, was decentralized. This led to contradictions in direction. An enhancement to the claims administration system to handle claims other than workers compensation is an example of contradictions in direction. This enhancement took nearly eight years, which caused much criticism of the IRM department. Much of the problem was caused by the decentralization for IRM planning and development. IRM personnel were in direct contact with users. This allowed IRM personnel to respond quickly to changes that were required. However, it meant that the personnel implementing the enhancement were pulled off the enhancement project to implement urgent requests for modifications to existing systems. Thus, the

decentralization of the Claims and IRM departments required some coordination. The Company recognized this need and formed an IRM Steering Committee.

Formality is concerned with whether Activity procedures were described in writing. There was both match and mismatch of formality within the Claims Process. A mismatch could provide positive results. Since the IRM department lacked written procedures, there was no assurance that an IRM analyst would ask the proper questions in investigating claims Activities. But since the claims Activities were formalized, there was more a likelihood that the analyst would encounter the required information.

There was a mismatch in cohesion, the degree of specialization of Activities performed in the Claims Process. There were several IRM personnel involved in claims Activities, leading to low cohesion. However, this was offset by the high cohesion of the Company. For claims-related Activities, this meant that one job category, claims adjuster, performed most of the work that the claims administration system automated. Thus, for automating claims Activities, IRM personnel could focus on the duties of one person, the claims adjuster. This simplified the understanding required to add additional features to the system that supported the adjuster's work, the claims administration system. For example, the ability to handle lines other than worker's compensation was designed as a



extension to the functionality required for the first version of the claims administration system.

Coupling is concerned with the extent of formal coordination between Activities. For coupling within the Claims Process, the Company and the IRM department parameters both matched and mismatched. For planning, they tended to match, with both using informal coupling. One result was that with the signing of a new claims-handling contract, personnel would work together based on prior relationships in working on similar contracts. Little management supervision was needed. But the danger that some tasks would be overlooked was recognized by the marketing function, and it established an inter-departmental checklist to ensure that no necessary functions were permitted. On the other hand, the lack of formal coupling mechanisms also caused marketing personnel involved in price-setting for one particular contract to fail to discuss with IRM personnel the details of the tasks that would be required. As a result, the Company underestimated the amount of work needed to perform the Activities associated with writing computer programs (2.20) and providing the customer with information (1.20). This led to pricing the contract too low.

Within the Claims Process, there was a tendency toward mismatch of location, with most of the claims work being done in the district offices and all of the IRM work being done in the home office. This mismatch in location raises

the question as to whether there is adequate input from field personnel, especially working adjusters, for their information needs. For example, the adjuster time accounting system required the adjuster to manually code a form for subsequent keying into the computer by a clerk. A claims adjuster commented that this was cumbersome. The pad of forms had to be constantly available, but because it was legal size, it tended to clutter her desk. Another example of lack of input from field personnel relates to security. Because the claims administration system permitted issuing claims checks, home office security personnel considered having the system automatically log off after a period of time with no transactions. However, the claims adjuster noted that this would make her work difficult. Her terminal had dual logic. This permitted it to have two on-line applications active at all times, the claims administration system and E-mail. Because much of work involved answering customer and claimant questions over the telephone (Activity 3.32) and responding to her supervisor, she needed these systems to remain active. These kinds of information about the work of claims adjusters work might be more easily be discovered if IRM department personnel were closely associated with field personnel as noted by Kim (1990).

### Influence of Parameters Considered in Pairs

The organizational parameters can also be analyzed in combinations. In table 10 there are twenty cells giving a total of forty combinations when taken two at a time. To illustrate the use of ABA, two pairs are discussed in the following paragraphs. The examples are taken from IRM functions for which there were large numbers of matches or mismatches.

For the IRM planning function, one example is the relationship between centralization and coupling. There was a match in decentralization of decision making within the Claims Process and of informal coupling between Activities. This might present a danger for IRM planning. At lower levels in user departments, decisions could be made that the IRM department should support. But decentralization in the IRM department and lack of formal coupling mechanisms could mean that IRM personnel might not be aware of decisions they should support.

For the IRM operation function, there was a match in decentralization as well as in formalization of procedures. The decentralization could provide the danger that if there were problems with the running of users' computer jobs, there would be no centralized control to rectify the situation. But the formal procedures within the Operations department provided a structure for scheduling production

jobs, delivering the resulting reports, and responding to user queries.

#### Correlation Between Costs and Numbers of Matching Parameters

Table 11 shows by Activity the number of parameters that matched. Table 11 was developed by counting the number of matching parameters in appendix P (which summarizes the raw data in appendices N and O). Table 12 compares the total of the parameters from table 11 with Activity costs and IRM costs from table 5. Table 13 shows the values of Spearman's rank correlation for comparing magnitudes of Activity costs with the number of matching parameters for the Activity. The only significant relationship was the negative correlation between IRM costs and the number of matching parameters for IRM development. A more detailed analysis of the underlying data revealed that the larger part of the IRM costs were systems and programming costs. The highest of these costs were associated with claims-handling Activities. For these Activities, parameters for IRM development tended not to match those of the claims Activities. Table 14 summarizes the parameters.

Table 11--Number of Matching Parameters By Activity

Activity	Plan	Dev.	Op.	Total
1.2 Maintain Bill. Rcds.	4.0			4.0
1.3 Calc. Amt's to Be Billed	4.5		2.5	7.0
1.4 Prepare Bill. Stmnts	3.5		0.5	4.0
1.6 Collect Amounts Due	4.0			4.0
1.19 Reconcile Bank Acct	5.0	5.0	2.0	12.0
1.20 Transaction Report		4.0	2.0	6.0
1.21 Estab. Bank Account		4.0	3.0	7.0
2.20 Design/Code Programs	4.0	3.0	4.0	11.0
3.2 Negotiate with Atty	2.5	0.5	1.5	4.5
3.9 Investigate Claims	1.0	2.0	3.0	6.0
3.10 Evaluate Claims	2.0	1.0	2.0	5.0
3.11 Negotiate Settlements		0.5	1.5	2.0
3.12 Report to Customer				
3.20 Process Payments	2.0	2.0	3.0	7.0
3.21 Approve Claims Pmnts	2.0	0.0	2.0	4.0
3.25 Handle Salvage/Subr.			2.0	2.0
3.28 Notify Customer				
3.30 Claimant Inquiries				
8.4 Prepare Proposals	1.5			1.5
8.5 Proposal Presentations	0.5			0.5
8.6 Develop Contracts				
15.1 Establish Account	1.5		2.5	4.0
15.2 Update Contract DB			2.5	2.5
15.3 Maintain Contr. Rcds				
16.1 Legal Review				
17.19 Keep Time Records	3.0	2.0	2.0	7.0

Table 12--Comparison of Activity Costs with Total Number  
of Parameters on which IRM Department  
Matched Organization

Activity	Non-IRM Activ. Costs	IRM Activ. Costs	Nbr. Matching Params
1.2 Maintain Bill. Rclds.	2,546	132	4.0
1.3 Calc. Amts to Be Billed	3,872	163	7.0
1.4 Prepare Bill. Stmnts	3,872	163	4.0
1.6 Collect Amounts Due	1,367	58	4.0
1.19 Reconcile Bank Acct	936	296	12.0
1.20 Transaction Report	375	270	6.0
1.21 Estab. Bank Account	188	58	7.0
2.20 Design/Code Programs	5,281		11.0
3.2 Negotiate with Atty	16,145	4,752	4.5
3.9 Investigate Claims	44,991	8,581	6.0
3.10 Evaluate Claims	10,836	1,717	5.0
3.11 Negotiate Settlements	17,996	3,432	2.0
3.12 Report to Customer	8,263		
3.20 Process Payments	2,589	1,717	7.0
3.21 Approve Claims Pmnts	6,021	1,717	4.0
3.25 Handle Salvage/Subr.	Nominal		2.0
3.28 Notify Customer	Nominal		
3.30 Claimant Inquiries	9,794		
8.4 Develop Proposals	1,452	914	1.5
8.5 Proposal Presentations	1,936		0.5
8.6 Prepare Contracts	484		
15.1 Establish Account	295	165	4.0
15.2 Update Contract DB	Nominal		2.5
15.3 Maintain Contr. Rclds	Nominal		
16.1 Legal Review	953		
17.19 Keep Time Records	7,241	825	7.0

Table 13--Comparison of Rankings of Activity and IRM Costs with Number of Matching Organizational Parameters by Activity Using Spearman's Rank Correlation ( $r_s$ )

IRM Function	Activity Costs			IRM Costs		
	n	$r_s$	Ranking Relationship	n	$r_s$	Ranking Relationship
Planning	15	-.142	None	15	-.384	None
Development	11	-.618	None	11	-.707	Negative
Operations	16	-.249	None	16	-.288	None
All Functions	20	.174	None	20	.157	None

$\alpha = .05$

Table 14--Summary of Parameters for IRM Development and Claims Activities

Parameter	Claims Activities	IRM Development	Match?
Centralization	Decentralized	Decentralized	Y
Cohesion	High	Low	N
Formality	Formal	Informal	N
Coupling	Informal	Formal	N
Location	District Office	Home Office	N

The data in table 14 permit an analysis of the low degree of matching of parameters for Activities for which IRM expenditures were highest. The low cohesion of the IRM department was caused by the number of personnel involved in the development and maintenance of the system. They operated out of the home office, whereas the system user operated out of district offices. Further, development and maintenance procedures were not written. The low cohesion, difference in location, and informal procedures would

difference in location, and informal procedures would suggest that obtaining valid user requirements would be difficult. However, the values of these parameters were offset by the formal coupling that took place. Development and maintenance were carefully supervised by IRM management. That this arrangement of organizational parameters produced a satisfactory system is evidenced by its reception by parties external to the Company. One customer wanted to buy the system. Further, after the State took over operation of the Company, government officials valued the system enough to convert it to a different hardware platform for use in other State insurance operations.

#### Summary for Research Question 4

This section discussed the kinds of analyses of organizational characteristics that ABA provided. The focus of the analyses was the relationship between organizational parameters at the level of the Claims Process. This focus permitted analyzing the impact of IRM on the Claims Process when considering the organizational parameters both individually and in pairs. This focus on this low organizational level also permitted the extent of parameter matching to be compared with Activity costs and with IRM costs.



Summary

Table 15 provides a summary of key points of this chapter. The first two columns list the Activities in the business process being investigated, the Claims Process. The third column, taken from table 3, provides the costs of the Activities using ABC. Following is a description of the other columns and their relationship to one another.

Table 15--Summary of Chapter 6 Analysis

Activity	Activ. Costs	AIG	IRM	Shr	Match
1.2 Maint Bill Rcd	\$ 2,546	\$ 2,546	\$ 132		4.0
1.3 Calc. Amts	3,872	3,872	163		7.0
1.4 Prepare Bill.	3,872	3,872	163		4.0
1.6 Collect Amount	1,367	1,367	58		4.0
1.19 Reconcile Bank	936	936	296		12.0
1.20 Trans. Record	375		270		6.0
1.21 Estab Bank Acc	188		58		7.0
2.20 Design/Code Pr	5,281				11.0
3.2 Negotiate Atty	16,145	10,817	4,752	3	4.5
3.9 Investig. Clm	44,991	38,692	8,581	2	6.0
3.10 Evaluate Claim	10,836	9,319	1,717	1	5.0
3.11 Negotiate Sett	17,996	17,996	3,432	1	2.0
3.12 Report to Cust	8,263	8,263			
3.20 Process Paymnt	2,589	1,942	1,717	1	7.0
3.21 Approve Paymnt	6,021	3,613	1,717	1	4.0
3.25 Handle Salv/Su	Nominal			1	2.0
3.28 Notify Custom	Nominal				
3.30 Claimant Inqui	9,794				
8.4 Develop Propos	1,452	1,452	914		1.5
8.5 Prop. Present.	1,936	1,936			0.5
8.6 Develop Contr.	484				
15.1 Estab Account	295	221	165		4.0
15.2 Update Contr	Nominal				2.5
15.3 Maint Contract	Nominal				
16.1 Legal Review	953	953			
17.19 Keep Time Rcrd	7,241	2,390	825	1	7.0
Totals	\$147,433	\$110,187	\$24,960	11	101.0

Research question 1 used Activity costs to define the weight in the next column, Activity Information Gap (AIG). This column comes from table 3. The Activity Information Gap weighs the significance of the missing data needed to manage the Activity. The Activity Information Gap provides a way of supporting decisions about which IRM systems to implement.

The column "IRM" comes from table 7. This column gives IRM costs traced to the Activity. Research question 2 used these data as a way of determining what information resources to outsource in order to reduce the costs of the Claims Process.

The column "Shr" refers to the problem addressed in the analysis for research question 3, sharing of data from the Claims Process with Risk Managers. This column is based on appendix M. The column shows which Activities had data to share and how many different kinds of data were available to share.

The final column, "Match," refers to the number of organizational parameters for which the Company and the IRM department matched. It is based on table 11. The analysis for research question 4 suggests that there were situations in which a failure to match proved beneficial in providing IRM services.

## CHAPTER 7

### REVIEWS OF PREDICTED OUTCOMES BY KEY COMPANY EMPLOYEES

This research study used Information Resource Management (IRM) theory and Activity-Based Costing (ABC) theory to predict that Activity-Based Analysis (ABA) could provide certain outcomes. These outcomes are suggested by the four research questions:

1. Did ABA identify management information required to monitor process effectiveness and efficiency?
2. Did ABA support outsourcing decision making by identifying IRM cost components within business processes?
3. Did ABA identify information resources that are sharable?
4. Did ABA identify differences between Company organizational characteristics and IRM department organizational characteristics?

Two key Company employees reviewed the reasonableness of these predicted outcomes. These two employees were selected because they had worked with the ABC project and because they had a wide knowledge of the operations of the Company.

One key employee was a Senior Vice President. He had led many projects at the Company to revise methods and procedures and to reorganize departments. Although he did not have an IRM background, he had been responsible for instigating many IRM projects.

The other key employee was Manager of Methods and Procedures. She had been project leader for interdepartmental projects at the Company that included redesigning department work flows and organization and making recommendations for mainframe systems. Her background also included internal auditing and applications development on personal computers. She is a Certified Public Accountant and a Chartered Property and Casualty Underwriter.

#### Review of Analysis for Research Question 1

Research question 1 was: Did ABA identify information needed to monitor process effectiveness and efficiency?

The Senior Vice President thought that ABA served as a good communication tool, "a common language," with the user. He thought the idea of using ABA for communications with users to be "sound." He gave as an example communications issues an IRM project at the Company that was to provide a life insurance commission information system. The project's results were unsatisfactory. The reason for the unsatisfactory results was poor communication between the

analyst and the user. Had the IRM personnel been able to look at the "pieces" as ABA permits, the analyst could have better understood the user's needs.

The Senior Vice President thought that the concept that ABA is useful for requirements analysis "very reasonable." It gives you an "x-ray" and you "have a snapshot" into what is going into a product or service. This allows you to keep IRM "in the background" and "impose it on what is happening." You can "brainstorm."

In discussing Activity effectiveness and efficiency, the Senior Vice President noted that "what is really good productivity" for an Activity can vary. IRM personnel need to be aware of this. For example, territory is one variable. An adjuster in one city might have to spend more time on a given Activity than did an adjuster in another city because of the kind of claimants and the kind of legal climate that existed.

The Manager commented that using ABA for requirements analysis "sounds reasonable." This approach gives "specific information." "You're only interested in parts of their overall process." But she also noted a difficulty. There is a problem with those managers who do not realize all of the individual Activities at which they should look. "So we may not be able to identify all of the information the manager needs."

The Manager also noted that the accounting firm managing the Company had used their Activity Effort Worksheets both to downsize and to reorganize departments. She had worked with them on this project. This suggests that ABC provided the kind of information needed to understand the Company's work, a goal of requirements analysis.

#### Review of Analysis for Research Question 2

The second research question was: Did ABA support outsourcing decision making by identifying IRM cost components within business processes?

The Senior Vice President thought ABA would be useful for outsourcing. "To know whether it is advantageous to outsource or not, you have to look at Activities." He disagreed with the concept suggested by chapter 6 that ABA would not provide useful costing information for outsourcing the IRM department as a whole. He argued that to make accurate outsourcing decisions, it is necessary to do a form of Activity costing regardless of the name given. The Senior Vice President viewed costing for outsourcing the same as costing for selling services, the topic addressed in the next question.

The costing of the laser printer was "a good example" of outsourcing decision making. In selling laser resources to another company, he had to answer the question of "why is

this costing so much?" The Senior Vice President thought that some form of Activity costing was needed to answer the question.

Another example of outsourcing that he gave was the Company's investigation of outsourcing of printed forms as opposed to printing them on the laser printer. The Vice President in charge of forms went through the same steps as ABA to determine the cost of using the laser printer as an alternative to the quote given by the forms vendor.

Concerning the different ways Activities had been defined in the IRM department, the Vice President thought that it might be necessary in the IRM department to have "two ABCs." One of these would be by function and the other by system development life cycle task.

The Manager also thought that cost information was readily available. For outsourcing Systems and Programming, she thought Activities were useful because they identified smaller units of work. The Company could "outsource programming and be very specific about" what the vendor was "to do and how many hours it should take." But for saving money in the Operations department by outsourcing application systems, "the approach wouldn't work." "You couldn't outsource a piece of a system." There was no surplus capacity in the Operations department so that "if you outsourced a part of a system, the costs would just get spread to others."

Review of Analysis for Research Question 3

The third research question was: Did ABA identify information resources that are shareable?

The Vice President stated that the use of ABA for sharing resources had been a key reason for adopting ABC. He again used the laser printer as an example. He referred to the personnel required to operate the laser: a programmer, a forms designer, and a computer operator. "These are Activity costs." And ABC is the "simplest way to arrive at costs." In determining laser costs, the Operations Manager was "almost doing a little ABC."

He thought that ABA was essential for pricing information resources for a firm attempting to sell claims-handling services. The Senior Vice President's focus was slightly different from that taken by the research study. In the research study, ABA was used to identify resources to share. The Senior Vice President, on the other hand, was concerned with responding to requests from a customer. But he did note that ABA would help "you...know if you could supply what the customer wants."

The Senior Vice President thought that a firm selling claims-handling services needed "versatility." There was "no limit to what a customer could ask for." ABA "lets you be able to reach the price quickly." "If it'll take you 60 days to respond, the competition will win." But it is a "major decision when you go out on a limb and say you can



provide the service." You must be able to "show senior management you can sell this service."

The Manager agreed with the approach of using Activities to identify a Risk Manager's needs. This would allow the Company to know about the Company actions the Risk Manager is concerned with. "You assume the Risk Manager will want to know the individual steps that take place" in the handling of claims. The Risk Manager "is as much concerned with the handling of the claim as he is with the final payment, if not more so."

#### Review of Analysis for Research Question 4

Question 4 was: Did ABA identify differences between Company organizational characteristics and IRM department organizational characteristics?

The Senior Vice President did not disagree that parameters could be compared within Activities. But he did not think ABA useful for this purpose. His belief was that the structure of the IRM department was independent of that of the remainder of the Company. He did not think "this was a good way to determine" the IRM organization or that "meshing" was important. An example he used was that of selling IRM services to an outside insurance agency. After talking to the customer, the marketing coordinator would "dictate what he wants" to IRM. IRM "could be organized one

way and the rest of the organization" in another and "in no way be related to" IRM.

The Manager thought ABA works for identifying organizational parameters for user departments but not for the IRM department. It would be difficult to use for identifying organizational parameters in the Operations department "because there is no way they could identify the individual piece that applied, say, to correcting loss reserves." However, she noted an overall strength of the approach is that "there's better information if you're looking at the individual Activities, knowing what's taking most of the time and what's involved."

#### Summary

Two key employees of the Company reviewed the reasonableness of the use of ABA as suggested by the four research questions. They concluded that it was reasonable to expect ABA to provide the outcomes suggested by the four research questions. The next chapter provides the researcher's conclusions.

## CHAPTER 8

### FINDINGS, IMPLICATIONS, AND FOCUS OF FUTURE RESEARCH

This chapter draws conclusions based on the analysis of the data in chapter 6. The conclusions permit answering the four research questions regarding Activity-Based Analysis (ABA):

1. Did ABA identify information needed to monitor process effectiveness and efficiency?
2. Did ABA support outsourcing decision making by identifying IRM cost components within business processes?
3. Did ABA identify information resources that are shareable?
4. Did ABA identify differences between Company organizational characteristics and IRM department organizational characteristics?

The reviews by key Company employees described in chapter 7 suggested the reasonableness of using ABA in the manner indicated for each of the four research questions. This chapter presents both the conclusions drawn by the researcher regarding the use of ABA and the chain of evidence supporting those conclusions.

### Brief Review of Methodology

This research study used a case study methodology. The four research questions listed in the prior section guided the research study. The unit of analysis was one business process, a process for handling claims.

To answer the four questions, the technique of nonequivalent dependent variables suggested by Yin (1989) was used. This technique involves using theory to predict outcomes. If the outcomes occur as predicted by theory, causal inferences can be made. In this study, theory based on the Information Resource Management (IRM) literature was used to predict the kinds of results that should be obtained. Theory based on Activity-Based Costing (ABC) literature was used to predict an ABA technique that could produce these results. If the results predicted by theory were obtained, the finding that ABA was successful would be substantiated.

In order to determine that the correct causal inferences were drawn concerning the use of theory, a chain of evidence was established for each research question. The chain of evidence provides the steps in the reasoning process that concluded that theory led to the predicted results. This chapter describes these chains of evidence.

### Findings for Research Question 1

Research question 1 was: Did ABA identify information needed to monitor process effectiveness and efficiency?

### Conclusion Drawn by the Researcher

ABA was able to identify information required to monitor effectiveness and efficiency in the Claims Process.

### Chain of Evidence Supporting the Conclusion

Chapter 4 listed six steps in a chain of evidence to support an answer to research question 1. The following discussion presents evidence confirming or contradicting each of the six steps.

1. As predicted by ABC theory, a business process could be identified by selecting a cost object and identifying the Bill of Activities supporting attainment of that cost object.

The Claims Process was identified by selecting a cost object, in this case a claims handling contract that specified certain services. The contract is described in chapter 4. The Activities to support that kind of contract were identified by interviewing four Company managers. Appendix D lists these Activities.

2. Analysis of each of the Activities led to identifying how effectiveness and efficiency were defined for the Activity and hence for the business process.

The analysis of the Activities led to identifying information needed to monitor the effectiveness and efficiency of each Activity. The analysis took place through interviews of Activity personnel. Their responses are listed in appendices F and G and summarized in table 1. The users were able both to think in terms of how to manage individual Activities and how to define effectiveness and efficiency.

The only difficulty noted was the potential for this approach to lead to suboptimization. Chapter 4 discussed suboptimization problems with the use of the measures "promptness" and "billing as many hours as possible."

3. Analysis of definitions of Activity effectiveness and efficiency led to identifying the corresponding information needed to monitor effectiveness and efficiency as required by IRM theory.

Activity personnel were also asked what information they needed to monitor process effectiveness and efficiency. Their responses are summarized in appendices F and G. The number of data items required was calculated and summarized in table 3.

4. Analysis of Activities also permitted identifying information resources already provided for the Activity. Comparison of information needed with information already provided led to identifying

additional information needed as required by IRM theory.

The information already available to monitor effectiveness and efficiency was determined through discussions of Activity personnel and IRM personnel and through reviews of IRM documentation. A variable was defined for calculating the number of data items available. This number is in table 3.

5. Analysis of ABC data provided cost information as predicted by ABC theory.

Table 3 summarizes Activity costs for the Claims Process.

6. The cost information supported developing priorities for IRM planning as required by IRM theory.

By counting the number of data items required and the number of data items already available, it was possible to identify additional data needed to monitor effectiveness and efficiency of the Activity. Identifying the additional data needed led to the use of ABC data to calculate the metric "Activity Information Gap."

#### Findings for Research Question 2

The second research question was: Did ABA support outsourcing decision making by identifying IRM cost components within business processes?

### Conclusions by the Researcher

ABA was able to measure the costs of information resources within the Claims Process. ABA did this by first identifying the information resources and then determining the elements that made up their costs. ABA's unique contribution was permitting an analysis for outsourcing part of the IRM function rather than the entire IRM function.

### Chain of Evidence Supporting the Conclusions

Chapter 4 listed four steps in a chain of evidence to support an answer to research question 2. The following discussion presents evidence confirming or contradicting each of the four steps.

1. As predicted by ABC theory, a business process could be identified by selecting a cost object and identifying the Bill of Activities supporting that cost object.

As the discussion of step 1 for the chain of evidence for question 1 indicated, this step was satisfied.

2. Analysis of ABC data led to the identification of information resource costs traced to each Activity in the process and hence to identification of the information resources themselves.

The information resources identified were application systems, the systems hardware and software supporting the application systems, and IRM personnel. These were identified through reviews of documentation the Company used



for tracing costs and by interviews with Activity personnel and IRM personnel. Information resources are listed in appendices F and G.

3. Identification of process information resources that were traced to Activities permitted identifying the overall information resource.

This step refers to using the portions of the information resources that were traced to Activities in order to identify the overall resource. The overall resources are given by the various levels in figure 12.

4. As required by IRM theory, identifying the overall information resource provided data for making outsourcing decisions as a way of reducing the cost of the business process.

Table 6 summarizes the discussion of identifying information resources supporting the Claims Process and the resource costs. The resulting analysis provided information for IRM outsourcing decisions.

### Findings for Research Question 3

The third research question was: Did ABA identify information resources that are shareable?

### Conclusions of the Researcher

ABA did identify information resources that could be shared. The focus of the research was sharing with external

parties, but ABA also provided information about sharing with internal parties.

#### Chain of Evidence Supporting the Conclusions

Chapter 4 listed three steps in a chain of evidence to support an answer to research question 3. The following discussion presents evidence confirming or contradicting each of the three steps.

1. As predicted by ABC theory, a business process could be identified by selecting a cost object and identifying the Bill of Activities supporting that cost object. The cost object could be linked to the customer of the business process.

As noted in the discussion of step one for the chain of evidence for question 1, the Claims Process, Activities, and individual resources supporting the Activities could be identified through interviews with Activity personnel and IRM personnel and through IRM documentation. The customer could be identified because the Claims Process served a contract (chapter 4) made between the customer and the Company.

2. Analysis of ABC data led to the identification of information resource costs traced to each Activity and thus to the information resources themselves.

The second step of the chain of evidence for question 2 addresses this step.

3. As required by IRM theory, identification of the information resources (within the Claims Process) and of the customer permitted determining if there were information resources within the process to share with the customer of the process.

The customer's employee who was associated with the Claims Process is a Risk Manager. Because risk management is a profession with certifications, trade journals, and conferences, it was possible to identify the Risk Manager's information needs. In addition, the Company had discussions with Risk Managers about their information needs. Further, requests for proposals received from Risk Managers gave an indication of their needs.

Using the sources for the Risk Manager's needs suggested how the Risk Manager might use the information resources mentioned in step 2. These were used as a basis for interviewing Activity personnel. Their answers are summarized in appendix M and in table 9. In addition, ABA suggested some additional services not currently requested by Risk Managers, in other words, analysis of adjuster performance in setting reserves and analysis of attorney payments.

However, not all Activities had sharable resources. Table 8 provides a summary of which Activities did have sharable resources.

#### Findings for Research Question 4

Question 4 was: Did ABA identify differences between Company organizational characteristics and IRM department organizational characteristics?

#### Conclusions by the Researcher

ABA identified values for five selected Company and IRM department organizational parameters and compared them. ABA determined how well the parameters matched and whether the extent of matching was associated either with Activity Costs or with IRM costs. ABA supported an analysis of the implications of matching and mismatching.

#### Chain of Evidence Supporting the Conclusions

Chapter 4 listed four steps in a chain of evidence to support an answer to research question 4. The following discussion presents evidence confirming or contradicting each of the four steps.

1. As predicted by ABC theory, a business process could be identified by selecting a cost object and identifying the Bill of Activities supporting that cost object. The Claims Process was identified as was discussed for step 1 of the chain of evidence for research question 1.
2. Investigation of the Activities comprising the Bill of Activities permitted identifying the corresponding organizational parameters.

Within the Activities of the Claims Process, Company structural parameters were identified and measured through observation, interviews, and review of documentation. This was possible because the Activities suggest an organization structure. Activities represent the way the Company's work was broken in to tasks and how those tasks were coordinated. Breaking work into tasks and coordinating the tasks are key elements of organization structure according to Mintzberg (1983). The results are summarized in appendix N.

3. Investigation of the Activities comprising the Bill of Activities permitted identifying the corresponding organizational parameters of the IRM department.

Because application systems could be associated with Activities (as was shown for the second research question), the corresponding information resources could be associated with the Activities. This led to identifying the IRM organizational parameters associated with managing the information resources within the Activities. These are summarized in appendix O.

4. As required by IRM theory, since Company and IRM department organizational parameters were associated with the same Activities, they could be compared on the basis of organizational characteristics.

The result of linking IRM services to Activities was that IRM organizational parameters can be associated with the same Activities as the Company parameters, and this

permitted comparing IRM and Company parameters within those Activities. The comparisons are summarized in appendix P and in tables 10, 11, and 14. Spearman's Rank Correlation was used to investigate the relationship between the number of matching parameters and both Activity costs and IRM costs.

Based on whether the parameters had the same values, examples were given in chapter 6 as to impact upon the corresponding information systems. As the examples suggested, this would in turn permit using Activities to assess the impact of matching or mismatching of parameters.

#### Implication of the Findings

This research study found, subject to several qualifications, that for the four research questions, ABA functioned as predicted by ABC theory and IRM theory. ABA was able to identify management information required to monitor the effectiveness and efficiency of the Claims Process. ABA supported outsourcing decision making by identifying IRM cost components within the Claims Process. ABA identified Claims Process information resources that could be shared both within the Company and with the Company's customers. ABA was able to identify differences between Company organizational characteristics and IRM department organizational characteristics as these characteristics were revealed within the Claims Process.

In summary, ABA proved to be a useful tool at the Company for requirements analysis, outsourcing decisions, identifying information resources to share, and for investigating organizational parameters.

For requirements analysis, the findings suggest that ABA offers the potential for defining the problem domain in business process terms. Being able to define the problem domain in business process terms permits enhancing existing requirements analysis methods. If these methods were not designed to focus on business processes, ABA permits them to be adapted to a business process orientation.

For requirements analysis, ABA also enables ABC cost information to be used in making decisions about whether to develop systems suggested by the requirements analysis. An example of the way costing information can be used was illustrated by the Activity Information Gap described in chapter 6. The Activity Information Gap used Activity costs as a way of assigning a weight to the information that is needed to manage Activities but that is missing.

For outsourcing decisions, the findings suggest that ABA provides a way of focussing on outsourcing part of the IRM function rather than the entire function. This focus permits investigating outsourcing IRM components as a way of reducing costs of a particular business process. ABA supports this focus by identifying specifically the information resources that support the business process.

The findings suggest that ABA provides the potential for reducing costs of information resources by identifying potential users of information resources in addition to existing users. ABA supports identifying potential users in two ways. First, ABA identifies Activities that are common within a firm. The performance of common Activities suggests sharing among Activity personnel the information resources supporting the common Activities. Second, ABA identifies potential customers of information resources. These customers are identified by determining the customers of business processes. As a result, information resources supporting Activities within the business processes are candidates for sharing with customers.

The findings suggest that ABA provides a tool for IRM organizational analysis. ABA subdivides a company's work into Activities. Subdividing permits analyzing the interaction between company and IRM department organizational parameters as the company's work is being performed. As a result, analyses can be made to determine if the existing IRM organizational structure permits interacting with the company so as to support the provision of information resources.

Thus, ABA is useful for requirements analysis, outsourcing decisions, sharing information resources, and IRM organizational analysis. For IRM researchers, the success of ABA with such diverse problems suggests that ABA



has the potential for aiding in the solution of certain IRM problems. As a consequence, ABA should be investigated as a tool not only for the problems addressed by this study but also for other problems noted in the IRM literature. Also, ABA should be compared with other IRM tools.

For IRM practitioners, the success of applying ABA for information resource management suggests a broader application of Activity-Based Costing (ABC), a tool that has been found to be useful for accounting purposes and for business process improvement (Brimson 1991; Turney 1991). This implies that ABC could have the potential for becoming a company-wide planning tool. As a result, any evaluation of the cost of implementing ABC needs to consider the additional benefits gained by applying ABC to other areas of the business. The potential usefulness of ABA also suggests that IRM personnel become involved in the implementation of ABC in their organizations. They could encourage the use of ABC and work on ABC implementation teams to ensure that decisions made during the implementation would allow ABC to be used not only for accounting purposes but also for ABA.

#### Focus of Future Research

If ABA is to be recommended as an IRM tool, there are a number of issues that should be addressed by future research. Some of these are specific to the four research questions. However, six apply to all four questions:

1. Other kinds of business processes in other industries should be studied in order to generalize upon the usefulness of ABA.
2. ABA should be compared to other IRM methods in order to determine the quality of ABA's results.
3. It should be determined whether, during the implementation of ABC, IRM decision makers can provide input to the design of the ABC system to enhance its usefulness for ABA.
4. It should be determined if ABA is useful when considering Activities traced to higher levels in the cost hierarchy than the cost object. This research study considered only those Activities that could be traced directly to the cost object of the Claims Process.
5. Not all variables in the research framework for this study were investigated in this study. The other variables should be investigated in order to further define the usefulness of ABA.
6. In this research ABA focussed on individual Activities. A next step is to investigate ABA for the entire process in which the individual Activities occur.

In addition to these six issues, there are research issues specific to each of the four research questions. These research issues are associated with the variables encountered during the study.

### Research Question 1

Research question 1 was: Did ABA identify management information required to monitor process effectiveness and efficiency? This question was concerned with requirements analysis.

One set of variables encountered while answering question 1 was related to the kind of information needs that ABA sought to support. This research study investigated information to monitor Activity efficiency and effectiveness. Related variables were the interviewees' definitions of effectiveness and efficiency, their understanding of the information needed, and whether effectiveness and efficiency were management issues for the Activities studied.

This study detected a potential for suboptimization. To explore this problem further, the relevant variable for study is the impact on other Activities of making individual Activities effective and efficient.

Although cost drivers were not emphasized in this investigation, their usefulness in other contexts suggests that cost drivers should be useful in requirements analysis. The perceived degree of control over a cost driver is a key variable for understanding the usefulness of cost driver information for Activity managers. For the cost drivers studied, perceived control depended on whether the cost driver was internal to the Company or external to it.

The kinds of information ABA provides is a variable that must be investigated in order to compare ABA to other requirements analysis techniques and to determine how it should be used in conjunction with them. Examples of the kinds of information provided by requirements analysis include information requirements, process understanding, behavior understanding, and problem frame understanding (Byrd et al. 1992).

The category of Activity is a variable whose understanding would sharpen the objectives of requirements analysis. Examples of categories used by ABC include repetitive or nonrepetitive, primary or secondary, required or discretionary, compliance, transaction, and administrative (Brimson 1991).

### Research Question 2

Research question 2 was: Did ABA support outsourcing decision making by identifying IRM cost components within business processes?

A key variable identified by the study for outsourcing decisions is the viewpoint from which Activities were defined. For example, Systems and Programming Activities could be defined from the viewpoint of the systems development life cycle. These Activities could also be defined from the viewpoint of Company functions. This latter viewpoint was found useful by this study for

outsourcing decisions. Also, how to define Operations department Activities should be investigated because the definitions used at the Company did not identify highlight the outsourcing of an obvious candidate, the laser printer.

The specificity of the cost drivers used to trace application systems costs to Activities is a variable that is relevant for identifying IRM resources within Activities. If these drivers are precise enough to distinguish between applications systems, it will be easier to associate specific systems with specific Activities. Having this association would permit more precise identification of which systems should be considered during an outsourcing decision.

For the variable defining the motivation for outsourcing, this study focussed on the motive of cost reduction. The usefulness of ABC for outsourcing decision making should be assessed in situations in which the motivation is not cost reduction.

A final variable related to outsourcing that requires further research is the impact of reduction of IRM costs on other Activity costs. ABC determines all of the costs of Activities, not just IRM costs. Consequently, future investigations of ABA for outsourcing should determine the impact of outsourcing IRM costs for an Activity on other costs for the same Activity. For example, outsourcing IRM might increase the amount of clerical work needed if the

outsourcing vendor does not provide some of the tailored functionality of a system developed in house.

### Research Question 3

Research question 3 was: Did ABA identify information resources that are sharable?

One set of variables identified by this study relates to the nature of customer that the business process serves. This kind of customer that the process serves impacts the customer's information needs, information resources available, knowledge of the information resources available, and knowledge of the customer's needs. The customer in the this study, a Risk Manager, provided a straightforward application of ABA. Whether ABA would provide be successful in identifying sharable resources for other kinds of customers needs to be determined.

A related variable is the level of customer's interest in the Company's Activities. In the case studied, the Risk Manager was concerned with either managing the Company Activity or monitoring how the Company was managing the Activity. However, it could be that the customer would not be aware of the Company's Activities. This could make sharable Activity information less useful to the customer.

The kind of information supporting an Activity is a variable that affects the ability of the Activity to provide sharable information resources. For some Activities, the

information would not be available for use by the customer. Billing and marketing information are examples. Also, in some cases the kind of information discovered within Activities would constitute a trivial case. This occurred when it was the purpose of the Activity to provide information for the customer. An example is Activity 1.20 which provided customer reports.

#### Research Question 4

Research question 4 was: Did ABA identify differences between Company organizational characteristics and IRM department organizational characteristics?

The kind of organizational parameter investigated is a key variable because it dictates the perspective for understanding whether there is matching or not. The research investigated five organizational parameters within the Claims Process: centralization, formalization, cohesion, coupling, and location. However, other parameters need to be investigated in order to evaluate further the usefulness of ABA for comparison of organizational characteristics. An example is the size of budgets for the IRM department and for the remainder of the organization.

The categories of IRM functions investigated is a variable that affects how the IRM department is segmented for comparing its organizational characteristics with those of the Company. This research used the functions of

planning, development, and operations. However, there are other perspectives on the organization of the IRM function (Roger, Vogel, and Wetherbe 1987; Zmud, 1984).

How Activities are defined is a critical variable for analysis as was indicated for research question 2. Determining whether there was match or mismatch depended on what elements within an Activity were being measured in determining the value of a parameter. For example, for a single Activity, some decisions could be made by the Activity supervisor or worker while other decisions might be reserved for higher levels of management. Or, in the case of formality, formality could be partial or complete.

The number of Activities for which a parameter is defined is a variable that affects the number of matching parameters. Combinations of Activities must be considered. For example, there were claims Activities for which the measures could be made for the group of Activities rather than just for the individual Activities.

The research identified an impact of the match and mismatch of parameters. However, the nature of the impact was not categorized or generalized. It appears that if measures of IRM success are defined as suggested by DeLone and McLean (1992); for example, there are intervening variables that could be studied. These would link IRM success to the effects of matching and mismatching.



Examples include communications, priorities, and working relationships between users and IRM personnel.

#### Summary

This research investigated an adaptation of Activity-Based Costing called "Activity-Based Analysis." The purpose of the research was to investigate the proposition that ABA could improve the management of information resources that support business processes. The research concluded that, in the environment of the study, ABA did provide this improvement. This conclusion suggests further research be done on ABA in other environments and for other IRM problems. This chapter outlined the direction of such future research.

APPENDIX A  
RESEARCH PROTOCOLS

## Research Protocols

Data Collection to Support All Research Questions:

1. Select Process for review. Identify corresponding Activities and record on "Bill of Activities List" (Form 0.1).
2. Investigate each Activity's operation. Use "Activity Description Summary" (Form 0.2) for items to investigate and for recording findings.

## Research Protocols

### Research Question 1:

Did ABA identify management information required to monitor process effectiveness and efficiency?

### Research Protocol:

#### Data Collection

1. Select Process for review. Use "Bill of Activities List" (Form 0.1).
2. For Activity data, use "Activity Description Summary" (Form 0.2).

#### Data Analysis

3. Using the data summarized on "Activity Description Summary" (Form 0.2), investigate the following and record on "Efficiency Information Needs Analysis" (Form 1.1):
  - a. Determine methods of measuring efficiency.
  - b. Determine information needed to provide monitoring of efficiency measures.
  - c. Determine the availability of this information.
4. Perform the same steps investigating effectiveness and record on "Effectiveness Information Needs Analysis" (Form 1.2).
5. Evaluate evidence supporting effectiveness of ABA and record on "Chain of Evidence Summary" (Form 1.3).
6. Review conclusions with research site personnel and record results on "Review of Findings" (Form 1.4).
7. Investigate other corroborating evidence and record on "Other Corroborating Evidence" (Form 1.5).

## Research Protocols

Research Question 2:

Did ABA measure the costs of information resources within business processes?

Research Protocol:

## Data Collection

1. Select Process. Use "Bill of Activities List" (Form 0.1).
2. Use "Activity Description Summary" (Form 0.2) as data sources for Activities in Process.

## Data Analysis

3. Identify costs of IRM components within each Activity and record on "Breakdown of IRM Costs for Bill of Activities" (Form 2.1).
4. Sort and subtotal by IRM type on "Total IRM Costs for Bill of Activities" (Form 2.2) to provide IRM costs by component for cost object.
5. Evaluate evidence supporting effectiveness of ABA and record on "Chain of Evidence Summary" (Form 2.3).
6. Review conclusions with research site personnel and record results on "Review of Findings" (Form 2.4).
7. Investigate other corroborating evidence and record on "Other Corroborating Evidence" (Form 2.5).

## Research Protocols

### Research Question 3:

Did ABA identify information resources that could be shared?

### Research Protocol:

#### Data Collection

1. Select Process for review. Use "Bill of Activities List" (Form 0.1).
2. Identify information resources associated with the Bill of Activities. For data source, use "Total IRM Costs for Bill of Activities" (Form 2.2).
3. Identify customers associated with Activities at the endpoint of the Bill of Activities. For data source, use "Activity Description Summary" (Form 0.2). Record on "Information Resources to Share" (Form 3.1).
4. Identify Activities of customer and implied information resource needs. Use interviews with research site personnel, review of research site documentation, review of periodicals, and interviews with customers where possible. Record on "Information Resources to Share" (Form 3.1).

#### Data Analysis

5. Determine possible uses of the information resource by the customer. Use interviews with research site personnel, review of research site documentation, review of periodicals, and interviews with customers where possible. Record on "Information Resources to Share" (Form 3.1).
6. Evaluate evidence supporting effectiveness of ABA and record on "Chain of Evidence Summary" (Form 3.2).
7. Review conclusions with research site personnel and record results on "Review of Findings" (Form 3.2).
8. Investigate other corroborating evidence and record on "Other Corroborating Evidence" (Form 3.3).

## Research Protocols

### Research Question 4:

What organizational characteristics were identified by ABA?

### Research Protocol:

#### Data Collection

1. For each Bill of Activities, use "Activity Description Summary" (Form 0.2) for data source.

#### Data Analysis

2. Using these as data sources, measure organizational parameters and record on the corresponding research form:

Parameter	Research Form
Firm's Centralization	4.1
Firm's Formalization	4.2
Firm's Cohesion	4.3
Firm's Coupling	4.4
Firm's Location	4.5
IRM Org.'s Planning	4.6
IRM Org.'s Development	4.7
IRM Org.'s Operations	4.8

3. Summarize research forms on "Summary of Organization Structural Parameters" (Forms 4.9. 4.10 4.11 4.12 4.13) and indicate whether parameters match.
4. Evaluate evidence supporting effectiveness of ABA and record on "Chain of Evidence Evaluation" (Form 4.14).
5. Review conclusions with research site personnel and record results on "Review of Findings" (Form 4.15).
6. Investigate other corroborating evidence and record on "Other Corroborating Evidence" (Form 4.16).

APPENDIX B  
CASE STUDY DATA BASE



Case Study Data Base  
Forms Used to Record and Analyze Data

All Research Questions

- 0.1 Bill of Activities List
- 0.2 Activity Description Summary

Research Question 1

- 1.1 Efficiency Information Needs Analysis
- 1.2 Effectiveness Information Needs Analysis
- 1.3 Chain of Evidence Evaluation
- 1.4 Review of Findings
- 1.5 Other Corroborating Evidence

Research Question 2

- 2.1 Breakdown of IRM Costs for Bill of Activities
- 2.2 Total IRM Costs for Bill of Activities
- 2.3 Chain of Evidence Evaluation
- 2.4 Review of Findings
- 2.5 Other Corroborating Evidence

Research Question 3

- 3.1 Information Resources to Share
- 3.2 Chain of Evidence Evaluation
- 3.3 Review of Findings
- 3.4 Other Corroborating Evidence

Research Question 4

- 4.1 Firm Organization Structure Analysis - Centralization
- 4.2 Firm Organization Structure Analysis - Formalization
- 4.3 Firm Organization Structure Analysis - Cohesion
- 4.4 Firm Organization Structure Analysis - Coupling
- 4.5 Firm Organization Structure Analysis - Location
- 4.6 IRM Organization Structure Analysis - Planning
- 4.7 IRM Organization Structure Analysis - Development
- 4.8 IRM Organization Structure Analysis - Operations
- 4.9 Comparison of Organization and IRM Structural Parameters-Centralization
- 4.10 Comparison of Organization and IRM Structural Parameters-Formalization
- 4.11 Comparison of Organization and IRM Structural Parameters-Cohesion
- 4.12 Comparison of Organization and IRM Structural Parameters-Coupling
- 4.13 Comparison of Organization and IRM Structural Parameters-Location
- 4.14 Chain of Evidence Evaluation
- 4.15 Review of Findings
- 4.16 Other Corroborating Evidence

Case Study Data Base  
Bill of Activities List

Cost Object \_\_\_\_\_

Form 0.1 Index Number \_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_ Page 1 of \_\_\_\_

Data Source Type (check one):

Observation -- Location \_\_\_\_\_

Interview -- Person/Position \_\_\_\_\_

Documentation -- Description \_\_\_\_\_

<u>Number</u>	<u>Activity</u>	<u>Form</u> <u>Index Number</u>
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Case Study Data Base  
Activity Description Summary

Form 0.2 Index Number \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_ Page 1 of \_\_\_\_\_

Activity \_\_\_\_\_ Activity Number \_\_\_\_\_

Data Source Type (check one):

Observation -- Location \_\_\_\_\_

Interview -- Person/Position \_\_\_\_\_

Documentation -- Description \_\_\_\_\_

Topics To Investigate Where Available in Source:

1. Sequence of Tasks Performed in Activity
2. Personnel Performing Tasks
3. Activity Inputs
4. Activity Outputs
5. Resources
6. Resource Costs
7. Resource Drivers
8. Activity drivers
9. Cost Drivers
10. Measurements of Efficiency
11. Measurements of Effectiveness
12. Specific Information Resources Used
13. Information Resource Costs Traced to Activity
14. Other Activity Documentation Available
15. Information Resource Documentation Available
16. Other Persons to Interview

Notes on Findings (keyed to topic number):

Case Study Data Base  
Efficiency Information Needs Analysis

Form 1.1 Index Number \_\_\_\_ Date \_\_\_/\_\_\_/\_\_\_ Page 1 of \_\_\_\_

Level of Activity (circle one):

Bill of Activities    Activity    Task Within Activity

Description of Activity Level (circled above):

Index Numbers of Forms Used as Data Sources:

Analysis of Information Needs:

How Efficiency is Measured

Information Needed

Information Available

Gap (Missing)

Case Study Data Base  
Effectiveness Information Needs Analysis

Form 1.2 Index Number \_\_\_\_ Date \_\_\_/\_\_\_/\_\_\_ Page 1 of \_\_\_\_

Level of Activity (circle one):

Bill of Activities    Activity    Task Within Activity

Description of Activity Level (circled above):

Index Numbers of Forms Used as Data Sources:

Analysis of Information Needs:

How Effectiveness is Measured

Information Needed

Information Available

Gap (Missing)

Case Study Data Base  
Chain of Evidence Evaluation  
Question 1

Form 1.3 Index Number \_\_\_\_\_ Date \_\_\_/\_\_\_/\_\_\_ Page 1 of \_\_\_\_\_

For each of the following steps, evaluate effectiveness of the step and summarize evidence supporting the evaluation:

1. As predicted by ABC theory, a business process could be identified by selecting a cost object and identifying the Bill of Activities supporting that cost object.
2. Analysis of each of the Activities led to identifying how effectiveness and efficiency were defined for the Activity and hence for the business process.
3. Analysis of definitions of Activity effectiveness and efficiency led to identifying the corresponding information needed to monitor effectiveness and efficiency as required by IRM theory.
4. Analysis of Activities also permitted identifying information resources already provided for the Activity. Comparison of information needed with information already provided led to identifying additional information needed as required by IRM theory.
5. Analysis of ABC data provided cost information as predicted by ABC theory.
6. The ABC method provided cost information needed for developing priorities for IRM planning as required by IRM theory.

Step Effectiveness  
No. of Step

Summary of Evidence Supporting  
ABA Effectiveness/Ineffectiveness

Case Study Data Base  
Review of Findings  
by Research Site Personnel

Form 1.4 Index Number \_\_\_\_\_ Date \_\_\_/\_\_\_/\_\_\_ Page 1 of \_\_\_\_\_

Research Question No.

Research Question

Person Reviewing:

Position:

Research Conclusion

Interviewee's Assessment of Conclusions

Interviewee's Reasons for Assessment

Strengths/Advantages Noted by Interviewee

Weaknesses/Disadvantages Noted by Interviewee

Other Comments by Interviewee

Case Study Data Base  
Other Corroborating Evidence

Form 1.5 Index Number \_\_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_ Page 1 of \_\_\_\_\_

Research Question No.

Research Question

Research Conclusion

Evidence Supporting/Contradicting Conclusion

Source of Evidence



Case Study Data Base  
Breakdown of IRM Costs For Cost Object  
Sorted by Activity

Form 2.1 Index Number \_\_\_\_ Date \_\_\_/\_\_\_/\_\_\_ Page 1 of \_\_\_\_

Cost Object \_\_\_\_\_

<u>Act.</u> <u>No.</u>	<u>Activity</u>	<u>Form</u> <u>Index</u> <u>No.</u>	<u>IRM Component</u>	<u>IRM</u> <u>Comp</u> <u>Cost</u>
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Case Study Data Base  
 Total IRM Costs for Cost Object  
 Totaled by IRM Component

Form 2.2 Index Number \_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_ Page 1 of \_\_\_\_

Cost Object \_\_\_\_\_

Customer \_\_\_\_\_

Customer's Business/Function \_\_\_\_\_

<u>IRM Component</u>	<u>IRM Comp. Cost</u>	<u>Act. No.</u>	<u>Activity</u>	<u>Form Seq. No.</u>
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Case Study Data Base  
Chain of Evidence Evaluation  
Question 2

Form 2.3 Index Number \_\_\_\_\_ Date \_\_\_/\_\_\_/\_\_\_ Page 1 of \_\_\_\_\_

For each of the following steps, evaluate effectiveness of the step and summarize evidence supporting the evaluation:

1. As predicted by ABC theory, a business process could be identified by selecting a cost object and identifying the Bill of Activities supporting that cost object.
2. Analysis of ABC data led to the identification of information resource costs traced to each Activity in the process and hence to identification of the information resources themselves.
3. Identification of process information resources that were traced to Activities permitted identifying the overall information resource and its costs.
4. As required by IRM theory, identifying the overall information resource provided data for making outsourcing decisions.

<u>Step Effectiveness</u>	<u>Summary of Evidence Supporting</u>
<u>No. of Step</u>	<u>ABA Effectiveness/Ineffectiveness</u>

Case Study Data Base  
Review of Findings  
by Research Site Personnel

Form 2.4 Index Number \_\_\_\_ Date \_\_\_/\_\_\_/\_\_\_ Page 1 of \_\_\_\_

Research Question No.

Research Question

Person Reviewing:

Position:

Research Conclusion

Interviewee's Assessment of Conclusions

Interviewee's Reasons for Assessment

Strengths/Advantages Noted by Interviewee

Weaknesses/Disadvantages Noted by Interviewee

Other Comments by Interviewee

Case Study Data Base  
Other Corroborating Evidence

Form 2.5 Index Number \_\_\_\_ Date \_\_\_/\_\_\_/\_\_\_ Page 1 of \_\_\_\_

Research Question No.

Research Question

Research Conclusion

Evidence Supporting/Contradicting Conclusion

Source of Evidence

Case Study Data Base  
Information Resources to Share

Form 3.1 Index Number \_\_\_\_ Date \_\_\_/\_\_\_/\_\_\_ Page 1 of \_\_\_\_

Customer \_\_\_\_\_

Customer's Business/Function \_\_\_\_\_

Bill of Activities \_\_\_\_\_

Data Source Type (check one):

Observation -- Location \_\_\_\_\_

Interview -- Person/Position \_\_\_\_\_

Documentation -- Description \_\_\_\_\_

Customer Activity

Implied Info. Needs

Information to Share

Information Resource Costs

Case Study Data Base  
Chain of Evidence Evaluation  
Question 3

Form 3.2 Index Number \_\_\_\_ Date \_\_\_/\_\_\_/\_\_\_ Page 1 of \_\_\_\_

For each of the following steps, evaluate effectiveness of the step and summarize evidence supporting the evaluation:

1. As predicted by ABC theory, a business process could be identified by selecting a cost object and identifying the Bill of Activities supporting that cost object. The cost object could be linked to the customer of the business process.
2. As predicted by ABC theory, analysis of ABC data led to the identification of information resource costs traced to each Activity and thus to the information resources themselves.
3. As required by IRM theory, identification of the information resources and of the customer permitted determining if there were information resources within the process to share with the customer of the process.

<u>Step</u> <u>Effectiveness</u>	<u>Summary of Evidence Supporting</u>
<u>No.</u> <u>of Step</u>	<u>ABA Effectiveness/Ineffectiveness</u>

Case Study Data Base  
Review of Findings  
by Research Site Personnel

Form 3.3 Index Number \_\_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_ Page 1 of \_\_\_\_\_

Research Question No.

Research Question

Person Reviewing:

Position:

Research Conclusion

Interviewee's Assessment of Conclusions

Interviewee's Reasons for Assessment

Strengths/Advantages Noted by Interviewee

Weaknesses/Disadvantages Noted by Interviewee

Other Comments by Interviewee



Case Study Data Base  
Other Corroborating Evidence

Form 3.4 Index Number \_\_\_\_\_ Date \_\_\_/\_\_\_/\_\_\_ Page 1 of \_\_\_\_\_

Research Question No.

Research Question

Research Conclusion

Evidence Supporting/Contradicting Conclusion

Source of Evidence

Case Study Data Base  
Organization Structure Analysis: Centralization

Form 4.1 Index Number \_\_\_\_ Date \_\_\_/\_\_\_/\_\_\_ Page 1 of \_\_\_\_

Level of Analysis (check one of following)

Bill of Activities: Cost Object \_\_\_\_\_

Activity: No. \_\_\_\_ Activity Descr. \_\_\_\_\_

Degree of Centralization (circle one): Centralized  
Decentralized  
(Based on Info. Below)

Details of Centralization

Activity/Task

Key Decisions

Organization Level of Decision

Centralized?

Case Study Data Base  
Organization Structure Analysis: Formalization

Form 4.2 Index Number \_\_\_\_ Date \_\_\_/\_\_\_/\_\_\_ Page 1 of \_\_\_\_

Level of Analysis (check one of following)

Bill of Activities: Cost Object \_\_\_\_\_

Activity: No. \_\_\_\_\_ Activity Descr. \_\_\_\_\_

Degree of Formalization (circle one): Formal Informal  
(Based on Info. Below)

Details of Formalization

Activity/Task

Description of Written Procedures

Formalized?

Case Study Data Base  
Organization Structure Analysis: Cohesion

Form 4.3 Index Number \_\_\_\_ Date \_\_\_/\_\_\_/\_\_\_ Page 1 of \_\_\_\_

Level of Analysis (check one of following)

Bill of Activities: Cost Object \_\_\_\_\_

Activity: No. \_\_\_\_\_ Activity Descr. \_\_\_\_\_

Details of Cohesion

Activity/Task

Positions Performing Activity/Task

Specialized?

Case Study Data Base  
Organizational Structural Analysis: Coupling Mechanisms

Form 4.4 Index Number \_\_\_\_ Date \_\_\_/\_\_\_/\_\_\_ Page 1 of \_\_\_\_

Level of Analysis (check one of following)

Bill of Activities: Cost Object \_\_\_\_\_

Activity: No. \_\_\_\_\_ Activity Descr. \_\_\_\_\_

Summary Of Coupling (circle one): Formal Informal  
(supported by analysis below)

Details of Coupling

Activity/Task

Method of Coupling With Adjacent Activities

Formal?

Case Study Data Base  
Organizational Structural Analysis: Location

Form 4.5 Index Number \_\_\_\_ Date \_\_\_/\_\_\_/\_\_\_ Page 1 of \_\_\_\_

Level of Analysis (check one of following)

Bill of Activities: Cost Object \_\_\_\_\_

Activity: No. \_\_\_\_\_ Activity Descr. \_\_\_\_\_

Summary of Location (circle one): Home Office Dist.  
Office  
(supported by analysis below)

Details of Location

Activity/  
Task

Office Location  
Home District

Case Study Data Base  
IRM Organizational Structure Analysis: Planning

Form 4.6 Index Number \_\_\_\_ Date \_\_\_/\_\_\_/\_\_\_ Page 1 of \_\_\_\_

Level of Analysis (check one of following)

Bill of Activities: Cost Object \_\_\_\_\_

Activity: No. \_\_\_\_\_ Activity Descr. \_\_\_\_\_

Data Sources:

Activity

IRM Planning Function

Centralization:

Formalization:

Cohesion:

Coupling:

Location:

Case Study Data Base  
IRM Organizational Structure Analysis: Development

Form 4.7 Index Number \_\_\_\_ Date \_\_\_/\_\_\_/\_\_\_ Page 1 of \_\_\_\_

Level of Analysis (check one of following)

Bill of Activities: Cost Object \_\_\_\_\_

Activity: No. \_\_\_\_\_ Activity Descr. \_\_\_\_\_

Data Sources:

Activity

IRM Development Function

Centralization:

Formalization:

Cohesion:

Coupling:

Location:



Case Study Data Base  
IRM Organizational Structure Analysis: Operations

Form 4.8 Index Number \_\_\_\_ Date \_\_\_/\_\_\_/\_\_\_ Page 1 of \_\_\_\_

Level of Analysis (check one of following)

Bill of Activities: Cost Object \_\_\_\_\_

Activity: No. \_\_\_\_\_ Activity Descr. \_\_\_\_\_

Data Sources:

Activity

IRM Operations Function

Centralization:

Formalization:

Cohesion:

Coupling:

Location:

Case Study Data Base  
 Comparison of Organization and IRM Structural Parameters  
 Centralization

Form 4.9 Index Number \_\_\_\_\_ Date \_\_\_/\_\_\_/\_\_\_ Page 1 of \_\_\_\_\_

Cost Object \_\_\_\_\_

Data Sources:

Organizational Structural Parameters  
 IRM Structural Parameters

Codes:

C - Centralized  
 D - Decentralized  
 Y - Yes  
 N - No  
 N/A - Not Applicable

<u>Act.</u>		<u>IRM Department</u>				
<u>No.</u>	<u>Activity</u>	<u>Org.</u>	<u>Plan</u>	<u>Dev.</u>	<u>Oper.</u>	<u>Match?</u>

Case Study Data Base  
 Comparison of Organization and IRM Structural Parameters  
 Formalization

Form 4.10 Index Number \_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_ Page 1 of \_\_\_\_

Cost Object \_\_\_\_\_

Data Sources:  
 Organizational Structural Parameters  
 IRM Structural Parameters

Codes:  
 F - Formalized  
 I - Informal  
 Y - Yes  
 N - No  
 N/A - Not Applicable

<u>Act.</u> <u>No.</u>	<u>Activity</u>	IRM Department			<u>Match?</u>
		<u>Org.</u>	<u>Plan</u>	<u>Dev.</u> <u>Oper.</u>	

Case Study Data Base  
 Comparison of Organization and IRM Structural Parameters  
 Cohesion

Form 4.11 Index Number \_\_\_\_ Date \_\_\_/\_\_\_/\_\_\_ Page 1 of \_\_\_\_

Cost Object \_\_\_\_\_

Data Sources:

Organizational Structural Parameters  
 IRM Structural Parameters

Codes:

H - High Cohesion  
 L - Low Cohesion  
 Y - Yes  
 N - No  
 N/A - Not Applicable

<u>Act.</u>		<u>IRM Department</u>				
<u>No.</u>	<u>Activity</u>	<u>Org.</u>	<u>Plan</u>	<u>Dev.</u>	<u>Oper.</u>	<u>Match?</u>

Case Study Data Base  
Comparison of Organization and IRM Structural Parameters  
Coupling

Form 4.12 Index Number \_\_\_\_ Date \_\_\_/\_\_\_/\_\_\_ Page 1 of \_\_\_\_

Cost Object \_\_\_\_\_

Data Sources:

Organizational Structural Parameters  
IRM Structural Parameters

Codes:

F - Formal

I - Informal

Y - Yes

N - No

N/A - Not Applicable

<u>Act.</u> <u>No.</u>	<u>Activity</u>	IRM Department			<u>Match?</u>
		<u>Org.</u>	<u>Plan</u>	<u>Dev.</u> <u>Oper.</u>	

Case Study Data Base  
 Comparison of Organization and IRM Structural Parameters  
 Location

Form 4.13 Index Number \_\_\_\_ Date \_\_\_/\_\_\_/\_\_\_ Page 1 of \_\_\_\_

Cost Object \_\_\_\_\_

Data Sources:

Organizational Structural Parameters  
 IRM Structural Parameters

Codes:

H - Home Office  
 D - District Office  
 Y - Yes  
 N - No  
 N/A - Not Applicable

Act. <u>No.</u>	<u>Activity</u>	IRM Department	<u>Org.</u>	<u>Plan</u>	<u>Dev.</u>	<u>Oper.</u>	<u>Match?</u>
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Chain of Evidence Evaluation  
Question 4

Form 4.14 Index Number \_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_ Page 1 of \_\_\_\_

For each of the following steps, evaluate effectiveness of the step and summarize evidence supporting the evaluation:

1. As predicted by ABC theory, a business process could be identified by selecting a cost object and identifying the Bill of Activities supporting that cost object.
2. Investigation of the Activities comprising the Bill of Activities permitted identifying the corresponding Company organizational parameters.
3. Investigation of the Activities comprising the Bill of Activities permitted identifying the corresponding organizational parameters of the IRM department.
4. As required by IRM theory, since Company and IRM department organizational parameters were associated with the same Activities, they could be compared on the basis of organizational characteristics.

<u>Step</u> <u>Effectiveness</u>	<u>Summary of Evidence Supporting</u>
<u>No.</u> <u>of Step</u>	<u>ABA Effectiveness/Ineffectiveness</u>

Case Study Data Base  
Review of Findings  
by Research Site Personnel

Form 4.15 Index Number \_\_\_\_\_ Date \_\_\_/\_\_\_/\_\_\_ Page 1 of \_\_\_\_\_

Research Question No.

Research Question

Person Reviewing:

Position:

Research Conclusion

Interviewee's Assessment of Conclusions

Interviewee's Reasons for Assessment

Strengths/Advantages Noted by Interviewee

Weaknesses/Disadvantages Noted by Interviewee

Other Comments by Interviewee



Case Study Data Base  
Other Corroborating Evidence

Form 4.16 Index Number \_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_ Page 1 of \_\_\_\_

Research Question No.

Research Question

Research Conclusion

Evidence Supporting/Contradicting Conclusion

Source of Evidence

APPENDIX C  
ORGANIZATIONAL PARAMETERS AND THEIR MEASUREMENTS

## Organizational Parameters and Their Measurements

<b>Centralization</b>	
Definition	Hierarchical level at which decisions made.
Firm Measurement	Hierarchical level at which Activity decisions are made.
IRM Measurement	Hierarchical level for IRM planning, development, and operations for Activity.
<b>Formalization</b>	
Definition	Extent to which Activity procedures have been prescribed in writing.
Firm Measurement	Classify as formal if procedures have been documented: otherwise, as informal.
IRM Measurement	Classify same as for firm for following: IRM planning, development, and operations for Activity.
<b>Cohesion</b>	
Definition	Breadth of the function. Horizontal complexity. Degree to which Activities are subdivided into tasks for different workers.
Firm Measurement	Classify cohesion as high if tasks within Activities performed by same job position. Otherwise, classify as low.
IRM Measurement	Classify as high if few number of positions required to perform planning, development, and operations within Activity. Otherwise, classify as low.
<b>Coupling</b>	
Definition	Extent of formal coordination of Activities.
Firm Measurement	Classify as informal if done by mutual adjustment between workers or formal if done by direct supervision or standardization.

IRM Measurement	Classify depending on method for coordinating IRM planning, development, and operation within Activity.
Location Definition	Geographical location of Activity.
Firm Measurement	Classify Activity as performed in Home Office, District Office, or both.
IRM Measurement	Classify IRM planning, development, and operation according to where function is located for Activity.

APPENDIX D  
ACTIVITIES IN THE CLAIMS PROCESS

Activities in the Process

<u>Act. No.</u>	<u>Activity</u>	<u>Description from Company Activity Dictionary</u>
1.2	Maintain Billing Records	Pull files or compile data needed for billing.
1.3	Calculate Amounts to Be Billed	Calculate amounts due consulting other departments if necessary.
1.4	Prepare Billing Statements	Prepare billing statements or summary of billing information for use by other departments. Match billing to supporting documents. Notify appropriate departments.
1.6	Collect Amounts Due	Handle incoming remittances. Allocate money received. Deliver to appropriate departments.
1.19	Reconcile Bank Account	Compare company bank account records to bank's records. Explain differences. Determine correct balance.
1.20	Review/Transmit Transaction Report	Provide customers with list of transactions to their bank account: payments, recoveries, adjustments. Provide lists of outstanding drafts and cleared drafts. Provide explanations.
1.21	Establish Bank Account	Communicate with bank to establish bank account and banking arrangements. Provide for printing of checks on company's laser printer if required.

<u>Act. No.</u>	<u>Activity</u>	<u>Description from Company Activity Dictionary</u>
2.20	Design and Code Mainframe Programs	Design individual computer programs. Determine input, processing, and output. Code computer program according to design specifications. (This Activity was used for tape exchanges with a customer and special reports for the customer.)
3.2	Negotiate with Plaintiff Attorney	Negotiate with plaintiff's attorney to settle claim.
3.9	Investigate Claims	Obtain data. Visit accident scene. Take statements of informed parties. Set initial reserves. Request medical information. Assign appraisal/rental.
3.10	Evaluate Claims	Determine causal relationship between accident and injury. Analyze material gathered in investigation to determine extent of liability. Set reserves necessary to conclude claim based on evaluation. Consult with medical advisor. Consult with supervisor.
3.11	Negotiate Settlements	Make offer/negotiate demands to/from claimants and insureds. Generate correspondence to insureds, claimants, doctors, medical providers, etc. consistent with evaluation. Prepare non-litigated arbitration, attend mediation conferences.
3.12	Report to Customer	Provide reports as required to customer.

<u>Act. No.</u>	<u>Activity</u>	<u>Description from Company Activity Dictionary</u>
3.20	Process Payments	Screen bills by checking against computer records. Identify adjuster, claim number, and special coding. Enter into computer. Separate check copies and distribute.
3.21	Approve Claims Payments	Approve bills. Sign drafts.
3.25	Handle Salvage/ Subrogation	Prepare initial and final subrogation cards. Place 3rd party on notice. Negotiate settlements. Refer files to attorneys. Monitor files to recovery or closing. Process recoveries.
3.28	Notify Customer of Possible Excess Expos.	Give proper notice of loss to customer. As required, give notice to reinsurer, excess carrier, umbrella carrier.
3.30	Service Claimant Inquiries and Requests	Answer questions and provide information to claimants.
8.4	Develop Proposals	Provide managerial and clerical support to prepare for sales presentations. This involves all departments marketing their own services or participating in effort with other departments.
8.5	Give Proposal Presentations	Give sales presentations. Close sale. Involves all departments marketing for their own services or participating in effort with other departments.
8.6	Develop Contracts	Prepare contracts for services.



<u>Act. No.</u>	<u>Activity</u>	<u>Description from Company Activity Dictionary</u>
15.1	Establish Account	Verify new account data, assign customer, account, and contract numbers. Create reconciliation sheets.
15.2	Update Contract Data Base	Update service data base, add coverage codes and contract rates.
15.3	Maintain Contract	Maintain data, update renewal records, update customer list.
16.1	Review Contracts	Review assumption agreements, real estate licenses, contracts of sales, deeds, closing papers.
17.19	Keep Time Records	Keep time logs for billing and other purposes.

APPENDIX E  
DESCRIPTION OF SYSTEMS REFERENCED IN THE STUDY

## Description of Systems Referenced in the Study

<u>System</u>	<u>Description</u>
Time Accounting	Adjuster Time Accounting System
Bank Reconciliation	System comparing payments according to company records to payments according to bank records.
Diary	Free form text file for use as a reminder.
Contract Rates	On-line system for recording contract rates.
Claims Administration	Claims administration systems. On-line claims handling system. Provides for entering loss reserves and for making claims payments. Also provides information about the claim.
E-mail	Electronic mail system.
General Ledger	Company's accounting system. Receives automated input from other systems.
Coverage Codes	On-line system for entering legitimate coverages against which a claim could be filed.
Litigation Management	System providing information about trials and the attorneys involved.
Marketing Information	System listing potential customer information including type of business and contacts within the customer's operations. Also allows free-form notes.
Claim Status	Summary of current information by claim.
Claims Transactions	History of claims transactions by claim: set up, payments, loss reserves, close.

APPENDIX F  
SUMMARY OF EFFICIENCY INFORMATION NEEDS

## Summary of Efficiency Information Needs

Note: Comments in parentheses are researcher's analysis of the data.)

<u>Act. No.</u>	<u>Activity</u>	<u>How Efficiency Measured</u>	<u>Availability of Information</u>
1.2	Maintain Billing Records	Posting records within reasonable time. (Characteristic is "Promptness in Performing Activity." 2 data items are required: when data came in and when posted.)	Available only in manual records. A billing system proposed by user would have this information. (0 data items available.)
1.3	Calculate Amounts to be billed	How soon bill is sent after due. (Characteristic is "Promptness in Performing Activity." 2 data items are required: when data came in and when posted.)	Same as 1.2.
1.4	Prepare Billing Statements	Same as 1.3.	Same as 1.3.
1.6	Collect Amounts Due	None	

<u>Act. No.</u>	<u>Activity</u>	<u>How Efficiency Measured</u>	<u>Availability of Information</u>
1.19	Reconcile Bank Account	How soon done. Requires knowing when was done and difficulty of any problems encountered with reconciliation. (Characteristic is "Promptness in Performing Activity." 3 data items required: when started, when completed, and level of difficulty to perform.)  See also same Activity for effectiveness. Inaccuracy (poor effectiveness) could impact efficiency.	None of the required information is automated. Supervisor can determine by inspecting the work. (0 data items available.)
1.20	Review/Transmit Transaction Report	Time expended. Currently, not an issue because supervisor does the work.	
1.21	Establish Bank Account	Same as 1.20.	
2.20	Design and Code Mainframe Programs	Time expended. (Characteristic is "Time Expended to Perform Activity." Requires 1 data item.)	Is available on Project Management Data Base. (1 data item available.)

Act. No.	<u>Activity</u>	How Efficiency Measured	Availability of <u>Information</u>
3.2	Negotiate with Plaintiff Atty	<p>How knowledgeable adjuster is about trial information: what trial is about, elements of damage, plaintiff attorney's typical tactics. (Characteristic is "Completing All Required Procedures." 3 data items are required to indicate whether adjuster obtained each of the required kinds of information.)</p> <p>How closely adjuster monitors reserves. Showing reserves 60 days prior to trial and then at trial would indicate. (Characteristic is "Completing All Required Procedures." 2 data items required.)</p>	<p>Remarks screen in Claims Admin. gives limited information. (Count as 0 data items available.)</p> <p>Reserve history is in Claims Trans. but is not presented in the manner required. (2 data items available.)</p>

<u>Act. No.</u>	<u>Activity</u>	<u>How Efficiency Measured</u>	<u>Availability of Information</u>
3.9	Investigate Claims	Following correct procedure for type of claim. Requires knowing what procedures were followed. (Classification is "Completing all required procedures.")	Remarks screen in Claims Admin. describes what adjuster says he did. A more sophisticated approach was suggested by the user. He wanted a laptop computer with instructions to the adjuster in decision tree format. This system would also log what adjuster actually did. This suggested use of an expert system. (Information is text format. Classify as 0 data elements available.)
3.10	Evaluate Claims	Time expended. (Classification is "Time Expended to Perform Activity." 1 data item is required.)	Time Accounting had time expended but not currently summarized by adjuster. (Information is available in computer files but not in format required. Count as 1 data item available.)



<u>Act. No.</u>	<u>Activity</u>	<u>How Efficiency Measured</u>	<u>Availability of Information</u>
		Use of automated tools: E-mail, on-line ordering of Motor Vehicle Reports, STAX, TRCL, SAGE. (Classification is "Use of Automated Tools." 5 data items are required.)	The systems have users of this information recorded. But is not summarized for management. (0 data items are available.)
3.11	Negotiate Settlements	Not of concern to management.	
3.12	Report to Customer	Whether would have made report at this point in time. (Classification is "Completing All Required Procedures." Requires 2 data items to indicate whether report was required and whether actually made.)	Copy of letter is in claims file but there is no automated record except Remarks screen in Claims Admin. system. Imaging of the claims file would provide automated record. (Record as 0 data items available.)
3.20	Process Payments	Whether bills are paid promptly. (Classification is "Promptness in Performing Activity." 2 data items are required: date bill was received and date bill was set up on computer.)	Date bill set up on computer is available, but not date received. (Information is available in computer records. 1 data item available.)

<u>Act. No.</u>	<u>Activity</u>	<u>How Efficiency Measured</u>	<u>Availability of Information</u>
3.21	Approve Claims Payments	Whether bills stack up at adjuster's desk. (Classification is "Promptness in Performing Activity." 2 data items are required: date bill was received and date it was set up on the computer.)	System shows date payments recorded on system then date check issued but not a comparison of the two. (2 data items are available.)
3.25	Handle Salvage/ Subrogation	None	
3.28	Notify Customer of Possible Excess Expos.	Not an issue to management.	
3.30	Service Claimant Inquiries and Requests	Not applicable. This Activity indicates how efficiently Activities 3.11 and 3.12 were performed	
8.4	Develop Proposals	Whether able to do in timely manner. (Classification is "Promptness in Performing Activity." Requires 2 data items: dates proposal started and completed.)	Dates available in manual records but not used. Not automated. (0 data items available.)

<u>Act. No.</u>	<u>Activity</u>	<u>How Efficiency Measured</u>	<u>Availability of Information</u>
8.5	Give Proposal Presentations	Amount of travel expenses. (Classification is "Amount of Money Expended." Requires 2 data items: amount of money and customer.)	Time Accounting has expenses for adjusters but not for marketing personnel. General ledger allows breaking down travel expenses by customer but is not used for this. (1 data item available.)
8.6	Develop Contracts	Not an issue to management.	Having to share PC with others could cause inefficiency.  Not noted by interviewee is possibility of speeding up review by management and by Legal department. Workgroup computing is a possible tool.
15.1	Establish Account	Promptness. Need to know when information comes in and when set up. Should take about 5 days. (Classification is "Promptness in Performing Activity." 2 data items are required.)	See 1.2.

<u>Act. No.</u>	<u>Activity</u>	<u>How Efficiency Measured</u>	<u>Availability of Information</u>
15.2	Update Contract Data Base	See 15.1.	
15.3	Maintain Contract Records	See 15.1.	
16.1	Review Contracts	How soon contract is received back from Legal Dept. (Classification is "Promptness in Performing Activity." 2 data items are required: date sent and date returned.)	No information is available. (0 data items are available.)
17.19	Keep Time	Time expended keeping record. (Classification is "Time Expended Performing Activity." Requires 1 data item.)	On Time Accounting system but no automated analysis is provided. (1 data item is available.)

APPENDIX G  
SUMMARY OF EFFECTIVENESS INFORMATION NEEDS

## Summary of Effectiveness Information Needs

Note: Comments in parentheses are researcher's analysis of the data.)

<u>Act. No.</u>	<u>Activity</u>	<u>How Effectiveness Measured</u>	<u>Availability of Information</u>
1.2	Maintain Billing Records	Accuracy. Need to know number and severity of errors. (Characteristic is "Accuracy of Information Developed. Requires 2 data items: 1 for number of errors and 1 for severity of errors.)	Is available when reviewed, but there is no automated record. (0 data items available.)
		Customer feedback is also a measure. (Characteristic is "Customer Feedback. Requires 1 data item to indicate whether feedback was positive or negative.	(Information not available. 0 data items available.)
1.3	Calculate Amounts to be billed	Same as 1.2.	Same as 1.2.
1.4	Prepare Billing Statements	Same as 1.2.	Same as 1.2.
1.6	Collect Amounts Due	Whether there is follow up on amounts due follow up on amounts due. (Characteristic is "Conformity to Requirements." Requires 2 data items: date due and date followed up.)	Proposed billing system would contain this information. Available now only if supervisor goes through records. Exists in manual records but not in usable format.

<u>Act. No.</u>	<u>Activity</u>	<u>How Effectiveness Measured</u>	<u>Availability of Information</u>
1.19	Reconcile Bank Account	Whether reports balance to list of payments.	None needed. Is self-evident.
1.20	Review/Transmit Transaction Report	Whether reports are complete and accurate.	Can only be determined by inspection or customer feedback. Currently, not an issue since done by supervisor.
1.21	Establish Bank Account	Whether banking arrangements conform to customer requirements.	Same situation as 1.20.
2.20	Design and Code Mainframe Programs	Whether information correctly transferred. An indicator is hours required. An excessive number would suggest had to redo the transfer. (Characteristic is "Time Expended to Perform Activity. Requires 1 data item.)	Required time is on Project Management Data Base. (1 data item is available.)
3.2	Negotiate with Plaintiff Atty	Billing as many hours as possible. Note: this will be true for all of the claims Activities except 3.20 & 3.30. (Characteristic is "Billing As Many Hours As Possible." Requires 2 data items: number of possible hours and number hours actually billed.)	Time Accounting System has hours billed. (1 data item available and 1 data item missing. In computer records but not in usable format.)

<u>Act. No.</u>	<u>Activity</u>	<u>How Effectiveness Measured</u>	<u>Availability of Information</u>
		<p>Whether sound procedures were followed. This is determined by a team that audits claims files. (Characteristic is "Completing All required Procedures." Requires 1 data item to indicate "yes" or "no.")</p>	<p>There will be some information on-line in the Remarks screen of Claims Admin. This will show the adjuster's and supervisor's remarks. Also see the laptop computer system discussed for efficiency in Activity 3.9. (Information available in text format. Treat as 1 data item missing.)</p>
3.9	Investigate Claims	<p>See 3.2.</p> <p>Use of proper sources to support evaluation. Could use some surrogate measures assuming they reflect efficiency: case loads, number of cases settled within adjuster's authority, rate adjuster is finishing cases, number in trial. (Characteristic "Completing All Required Procedures." 5 data items are required.)</p>	<p>Report shows case loads, closings, assignments. Does not show over time. Does not show whether within authority nor number of cases that went to court. May be able to link to Litigation Mgmt. system for court info. (Information is available but not in usable format. Thus, only the 1 data item "case loads" is available.)</p>
3.10	Evaluate Claims	None	



<u>Act. No.</u>	<u>Activity</u>	<u>How Effectiveness Measured</u>	<u>Availability of Information</u>
3.11	Negotiate Settlements	Whether attorney was involved. requires finding if proper steps taken to preclude involvement: projecting atty's involvement by type of claim, analysis of attorney's strategy, documentation on offers and demands, promptness in paying bills, promptness in contacting claimant. (Characteristic is "Completing All Required Procedures. Requires 5 data items.)	Remarks screen provides some indication of steps taken. Claims Admin. had indicator for atty involvement. Activity 3.32 will indicate if communications with claimant are satisfactory. The other information is not available. (Information does not exist.)
3.12	Report to Customer	Whether further inquiries or complaints. See Activity 3.30. (Characteristic is "Impact on Other Activities." Requires 1 data item to indicate feedback favorable or unfavorable.)	Information is available only if adjuster logs it on Remarks screen. (Information is available in text format. Count as 0 data items available.)
3.20	Process Payments	Accuracy in recording payment information such as amount and payee address. (Characteristic is "Accuracy." 2 data items required.)	None are automated. (Information exists in manual records but not in usable format. 0 data items available.)

<u>Act. No.</u>	<u>Activity</u>	<u>How Effectiveness Measured</u>	<u>Availability of Information</u>
3.21	Approve Claims Payment	Whether sound procedures followed. (Characteristic is "Completing All Required Procedures." 1 data item required. See 3.2)	See 3.2 for comments on "sound procedures." (Information is available in text format. Count as 0 data items available.)
3.25	Handle Salvage/ Subrogation	Amount of recoveries. (Characteristic is "Completing All Required Procedures." 2 data items required.)  Timeliness in notifying the 3rd party. (Characteristic is "Promptness in Performing Activity." Requires 2 data items: date of claim and date 3rd party notified.)	Claims Admin. system has indicator for potential subrogation. It also records the amount recovered. (2 data items are available.)  May possibly be recorded on the Remarks screen. (Information is available in text format. Count as 0 data items available.)
3.28	Notify Customer of Possible Excess Expos.	Whether done timely. (Characteristic is "Promptness in Performing Activity." Requires 2 data items: date exposure became excessive and date customer was informed.)	Possibly recorded on the Remarks screen. (Information is available in text format. Count as 0 data items available.)

<u>Act. No.</u>	<u>Activity</u>	<u>How Effectiveness Measured</u>	<u>Availability of Information</u>
3.30	Service Claimant Inquiries and Requests	This Activity is a measure of the effectiveness of Activities such as 3.32.	Not applicable.
8.4	Develop Proposals	Whether presents capabilities to potential customer. (Characteristic is "Completeness of Information." 1 data item required to indicate whether complete or incomplete.)  Whether proposal is accepted. (Characteristic is "Customer Feedback." 1 data item required to indicate whether accepted or not.)	Marketing Information System will permit recording in free-form text. (Count as 0 data items available.)  (Information available in manual records but not in usable format. Count as 0 data items available.)
8.5	Give Proposal Presentations	See 8.4.	Same as 8.4.
8.6	Develop Contracts	Not an issue to management.	
15.1	Establish Account	Accuracy. (Characteristic Is "Accuracy of Information Developed." See next column for estimate.)	Edit reject lists tell accuracy of some items, but not items such as incorrect rates. (Information partly available in computer records. Estimate as 1/2 data of items are available.)

<u>Act. No.</u>	<u>Activity</u>	<u>How Effectiveness Measured</u>	<u>Availability of Information</u>
15.2	Update Contract Data Base	See 15.1.	
15.3	Maintain Contract Records	See 15.1.	
16.1	Review Contracts	Not an issue to management.	
17.19	Keep Time Records	Whether all time recorded. (Characteristic is "Completeness of Information." 2 data items required: time available and time actually recorded.)	Time Accounting does not permit recording the time not spent on a specific claim. Yet, Co. could be contracted to audit a claims operation. (All items exist in computer records but not in usable format. 1 data item available.)

**APPENDIX H**  
**MONTHLY ACTIVITY COST EXAMPLE: CLAIMS DEPARTMENT**

Table 16--Estimated Monthly Salaries for Claims Activities

<u>Activ.</u>	Manager (1)	Adjuster (2)	Clerk (3)	Total (4)
2.18	11,860			11,860
3.2		55,919		55,919
3.3		55,919		55,919
3.6		27,960		27,960
3.9		139,798		139,798
3.10	11,860	27,960		39,820
3.11		55,919		55,919
3.12		27,960		27,960
3.13	11,860			11,860
3.14	11,860	27,960		39,820
3.20			8,350	8,350
3.21		27,960		27,960
3.22			8,350	8,350
3.26			8,350	8,350
3.27			8,350	8,350
3.30		27,960	8,350	36,310
4.1			8,350	8,350
4.2			8,350	8,350
4.3			8,350	8,350
4.4			8,350	8,350
4.5			8,350	8,350
4.6			8,350	8,350
4.11			8,350	8,350
4.13			8,350	8,350
4.15			8,350	8,350
7.1	11,860			11,860
7.2	11,860			11,860
7.3	23,720			23,720
7.4	11,860			11,860
7.6	23,720			23,720
7.8	11,860			11,860
7.12	47,439			47,439
9.1			8,350	8,350
9.2			8,350	8,350
9.3			8,350	8,350
9.4			16,701	16,701
11.9			8,358	8,358
17.6	11,860			11,860
17.8	11,860	27,960		39,820
17.14	11,860			11,860
17.19		27,960		27,960
17.20	11,858	27,955		39,813
Totals	237,197	559,190	167,009	963,396

(1) - (3) Columns (1) through (3) based on monthly salaries per payroll run. Allocated to Activities based on percentage provided by a manager.

(4) Sum of columns (1), (2), and (3).

Table 17--Monthly Resources Applicable to Claims Activities

Act. No.	Unalloc. Exp. (1)	Equip/ Office (2)	Travel (3)	Supplies/ Postage (4)	Teleph. (5)	Total (6)
2.18		3,732				3,732
3.2		7,464	10,820	3,086	7,684	29,054
3.3		7,464	10,820	3,086	7,684	29,054
3.6		3,732				3,732
3.9	24,363	18,661	27,051	7,715	19,210	97,000
3.10	9,745	7,464				17,209
3.11	9,745	7,464	10,820	3,086	7,684	38,799
3.12	4,872	3,732		3,086	3,842	15,532
3.13		3,732				3,732
3.14		3,732				3,732
3.20		3,732		1,543		5,275
3.21		3,732				3,732
3.22	4,872	3,732		1,543		10,147
3.26		3,732		1,543		5,275
3.27		3,732				3,732
3.30		7,464			7,684	15,148
4.1		3,732				3,732
4.2		3,732				3,732
4.3		3,732				3,732
4.4		3,732		1,543		5,275
4.5		3,732				3,732
4.6		3,732				3,732
4.11		3,732				3,732
4.13		3,732		1,543		5,275
4.15		3,732		1,543		5,275
7.1		3,732	5,410			9,142
7.2		3,732				3,732
7.3		7,464				7,464
7.4		3,732		1,543		5,275
7.6		7,464		3,086		10,550
7.8		3,732				3,732
7.12		14,929				14,929
9.1		3,732		1,543		5,275
9.2		3,732			3,842	7,574
9.3		3,732		1,543		5,275
9.4		7,464		3,086		10,550
11.9		3,732				3,732
17.6		3,732	5,412			9,144
17.8		7,464				7,464
17.14		3,732				3,732
17.19	4,875	3,732		1,543		10,150
17.20		7,476			7,685	15,161
Totals	58,472	220,202	70,333	41,661	65,315	455,983

- (1) - (5) Numbers come from average of 7 months expense per budget report. Numbers allocated to Activities as follows:
- (a) Former Claims manager picked Activities to which expense applied.
  - (b) Of those, expenses allocated to Activities that had salary dollars in table 18. Allocation was based on the ratio of the Activity's percent of salary to total percentage of salaries represented by the column. Percentages were those used in table 18.
- (6) Total of columns (1) through (5).



Table 18--Summary of Monthly Claims Activity Costs

Activity	Personnel (1)	Non-Personnel (2)	Activity Total (3)
2.18	11,860	3,732	15,592
3.2	55,919	29,054	84,973
3.3	55,919	29,054	84,973
3.6	27,960	3,732	31,692
3.9	139,798	97,000	236,798
3.10	39,820	17,209	57,029
3.11	55,919	38,799	94,718
3.12	27,960	15,532	43,492
3.13	11,860	3,732	15,592
3.14	39,820	3,732	43,552
3.20	8,350	5,275	13,625
3.21	27,960	3,732	31,692
3.22	8,350	10,147	18,497
3.26	8,350	5,275	13,625
3.27	8,350	3,732	12,082
3.30	36,310	15,148	51,458
4.1	8,350	3,732	12,082
4.2	8,350	3,732	12,082
4.3	8,350	3,732	12,082
4.4	8,350	5,275	13,625
4.5	8,350	3,732	12,082
4.6	8,350	3,732	12,082
4.11	8,350	3,732	12,082
4.13	8,350	5,275	13,625
4.15	8,350	5,275	13,625
7.1	11,860	9,142	21,002
7.2	11,860	3,732	15,592
7.3	23,720	7,464	31,184
7.4	11,860	5,275	17,135
7.6	23,720	10,550	34,270
7.8	11,860	3,732	15,592
7.12	47,439	14,929	62,368
9.1	8,350	5,275	13,625
9.2	8,350	7,574	15,924
9.3	8,350	5,275	13,625
9.4	16,701	10,550	27,251
11.9	8,358	3,732	12,090
17.6	11,860	9,144	21,004
17.8	39,820	7,464	47,284
17.14	11,860	3,732	15,592
17.19	27,960	10,150	38,110
17.20	39,813	15,161	54,974
Totals	963,396	455,983	1,419,379

(1) From table 18.

(2) From table 19.

(3) Sum of column (1) and column (2).

**APPENDIX I**  
**COST DRIVERS FOR ACTIVITIES IN THE CLAIMS PROCESS**

## Cost Drivers for Activities in the Claims Process

<u>Act. No.</u>	<u>Activity</u>	<u>Cost Driver</u>
1.2	Maintain Billing Records	Number of accounts
1.3	Calculate Amounts to Be Billed	<ol style="list-style-type: none"> <li>1. Whether special reports are necessary to calculate bill</li> <li>2. Whether sales tax is involved</li> </ol>
1.4	Prepare Billing Statements	Number of accounts
1.6	Collect Amounts Due	<ol style="list-style-type: none"> <li>1. Special arrangements the customer wants</li> <li>2. Need for diplomacy on past due amounts</li> </ol>
1.19	Reconcile Bank Account	<ol style="list-style-type: none"> <li>1. Number of checks that will clear during month</li> <li>2. How customer will want to fund the account</li> <li>3. Whether using customer's check stock--requires more internal controls</li> <li>4. Whether customer wants checks printed at his own office</li> <li>5. Whether there are limits on amounts that can be issued</li> <li>6. Changes needed to Claims Admin. System</li> </ol>
1.20	Review/Transmit Transaction Report	<ol style="list-style-type: none"> <li>1. What customer needs in reports</li> <li>2. How closely need to monitor accuracy of data extracted from claims system</li> <li>3. Whether special reports needed at year-end</li> </ol>
1.21	Establish Bank Account	<ol style="list-style-type: none"> <li>1. Whether familiar with bank</li> <li>2. Level of service customer wants</li> <li>3. Effort needed for IRM to set up account</li> </ol>

<u>Act. No.</u>	<u>Activity</u>	<u>Cost Driver</u>
2.20	Design and Code Mainframe Programs	<ol style="list-style-type: none"> <li>1. Format required by customer</li> <li>2. Complexity of program logic</li> <li>3. Changes in requirements</li> <li>4. Whether can use standard reports</li> <li>5. Whether any problems balancing to customer's data</li> </ol>
3.2	Negotiate with Plaintiff Atty	<ol style="list-style-type: none"> <li>1. Severity of claim</li> <li>2. Amount of policy limits</li> <li>3. Who the attorneys are and how they operate</li> <li>4. What county trial is in</li> </ol>
3.9	Investigate Claims	<ol style="list-style-type: none"> <li>1. Severity of claim</li> <li>2. Number of people involved</li> <li>3. Whether there was property damage</li> <li>4. Amount of home office reporting required</li> </ol>
3.10	Evaluate Claims	None
3.11	Negotiate Settlements	<ol style="list-style-type: none"> <li>1. Severity of claim</li> <li>2. Size of policy limits</li> </ol>
3.12	Report to Customer	<ol style="list-style-type: none"> <li>1. Same as 3.12 and 3.9</li> <li>2. Requirements of client</li> </ol>
3.20	Process Payments	<ol style="list-style-type: none"> <li>1. Number of bills</li> </ol>
3.21	Approve Claims Payments	<ol style="list-style-type: none"> <li>1. Number of bills</li> <li>2. Size of bills</li> </ol>
3.25	Handle Salvage/ Subrogation	None
3.28	Notify Customer of Possible Excess Expos.	None

<u>Act. No.</u>	<u>Activity</u>	<u>Cost Driver</u>
3.30	Service Claimant Inquiries and Requests	Number of inquiries
8.4	Develop Proposals	<ol style="list-style-type: none"> <li>1. Whether can use generic forms on PC</li> <li>2. Determining whether company can provide proposed service</li> <li>3. Determining price</li> <li>4. Having to borrow another department's desktop publishing facilities</li> <li>5. Lack of user instructions for application systems</li> </ol>
8.5	Give Proposal Presentations	<ol style="list-style-type: none"> <li>1. Whether customer is in public or private sector</li> </ol>
8.6	Develop Contracts	<ol style="list-style-type: none"> <li>1. Changes in wording required by customer</li> <li>2. Changes required by Legal Dept.</li> <li>3. Having to borrow another department's desktop publishing facilities</li> </ol>
15.1	Establish Account	Number of accounts
15.2	Update Contract Data Base	Number of accounts
15.3	Maintain Contract Records	Number of accounts
16.1	Review Contracts	Number of accounts
17.19	Keep Time Records	Number of entries

APPENDIX J

MONTHLY ACTIVITY COSTS: IRM DEPARTMENT

Table 19--Monthly Activity Costs for IRM Operations

	<u>Activity</u>	<u>Personnel</u>	<u>Non- Personnel</u>	<u>Activity Total</u>
1.1	Approve Bills	\$ 413	\$ 106	\$ 519
3.1	Plan Computer Capacity	413	106	519
3.2	Control Data Files	1,240	318	1,558
3.3	Install Voice Networks	1,654	422	2,076
3.4	Design Voice Networks	1,654	422	2,076
3.5	Implement Voice Networks	1,654	422	2,076
3.6	Maintain Voice Networks	1,654	11,642	13,296
3.7	Install Data Networks	1,654	422	2,076
3.8	Design Data Networks	1,654	422	2,076
3.9	Implement Data Networks	1,654	422	2,076
3.10	Maintain Data Networks	1,654	11,642	13,296
3.11	Maintain Database Struct.	1,240	318	1,558
3.12	Install Mainfr. Hardware	3,721	952	4,673
3.13	Install Mainfr. Software	1,240	318	1,558
3.14	Support Mainfr. Sys. Softw.	2,894	740	3,634
3.15	Setup Mainfr. Production	3,721	952	4,673
3.16	Schedule Mainfr. Prod.	7,442	1,902	9,344
3.17	Run Mainfr. Production	7,442	64,431	71,873
3.18	Maintain Tape Library	3,721	952	4,673
3.19	Distrib. Computer Output	7,442	1,902	9,344
3.20	Assist Mainfr. Users	3,722	952	4,674
3.21	Operate Help Desk	1,654	422	2,076
8.1	Supervise Employees	1,240	318	1,558
8.2	Supervise Workload	1,240	318	1,558
8.3	Handle Employee Problems	413	106	519
8.4	Prepare Empl. Evaluations	413	106	519
8.6	Prepare Management Reports	413	106	519
8.7	Prepare Production Reports	413	106	519
8.11	Superv. Indep. Contractor	413	106	519
8.12	Develop Future Plans	413	106	519
10.2	Operate Switchboard	1,652	422	2,074
10.8	Interface with Vendors	827	212	1,039
10.10	Negotiate Contracts	413	106	519
15.3	Secure Computer Data	827	212	1,039
19.6	Attend Industry Meetings	413	106	519
19.14	Serve on Committees	413	106	519
19.15	Research Tech. Material	829	212	1,041
19.17	Perform Special Projects	419	107	526
	Totals	\$70,288	\$102,942	\$173,230

Table 20--Monthly Activity Costs for IRM Systems  
and Programming

<u>Activity</u>	<u>Personnel</u>	<u>Non- Personnel</u>	<u>Activity Total</u>
1.1 Approve Bills	\$ 744	\$ 110	\$ 854
2.18 Evaluate Mainfr. Softw.	2,726	403	3,129
2.19 Design Mainfr. Systems	6,693	990	7,683
2.20 Design/Code Mainfr. Prog.	25,285	3,739	29,024
2.21 Test Mainfr. Systems	12,891	1,906	14,797
2.22 Doc./Install Mainfr. Sys.	10,412	1,540	11,952
2.23 Modify Design	5,454	806	6,260
2.24 Maintain Programs	36,440	5,388	41,828
2.25 Manage/Coord. Projects	3,470	513	3,983
2.26 Document Procedures	1,239	183	1,422
2.27 Perform Research	1,239	183	1,422
2.28 Develop Procedures	1,239	183	1,422
2.29 Support Procedures	1,239	183	1,422
2.30 Provide User Assistance	2,726	403	3,129
8.1 Supervise Employees	2,975	440	3,415
8.2 Supervise Workload	2,231	330	2,561
8.4 Prepare Empl. Evaluations	744	110	854
8.6 Prepare Management Reports	744	110	854
8.12 Develop Future Plans	744	110	854
10.8 Interface with Vendors	744	110	854
14.3 Monitor Regulations	1,239	183	1,422
16.2 Develop Training Materials	2,726	403	3,129
16.5 Train Employees on Job	2,231	330	2,561
16.6 Teach Classes	2,726	403	3,129
16.8 Train System Users	2,726	403	3,129
19.1 Support Auditors	6,443	953	7,396
19.4 Service Customer Inquiries	2,733	404	3,137
19.6 Attend Industry Meetings	744	110	854
19.8 Attend Company Meetings	744	110	854
19.14 Serve on Committees	744	110	854
19.15 Research Tech. Material	740	111	851
Totals	\$143,775	\$21,260	\$165,035



**APPENDIX K**

**ACTIVITY EFFORT WORKSHEETS: IRM DEPARTMENT**

Activities Effort Worksheet  
IRM Computer Operations

	<u>Nbr.</u> <u>People</u>	<u>% of Dept.</u> <u>Hours</u>
<u>Technical Support</u>	3	
Support All Mainframe Operating Systems and Communications Software		15
Disk Management		10
Disaster Recovery Planning		
<u>Computer Operations</u>	5	35
Operate Computer and Related Devices		
Production Control		
<u>Data Network Support</u>	2	
Perform Planning, Installation, and Support of Data Network		5
Maintain Terminal Equipment		5
<u>Voice Network Support</u>	2	
Provide Coordination in the Analysis, Acquisition, and Installation of Hardware and Software		5
Interface with Internal and External Customers and Vendors to Determine Needs		5
<u>Help Desk</u>	2	
Report and Track All Hardware, Software, Telephone, and Data Communication Problems		5
Maintain Personal Computer Hardware		5
<u>Forms Composition</u>	2	
Design, Develop, and Maintain Laser Form Library		5
Coordinate Data Entry Input and Output to Service Bureau		5

Activities Effort Worksheet  
IRM Systems and Programming

<u>For Claims Service Company</u>	<u>Nbr. People</u>	<u>% of Dept. Hours</u>
Maintenance and Enhancement to Financial Related Computer Systems	3	13
Maintenance and Enhancement to Claims Related Computer Systems	8	35
Maintenance and Enhancement to Commercial Policy Issue System	2	8
Maintenance and Enhancement to Misc. Computer Systems	1 1/2	7
<u>For Commercial Insurance Company</u>		
Maintenance and Enhancement to Financial Related Computer Systems	2	8
Maintenance and Enhancement to Accounts Receivable, Accounts Payable, and Marketing Systems	2	9
Maintenance and Enhancement to Misc. Computer Systems	1/2	3
<u>For Insurance Agency</u>		
Maintenance and Enhancement to Personal Lines Policy Issue System	1	5
Maintenance and Enhancement to Direct Bill and Production System	2	8
<u>For Company in Receivership</u>		
Write Special Programs as Requested	1	4

Activities Effort Worksheet  
IRM Systems and Programming  
Breakdown of Claims Activity

Activity: Maintenance & Enhancements to Claims Related  
Mainframe Systems

Percent of 35  
Payroll

<u>System</u>	<u>User</u>
WC Claims Administration System	Claims, Insureds, Engineering, Clients
Non-WC Claims Administration System	Claims, Insureds, Engineering, Clients
Risk Management Information System Reports	Claims, Insureds, claims service subsidiary
Claims Financial History Data On-Line	Claims, Accounting Insured, Engineering
Claims Exchange Data	Insureds, Third Party Administrators
WC Deductible Policy Billings	Customer Services
Reinsurance Recoverable Reports	Accounting
Reinsurance Master Contracts On-Line	Claims, Accounting
General Liability Policy Aggregate Loss Reports	Claims, Accounting
Payee System	Claims, Accounting, IRS
Claims Litigation System	Claims
WC Claims Cost Containment Forms and Checks	Claims, Texas Workers Compensation Commission

<u>System</u>	<u>User</u>
WC Detail Claims Reporting	Claims, Texas Workers Compensation Commission
Adjuster Production Reports	Claims
Reports Used for Adjuster Billings	Customer Service Claims

**APPENDIX L**  
**INFORMATION RESOURCES USED IN THE CLAIMS PROCESS**

## Information Resources Used in the Process

<u>Act. No.</u>	<u>Activity</u>	<u>IRM Component</u>	<u>Also Used Outside Process?</u>
1.2	Maintain Billing	Customer Service: PC, LOTUS, WordPerfect Time Accounting E-mail Diary	Yes
		Accounting: None	N/A
1.3	Calculate Amounts	Customer Service: Same as 1.2	
		Accounting: Lists of Paid Losses	No
1.4	Prepare Billing Statements	Same as 1.3	
1.6	Collect Amounts Due	Customer Service: E-mail	Yes
		Accounting: Deposit Lists	
1.19	Reconcile Bank Account	Reconciliation System General Ledger	Yes
1.20	Review/Transmit Transaction Report	Paid Loss Listings	No
1.21	Establish Bank Account	Laser Printer	N/A
2.20	Design and Code Mainframe Programs	Programmer, EASYTRIEVE Report Writer	Yes
3.2	Negotiate with Plaintiff Atty	Litigation Management System	No
		Payments Files	Yes
		Claims Admin.	Limited
		E-mail	Yes

<u>Act. No.</u>	<u>Activity</u>	<u>IRM Component</u>	<u>Also Used Outside Process?</u>
3.9	Investigate Claims	Claims Admin.	Limited
		Litigation Management System	No
		E-mail	Yes
		Claims Status	Yes
		Claims Transactions	Yes
3.10	Evaluate Claims	Claims Admin.	Limited
		E-mail	Yes
3.11	Negotiate Settlements	Claims Admin.	Limited
		E-mail	Yes
3.12	Report to Customer	Claims Admin.	Limited
		E-mail	Yes
3.20	Process Payments	Claims Admin.	Limited
3.21	Approve Claims Payments	Claims Admin.	Limited
3.25	Handle Salvage/ Subrogation	Claims Admin.	Limited
3.28	Notify Customer of Possible Excess Exposures	Claims Admin.	Limited
		Paid Loss Runs	No
3.30	Service Claimant Inquiries and Requests	Claims Admin.	Limited
8.3.	Develop Proposals	PC, WordPerfect, PageMaker, Laser Printer	Yes
8.4	Give Sales Presentations	Marketing Information System	Yes



<u>Act. No.</u>	<u>Activity</u>	<u>IRM Component</u>	<u>Also Used Outside Process?</u>
8.5	Develop Contracts	Same as 8.3	Yes
15.1	Establish Account	Contract Data Base	Yes
		Claims Coverages	Yes
		Contract Rates	Yes
15.2	Update Contract Data Base	Same as 15.1	
15.3	Maintain Contract Records	Same as 15.1	
16.1	Review Contracts	None	
17.19	Keep Time Records	Time Accounting	Yes

**APPENDIX M**  
**SUMMARY OF SHARABLE INFORMATION RESOURCES**

## Summary of Sharable Information Resources

<u>Act. No.</u>	<u>Activity</u>	<u>Customer Activities</u>	<u>Information Resources To Share</u>
1.2	Maintain Billing Records	Estimate potential claims amounts and set aside funds	None. Provides information for Activity 1.6.
1.3	Calculate Amounts to Be Billed	Same as 1.2.	Same as 1.2.
1.4	Prepare Billing Statements	Same as 1.2.	Same as 1.2.
1.6	Collect Amounts Due	Trivial. Customer reviews bill. Support provided by 1.2, 1.3, and 1.4.	Trivial case. Purpose of Activity is to share info. with customer.
1.19	Reconcile Bank Account	Balance in bank account and amount needed to cover claims payments.	None. Provides information for Activity 1.20.
1.20	Review/Transmit Transaction Report	See 1.19.	Trivial case. Purpose of Activity is to share info. with customer.
1.21	Establish Bank Account	Trivial case. Customer has paid to have this Activity done.	None.
2.20	Design and Code Mainframe Programs	Trivial. Relates to tape exchanges. Customer has paid to have this Activity done.	Trivial case. Purpose of Activity is to share info. with customer.

<u>Act. No.</u>	<u>Activity</u>	<u>Customer Activities</u>	<u>Information Resources To Share</u>
3.2	Negotiate with Plaintiff Atty	Reserving amounts for payment of claims. Reviewing handling of case by the Company.	Litigation Mgmt. System provides info. about case and attorneys involved. Legal payments are on sequential file and can be tied to claim and attorney. Will show how atty's fees for type of case compares to other fees of other attorneys. This corresponds to the RMIS facility "Litigation Management." Claims Admin. will show amount to reserve to pay the claim. This corresponds to the RMIS facility "Claims Tracking." Time Acctg. will give history of reserves for the claim. Can be compared to amounts reserved at trial and to final payment to determine how well adjuster is watching reserves. This corresponds to the RMIS facility "Claims Administration."

<u>Act. No.</u>	<u>Activity</u>	<u>Customer Activities</u>	<u>Information Resources To Share</u>
3.9	Investigate Claims	Obtaining details of claims to report to management.	Remarks screen in Claims Admin. tells what found during investigation: accident nature, witnesses, potential 3rd parties. Act. 3.12 provides this info. but on-line access would provide more quickly. This corresponds to the RMIS facility "Claims Tracking."
		Analysis of accidents in order to allocate losses to departments and to evaluate safety.	Engineering reports give type accident, severity, location, etc. This corresponds to the RMIS facility "Analysis and Control of Accidents."
			The information about accident location also permits the customer to charge the claim to the proper division. This corresponds to the RMIS facility "Cost of Risk Allocation."

<u>Act. No.</u>	<u>Activity</u>	<u>Customer Activities</u>	<u>Information Resources To Share</u>
3.10	Evaluate Claims	Reserving amounts for payments.	<p>Current reserved amount is on line. More descriptive information is available if adjuster uses Remarks screen in Claims Admin. Also see Act. 3.12 which provides this information. This corresponds to the RMIS facility "Claims Tracking."</p> <p>The history of loss reserves also allows customers to forecast losses. This corresponds to the RMIS facility "Loss Forecasting."</p>
3.11	Negotiate settlements with Claimant	Knowing how well case is being handled in order to keep claimant (an employee) satisfied and to avoid court in order to keep costs down.	Adjuster's notes on the Claims Admin. Remarks Screen. This corresponds to the RMIS facility "Claims Tracking."
3.12	Report to Customer	Monitoring status of claim.	Trivial case. Purpose of Activity is to share info. with customer.

<u>Act. No.</u>	<u>Activity</u>	<u>Customer Activities</u>	<u>Information Resources To Share</u>
3.20	Process Payments	Needs current payments and bank balance in order to manage bank account.	<p>Payment info. is on-line in Claims Admin. system. But 1.19 and 1.20 provide this information in written report. This corresponds to the RMIS facilities "Claims Tracking" and "Claims Administration."</p> <p>The history of payments permits the customer to forecast losses. This corresponds to the RMIS facility "Loss Forecasting."</p> <p>History of payments for attorney fees permits the customer to monitor legal expenses. This corresponds to the RMIS facility "Litigation Management."</p>
3.21	Approve Claims Payments	Whether payments are justified.	Claims Admin. system has on-line info. about claim including prior payments and adjuster comments on Remarks screen.

<u>Act. No.</u>	<u>Activity</u>	<u>Customer Activities</u>	<u>Information Resources To Share</u>
			This corresponds to the RMIS facility "Claims Tracking."
3.25	Handle Salvage/ Subrogation	Whether there is potential for recovery from a 3rd party.	Claims Admin. system has indicator for potential subrogation. This corresponds to the RMIS facility "Claims Tracking."
3.28	Notify Customer of Possible Excess Expos.	Must notify his insurance carrier of potential loss in excess of the policy limits.	Purpose of this Activity is to provide this information. But this is based on the adjuster's judgement. Customer can assess loss potential using the information described by Activities 3.2, 3.9, 3.10, 3.11, and 3.12.
3.30	Service Claimant Inquiries and Requests	Determine status of claim and any actions customer must take.	Trivial case. Information is directly requested by customer.
8.4	Develop proposals	Determine whether to do business with the Company. Activity.	None. Provides information to support 8.5.



<u>Act. No.</u>	<u>Activity</u>	<u>Customer Activities</u>	<u>Information Resources To Share</u>
8.5	Give proposal presentations	See 8.4.	Trivial case. Purpose of Activity is to share info. with customer.
8.6	Develop Contracts	Determine terms of agreement with the Company.	Trivial case. Purpose of Activity is to share info. with customer.
15.1	Establish Account	None. This is part of responding to the contract the customer has signed. It will lead to billing the customer.	None. Supports sharing of information about billing, Activity 1.4.
15.2	Update Contract Data Base	See 15.1.	Same as 15.1.
15.3	Maintain Contract Records	See 15.1.	Same as 15.1.
16.1	Review Contracts	None. This is for use by the Company.	None.
17.19	Keep Time Records	Reviews bill from company to verify that charges are justified.	Time Accounting breakdowns of adjuster time and expense info. This corresponds to the RMIS facility "Claims Tracking."

APPENDIX N  
ORGANIZATIONAL STRUCTURAL PARAMETERS

Organizational Structural Parameters  
Centralization: Summary of Key Decisions

<u>Act. No.</u>	<u>Activity</u>	<u>Key Decisions</u>	<u>Is Decision Centralized?</u>
1.2	Maintain Billing Records	None: Clerical task.	Not applicable
1.3	Calculate Amounts to Be Billed	Amounts to charge. Decided by Marketing Dept.	No
1.4	Prepare Billing Statements	None. Clerical operation.	Not applicable
1.6	Collect Amounts	Whether to charge off. Made at various levels depending on amount.	Yes
1.19	Reconcile Bank Account	None. Clerical task.	Not applicable
1.20	Review/Transmit Transaction Report	None.	Not applicable
1.21	Establish Bank Account	Options for banking arrangements. Customer determines.	No
2.20	Design and Code Mainframe Programs (to exchange claims data with customer)	Which claims data and what format. Customer determines.	No
3.2	Negotiate with Attorney	Amount to settle for. Decided by different levels depending on amount.	Partially
3.9	Investigate Claims	How to proceed with the investigation. Is made by the adjuster.	No

<u>Act. No.</u>	<u>Activity</u>	<u>Key Decisions</u>	<u>Is Decision Centralized?</u>
3.10	Evaluate Claims	Amount to reserve for loss. Decided at different levels depending on amount.	No
3.11	Negotiate Settlements	Amount to offer. Decided at different levels depending on amount.	Partially
3.12	Report to Customer	When and what to report. Determined by adjuster based on departmental procedures and contract.	Yes
3.20	Process Payments	None. Is a clerical production task.	Not applicable
3.21	Approve Claims Payments	Whether to approve a bill for payment. Determined by adjuster.	No
3.25	Handle Salvage/ Subrogation	Whether to proceed against a third party. Determined by District Claims Manager or the customer.	Yes
3.28	Notify Customer of possible excess expos.	Whether to notify. Determined by adjuster when claim reaches predetermined limits.	No
3.30	Service Claimant Inquiries and Requests	None.	Not applicable
8.4	Prepare Proposals	Contents of proposal. Contributions come from different levels from several depts.	No

<u>Act. No.</u>	<u>Activity</u>	<u>Key Decisions</u>	<u>Is Decision Centralized?</u>
8.5	Give Proposal Presentations	To whom to give proposal. Decision made at all levels by various departments.	No
8.6	Develop Contracts	What services to include in contracts and their prices. Marketing representative determines what to include in contract with management approval. Pricing is determined by Actuarial department.	No
15.1	Establish Account	Whether to set up account. Determined by contract.	Yes
15.2	Update Contract Data Base	Same as 15.1	
15.3	Maintain Contract Records	Same as 15.1	
16.1	Review Contracts by Legal Dept.	None	
17.19	Keep Time	How to classify time expended. Decided by adjuster.	No

Organizational Structural Parameters  
Formalization  
Summary of Formal Procedures

<u>Act. No.</u>	<u>Activity</u>	<u>Description of Written Procedures</u>	<u>Are Procedures Formalized?</u>
1.2	Maintain Billing Records	None in Acctg. Dept. Cust. Service has	Partially
1.3	Calculate Amounts to be billed.	Is in contract. Cust. Service has some additional procedures.	Partially
1.4	Prepare Billing Statements	None in Acctg Dept. Cust. Service has some.	Partially
1.6	Collect Amounts Due	None in Acctg. Dept. Cust. Service has some.	Partially
1.19	Reconcile Bank Account	None	No
1.20	Review/Transmit Transaction Report	None	No
1.21	Establish Bank Account	None	No
2.20	Design and Code Mainframe Programs (to exchange claims data with customer)	None	No
3.2	Negotiate with Attorney	1. Claims Manual (under revision) 2. Screen in on-line claims system that has special instructions for the customer 3. Contract	Yes
3.9	Investigate Claims	Same as 3.12	

<u>Act. No.</u>	<u>Activity</u>	<u>Description of Written Procedures</u>	<u>Are Procedures Formalized?</u>
3.10	Evaluate Claims	Same as 3.12	
3.11	Negotiate Settlements	Same as 3.12	
3.12	Report to Customer	Same as 3.12	
3.20	Process Payments	Clerical Activity Guide	Yes
3.21	Approve Claims Payments	Authority levels specified in contract	Yes
3.25	Handle Salvage/ Subrogation	Claims Manual	Yes
3.28	Notify Customer of Possible Excess Expos.	None	No
3.30	Service Claimant Inquiries and Requests	None	No
8.4	Prepare Proposals	None	No
8.5	Give Proposal Presentations	None	No
8.6	Develop Contracts	None	No
15.1	Establish Account	Some written procedures	Partially
15.2	Update Contract Data Base	Same as 15.1	
15.3	Maintain Contract Records	Same as 15.1	
16.1	Review Contracts by Legal Dept.	None	No
17.19	Keep Time Records	None	No

Organizational Structural Parameters  
Cohesion  
Summary of Specialization of Tasks

<u>Act. No.</u>	<u>Activity</u>	<u>Positions Performing</u>	<u>Are Personnel Specialized?</u>
1.2	Maintain Billing Records	Accounting Director and Cust. Service clerks. Their work is organized by contract, not task	No
1.3	Calculate Amounts to Be Billed	Same as 1.2	
1.4	Prepare Billing Statements	Same as 1.2	
1.6	Collect Amounts Due	Same as 1.2	
1.19	Reconcile Bank Account	Accounting supervisor and clerk	Yes
1.20	Review/Transmit Transaction Report	Accounting Director	Yes
1.21	Establish Bank Account	Accounting or Claims Dept Director	No
2.20	Design and Code Mainframe Programs (to exchange claims data with customer)	Any programmer in Claims Group	No
3.2	Negotiate with Plaintiff Atty	Adjuster	Yes
3.9	Investigate Claims	Adjuster	Yes
3.10	Evaluate Claims	Adjuster	Yes
3.11	Negotiate Settlements	Adjuster	Yes



<u>Act. No.</u>	<u>Activity</u>	<u>Positions Performing</u>	<u>Are Personnel Specialized?</u>
3.12	Report to Customer	Adjuster	No
3.20	Process Payments	Claims clerk	Yes
3.21	Approve Claims Payments	Adjuster	Yes
3.25	Handle Salvage/ Subrogation	Adjuster	Yes
3.28	Notify Customer of Possible Excess Expos.	Adjuster or Accounting Director	No
3.30	Service Claimant Inquiries and Requests	Anyone in the office	No
8.4	Prepare Proposals	Home office marketing representative or any department manager. District office adjuster, premium auditor, or safety engineer.	No
8.5	Give Proposal Presentations	Same as 8.4	No
8.6	Develop Contracts	None	No
15.1	Establish Account	Customer Service clerk	Yes
15.2	Update Contract Data Base	Same as 15.1	
15.3	Maintain Contract Records	Same as 15.1	
16.1	Review Contracts by Legal Dept.	Company attorney	Yes
17.19	Keep Time Records	All involved in contract	No

Organizational Structural Parameters  
Coupling  
Summary of Coordination of Tasks

<u>Act. No.</u>	<u>Activity</u>	<u>Method of Coordination with Other Activities</u>	<u>Is Coord- ination Formal?</u>
1.2	Maintain Billing	Mutual adjustment. Once set up, agreed on procedures cause next steps to be taken.	No
1.3	Calculate Amounts to be billed	Done on periodic basis.	No
1.4	Prepare Billing Statements	Same as 1.3	No
1.6	Collect Amounts Due	Same as 1.3	No
1.19	Reconcile Bank Account	Done in conjunction with sending out bill	No
1.20	Review/Transmit Transaction Report	Same as 1.19	No
1.21	Establish Bank Account	Mutual adjustment. Done in response to contract. Inter-departmental actions coordinated via a checklist.	No
2.20	Design and Code Mainframe Programs (to exchange claims data with customer)	Same as 1.21	No
3.2	Negotiate with Plaintiff Atty	Determined by demands of the case.	No
3.9	Investigate Claims	Assigned by supervisor	Yes
3.10	Evaluate Claims	Same as 3.12	No

<u>Act. No.</u>	<u>Activity</u>	<u>Method of Coordination with Other Activities</u>	<u>Is Coordination Formal?</u>
3.11	Negotiate Settlements	Same as 3.12	No
3.12	Report to Customer	Determined by contract or by departmental instructions	Yes
3.20	Process Payments	Determined by Clerical Activity Guide and by adjuster's instructions	Yes
3.21	Approve Claims Payments	Happens when bills come in	No
3.25	Handle Salvage/ Subrogation	Determined by facts of Case. Manager or contract will determine whether to proceed.	Yes
3.28	Notify Customer of Possible Excess Expos.	Happens when data indicate claim has reached a certain monetary level	No
3.30	Service Claimant Inquiries and Requests	Happens when claimant calls	No
8.4	Prepare Proposals	Happens when customer responds to marketing efforts	No
8.5	Give Proposal Presentations	Same as 8.4	No
8.6	Develop Contracts	Happens when customer agrees to buy services	No
15.1	Establish Account	Happens in response to 8.6. Coordinated through a checklist. Within Cust. Service Dept is coordinated by supervisor.	Yes
15.2	Update Contract Data Base	Same as 15.1	Yes

<u>Act. No.</u>	<u>Activity</u>	<u>Method of Coordination with Other Activities</u>	<u>Is Coordination Formal?</u>
15.3	Maintain Contract Records	Same as 15.1	Yes
16.1	Review Contracts by Legal Dept.	Is requested by marketing representative after performing 8.6.	No
17.19	Keep Time Records	Done by individual when service performed	No

Organizational Structural Parameters  
Location  
Summary of Where Activity Performed

<u>No.</u>	<u>Activity</u>	<u>Location of Activity</u>	
		<u>Home Office</u>	<u>District Office</u>
1.2	Maintain Billing Records	Home	
1.3	Calculate Amounts to Be Billed	Home	
1.4	Prepare Billing Statements	Home	
1.6	Collect Amounts Due	Home	
1.19	Reconcile Bank Account	Home	
1.20	Review/Transmit Transaction Report	Home	
1.21	Establish Bank Account	Home	
2.20	Design and Code Mainframe Programs (to exchange claims data with customer)	Home	
3.2	Negotiate with Plaintiff Atty		District
3.9	Investigate Claims		District
3.10	Evaluate Claims		District
3.11	Negotiate Settlements		District
3.12	Report to Customer		District
3.20	Process Payments		District

<u>No.</u>	<u>Activity</u>	<u>Location of Activity</u>	
		<u>Home Office</u>	<u>District Office</u>
3.21	Approve Claims Payments		District
3.25	Handle Salvage/ Subrogation		District
3.28	Notify Customer of Possible Excess Expos.	Home	District
3.30	Service Claimant Inquiries and Requests		District
8.4	Prepare Proposals	Home	District
8.5	Give Proposal Presentations	Home	District
8.6	Develop Contracts	Home	
15.1	Establish Account	Home	
15.2	Update Contract Data Base	Home	
15.3	Maintain Contract Records	Home	
16.1	Review Contracts by Legal Dept.	Home	
17.19	Keep Time Records		District

APPENDIX O  
IRM ORGANIZATIONAL STRUCTURAL ANALYSIS

IRM Organizational Structural Analysis  
 Unique IRM Functions by Activity: Planning

<u>Activity</u>	IRM Planning Function and Related Structural <u>Parameters</u>
1.2 Maintain Billing Records	<p>Establishing requirements for new billing system and whether to expend money now.</p> <p>Centralization: Decentralized planning for requirements but approval is centralized centralized at Senior VP level</p> <p>Formalization: None</p> <p>Cohesion: Not specialized: Group members for 3 departments: IRM, Customer Service, Methods &amp; Procedures</p> <p>Coupling: Informal: Meetings</p> <p>Location: Home Office</p>
1.3 Calculate Amounts to Be Billed	<p>Same as 1.2. Specifying rates to be used for a contract</p> <p>Centralization: Specification of rates comes through contract. Entered by Customer Service department.</p> <p>Formalization: None</p> <p>Cohesion: None</p> <p>Coupling: None</p> <p>Location: Home Office.</p>



<u>Activity</u>	IRM Planning Function and Related Structural <u>Parameters</u>
1.4 Prepare Billing Statements	Same as 1.2 Also, format of bill.
	Centralization: Format of bill changes requested by Claims marketing representative. Approval involves also Customer Service Department. Approval to do comes from Senior VP.
	Formalization: None
	Cohesion: None. 2 departments involved.
	Coupling: Informal: Meetings.
	Location: Home Office.
1.6 Collect Amounts Due	Same as 1.2
1.19 Reconcile Bank Account	Adding bank account
	Centralization: Decentralized: Authorization is done by Accounting Director in response to contract.
	Formalization: None. There is a written contract but there are no written procedures governing setting up the account.
	Cohesion: Specialized. Planning is done by Accounting Director.
	Coupling: Mutual adjustment: Accounting Director is informed by Customer Service or Marketing and is checked on through a checklist.

<u>Activity</u>	IRM Planning Function and Related Structural <u>Parameters</u>
Location:	Home Office
1.20 Review/Transmit Transaction Report	Determining whether to automate
Centralization:	Accounting Director has not made the request because the volume is low.
Formalization:	None
Cohesion:	None
Coupling:	None
Location:	Home Office
1.21 Establish Bank Account	No IRM planning function
2.20 Design and Code Mainframe Programs	Satisfying contract requirements for tape exchange
Centralization:	Decentralized. Determined by contract requirements.
Formalization:	No written procedures for informing persons. There is a checklist.
Cohesion:	Specialized: done by member of claims applications group
Coupling:	Informal: Checklist
Location:	Home Office

<u>Activity</u>	<u>IRM Planning Function and Related Structural Parameters</u>
3.2 Negotiate with Plaintiff Attorney	Contents of Litigation System and its linkage to Claims Admin.
	Centralization: Requested changes by Claims Manager
	Formalization: None
	Cohesion: Not specialized. Claims Manager has input, but so do other claims personnel.
	Coupling: Informal. Discusses with Claims group personnel.
	Location: Home Office
3.9 Investigate Claims	Contents of Claims Admin.
	Centralization: Anyone in Claims management can have input.
	Formalization: None.
	Cohesion: Not specialized.
	Coupling: Informal. Discusses with Claims group personnel. Can request small changes in person or on E-mail.
	Location: Home Office
3.10 Evaluate Claims	Same as 3.9
3.11 Negotiate Settlements	No IRM planning function
3.12 Report to Customer	No IRM planning function
3.20 Process Payments	See 3.9
3.21 Approve Claims Payments	See 3.9

<u>Activity</u>	IRM Planning Function and Related Structural <u>Parameters</u>
3.25 Handle Salvage/ Subrogation	No IRM planning function
3.28 Notify Customer of Possible Excess Exposure	For Claims, same as 3.9. For Accounting, what to automate.
	Centralization: At level of Accounting Director to request.
	Formalization: None
	Cohesion: Specialized. Done by Accounting Director.
	Coupling: Informal: discussions. Would ultimately require Request for IRM Services.
	Location: Home Office
3.30 Service Claimant Inquiries and Requests	No IRM planning function
8.4 Prepare Proposals	Request for more PC resources
	Centralization: VP makes request. Approval occurs in Automation Direction Committee (ADC). Can be overruled by VP.
	Formalization: Formal. Written procedures govern ADC process.
	Cohesion: Not specialized. Anyone working on proposals could request although would typically come from marketing representative.
	Coupling: Through formal request to ADC by VP.
	Location: Home Office

	<u>Activity</u>	IRM Planning Function and Related Structural <u>Parameters</u>
8.5	Give Proposal Presentations	Contents of Marketing Database
	Centralization:	Requested by Senior VP
	Formalization:	None
	Cohesion:	Not Applicable
	Coupling:	Formal. Senior VP requested of IRM VP.
	Location:	Home Office
8.6	Develop Contracts	No IRM planning functions
15.1	Establish Account	Same as 1.2. Add coverage codes to contract in existing system.
	Centralization:	Change requests for coverage code additions come from Customer Service Manager
	Formalization:	None
	Cohesion:	Specialized. Is idea of Customer Service Manager
	Coupling:	Informal. Initial planning is through meetings.
	Location:	Home Office
15.2	Update Contract Data Base	Not Applicable
15.3	Maintain Contract Records	Not Applicable
16.1	Review Contracts	None

<u>Activity</u>	IRM Planning Function and Related Structural <u>Parameters</u>
17.19 Keep Time Records	Nature of billing system
	<b>Centralization:</b> Requested by both Claims VP and Claims Manager
	<b>Formalization:</b> None
	<b>Cohesion:</b> Not specialized. Request by various persons in Claims management
	<b>Coupling:</b> Informal. Use of meetings to plan for changes.
	<b>Location:</b> Home Office

IRM Organizational Structural Analysis  
Unique IRM Functions by Activity: Development

<u>Activity</u>	<u>IRM Development Function and Related Structural Parameters</u>
1.2 Maintain Billing Records	No IRM development function
1.3 Calculate Amounts to Be Billed	None. Adding rates can be done by user.
1.4 Prepare Billing Statements	No IRM development function
1.6 Collect Amounts Due	No IRM development function
1.19 Reconcile Bank Account	Add new banks
	Centralization: Done by programmer/analyst in accounting/statistical group
	Formalization: None
	Cohesion: Done by a particular programmer who works with the system
	Coupling: Informal. Contacted by user.
	Location: Home Office
1.20 Review/Transmit Transaction Report	Same as 1.19
1.21 Establish Bank Account	Same as 1.19
2.20 Design and Code Mainframe Programs	Code program to perform tape exchange
	Centralization: Typically assigned by Claims group supervisor
	Formalization: None

	<u>Activity</u>	<u>IRM Development Function and Related Structural Parameters</u>
	Cohesion:	Can be done by anyone in Claims group
	Coupling:	Formal. Directed by Claims group supervisor.
	Location:	Home Office
3.2	Negotiate with Plaintiff Attorney	Make changes to Litigation System
	All parameters:	Same as 2.20
3.9	Investigate Claims	Make changes to Claims Admin.
	All parameters:	Same as 3.2
3.10	Evaluate Claims	Same as 3.9
3.11	Negotiate Settlements	Same as 3.9
3.12	Report to Customer	No IRM development functions
3.20	Process Payments	Same as 3.11
3.21	Approve Claims Payments	Same as 3.11
3.25	Handle Salvage/ Subrogation	No IRM development functions
3.28	Notify Customer of Possible Excess Exposure	No IRM development functions
3.30	Service Claimant Inquiries and Requests	No IRM development functions
8.4	Prepare Proposals	No IRM development functions
8.5	Give Proposal Presentations	No IRM development functions



<u>Activity</u>	<u>IRM Development Function and Related Structural Parameters</u>
8.6 Develop Contracts	No IRM development functions
15.1 Establish Account	Add coverage codes to contract in existing system
	Centralization: Typically assigned by Claims group supervisor
	Formalization: None
	Cohesion: Can be done by anyone in Claims group
	Coupling: Formal. Directed by Claims group supervisor.
	Location: Home Office
15.2 Update Data Base	Not Applicable
15.3 Maintain Contract Records	Not Applicable
16.1 Review Contracts by Legal Dept.	No IRM development functions
17.19 Keep Time Records	Make changes to Time Accounting system
	Centralization: Centralized. System was developed by IRM VP
	Formalization: None
	Cohesion: Not specialized. Any programmer could be assigned to work on.
	Coupling: Formal. IRM VP will dictate.
	Location: Home Office

IRM Organizational Structural Analysis  
Unique IRM Functions by Activity: Operations

<u>Activity</u>	<u>IRM Development Function and Related Structural Parameters</u>
1.2 Maintain Billing Records	No IRM operation function
1.3 Calculate Amounts to Be Billed	No IRM operation function
1.4 Prepare Billing Statements	No IRM operation function
1.6 Collect Amounts Due	No IRM operation function
1.19 Reconcile Bank Account	Operate computer
	Centralization: Staff
	Formalization: Specific instructions for running jobs
	Cohesion: Several jobs involved: scheduling, operating computer, systems programming
	Coupling: Formal procedures
	Location: Home Office
1.20 Review/Transmit Transaction Report	Same as 1.19
1.21 Establish Bank Account	Same as 1.19
2.20 Design and Code Mainframe Programs	Same as 1.19
3.2 Negotiate with Plaintiff Attorney	Same as 1.19
3.9 Investigate Claims	Same as 1.19
3.10 Evaluate Claims	Same as 1.19
3.11 Negotiate Settlements	Same as 1.19

<u>Activity</u>	<u>IRM Development Function and Related Structural Parameters</u>
3.12 Report to Customer	No IRM operation function
3.20 Process Payments	Same as 1.19
3.21 Approve Claims Payments	Same as 1.19
3.25 Handle Salvage/ Subrogation	No IRM operation function
3.28 Notify Customer of Possible Excess Exposure	No IRM operation function
3.30 Service Claimant Inquiries and Requests	No IRM operation function
8.4 Prepare Proposals	No IRM operation function
8.5 Give Proposal Presentations	No IRM operation function
8.6 Develop Contracts	No IRM operation function
15.1 Establish Account	Same as 1.19
15.2 Update Data Base	Same as 1.19
15.3 Maintain Contract Records	No IRM operation function
16.1 Review Contracts by Legal Dept.	No IRM operation function
17.19 Keep Time Records	Same as 1.19

**APPENDIX P**  
**COMPARISON OF COMPANY AND IRM STRUCTURAL PARAMETERS**

Table 21--Comparison of Organization and IRM Parameters:  
Centralization

Codes:

C - Centralized

D - Decentralized

Y - Yes

N - No

N/A - Not Applicable

Act. No.	Activity	Org.	IRM Department		
			Plan	Dev.	Oper.
1.2	Maintain Billing Records	D	C&D	N/A	N/A
1.3	Calculate Amounts to Be Billed	D	D	N/A	N/A
1.4	Prepare Billing Statements	D	C	N/A	N/A
1.6	Collect Amounts Due	C	C&D	N/A	N/A
1.19	Reconcile Bank Account	D	D	D	D
1.20	Review/Transmit Transaction Report	D	N/A	D	D
1.21	Establish Bank Account	D	N/A	D	D
2.20	Design and Code Mainframe Programs (to exchange claims data with customer)	D	D	D	D
3.2	Negotiate with Plaintiff Atty	C&D	D	D	D
3.9	Investigate Claims	D	D	D	D

<u>Act. No.</u>	<u>Activity</u>	<u>Org.</u>	<u>IRM Plan</u>	<u>Department Dev.</u>	<u>Oper.</u>
3.10	Evaluate Claims	D	D	D	D
3.11	Negotiate Settlements	C&D	N/A	D	D
3.12	Report to Customer	C	N/A	N/A	N/A
3.20	Process Payments	D	D	D	D
3.21	Approve Claims Payments	D	D	N/A	D
3.25	Handle Salvage/ Subrogation	C	N/A	N/A	D
3.28	Notify Customer of Possible Excess Expos.	D	N/A	N/A	N/A
3.30	Service Claimant Inquiries and Requests	D	N/A	N/A	N/A
8.4	Prepare Proposals	D	C	N/A	N/A
8.5	Give Proposal Presentations	D	N/A	N/A	N/A
8.6	Develop Contracts	D	N/A	N/A	N/A
15.1	Establish Account	C	D	N/A	D
15.2	Update Contract Data Base	D	N/A	N/A	D
15.3	Maintain Contract Records	D	N/A	N/A	N/A
16.1	Review Contracts by Legal Dept.	D	N/A	N/A	N/A
17.19	Keep Time Records	D	C	C	D

Table 22--Comparison of Organization and IRM Parameters:  
Formalization

Codes:

F - Formalized

I - Informal

Y - Yes

N - No

N/A - Not Applicable

Act. No.	Activity	Org.	IRM Department		
			Plan	Dev.	Oper.
1.2	Maintain Billing Records	F&I	I	N/A	N/A
1.3	Calculate Amounts to Be Billed	F&I	I	N/A	F
1.4	Prepare Billing Statements	F&I	I	N/A	F
1.6	Collect Amounts Due	F&I	I	N/A	N/A
1.19	Reconcile Bank Account	I	I	I	F
1.20	Review/Transmit Transaction Report	I	N/A	I	F
1.21	Establish Bank Account	I	N/A	I	F
2.20	Design and Code Mainframe Programs (to exchange claims data with customer)	I	I	N/A	N/A
3.2	Negotiate with Plaintiff Atty	F	I	I	F
3.9	Investigate Claims	F	I	I	F
3.10	Evaluate Claims	F	I	I	F

<u>Act. No.</u>	<u>Activity</u>	<u>Org.</u>	<u>IRM Department</u>		
			<u>Plan</u>	<u>Dev.</u>	<u>Oper.</u>
3.11	Negotiate Settlements	F	N/A	I	F
3.12	Report to Customer	F	N/A	N/A	N/A
3.20	Process Payments	F	I	I	F
3.21	Approve Claims Payments	F	I	I	F
3.25	Handle Salvage/ Subrogation	F	N/A	N/A	F
3.28	Notify Customer of Possible Excess Expos.	I	N/A	N/A	N/A
3.30	Service Claimant Inquiries and Requests	I	N/A	N/A	N/A
8.4	Prepare Proposals	I	F	N/A	N/A
8.5	Give Proposal Presentations	I	N/A	N/A	N/A
8.6	Develop Contracts	I	N/A	N/A	N/A
15.1	Establish Account	F&I	I	N/A	F
15.2	Update Contract Data Base	F&I	N/A	N/A	F
15.3	Maintain Contract Records	F&I	N/A	N/A	N/A
16.1	Review Contracts by Legal Dept.	I	N/A	N/A	N/A
17.19	Keep Time Records	I	I	I	F



Table 23--Comparison of Organization and IRM Parameters:  
Cohesion

Codes:

H - High Cohesion

L - Low Cohesion

Y - Yes

N - No

N/A - Not Applicable

Act. No.	Activity	Org.	IRM Department		
			Plan	Dev.	Oper.
1.2	Maintain Billing Records	L	L	N/A	N/A
1.3	Calculate Amounts to Be Billed	L	L	N/A	L
1.4	Prepare Billing Statements	L	L	N/A	N/A
1.6	Collect Amounts Due	L	L	N/A	N/A
1.19	Reconcile Bank Account	H	H	H	L
1.20	Review/Transmit Transaction Report	H	N/A	L	L
1.21	Establish Bank Account	L	N/A	H	L
2.20	Design and Code Mainframe Programs (to exchange claims data with customer)	L	H	H	L
3.2	Negotiate with Plaintiff Atty	H	H	L	L
3.9	Investigate Claims	H	L	L	L
3.10	Evaluate Claims	H	L	L	L

<u>Act. No.</u>	<u>Activity</u>	<u>Org.</u>	<u>IRM Department</u>		
			<u>Plan</u>	<u>Dev.</u>	<u>Oper.</u>
3.11	Negotiate Settlements	H	N/A	L	L
3.12	Report to Customer	L	N/A	N/A	N/A
3.20	Process Payments	H	H	L	L
3.21	Approve Claims Payments	H	L	L	L
3.25	Handle Salvage/ Subrogation	H	N/A	N/A	L
3.28	Notify Customer of Possible Excess Expos.	L	N/A	N/A	N/A
3.30	Service Claimant Inquiries and Requests	L	N/A	N/A	N/A
8.4	Prepare Proposals	L	L	N/A	N/A
8.5	Give Proposal Presentations	L	N/A	N/A	N/A
8.6	Develop Contracts	L	N/A	N/A	N/A
15.1	Establish Account	H	L	N/A	L
15.2	Update Contract Data Base	H	N/A	N/A	L
15.3	Maintain Contract Records	H	N/A	N/A	N/A
16.1	Review Contracts by Legal Dept.	H	N/A	N/A	N/A
17.19	Keep Time Records	L	L	L	L

Table 24--Comparison of Organization and IRM Parameters:  
Coupling

Codes:

F - Formal

I - Informal

Y - Yes

N - No

N/A - Not Applicable

<u>Act. No.</u>	<u>Activity</u>	<u>Org.</u>	<u>IRM Department</u>		
			<u>Plan</u>	<u>Dev.</u>	<u>Oper.</u>
1.2	Maintain Billing Records	I	I	N/A	N/A
1.3	Calculate Amounts to Be Billed	I	I	N/A	F
1.4	Prepare Billing Statements	I	I	N/A	F
1.6	Collect Amounts Due	I	I	N/A	N/A
1.19	Reconcile Bank Account	I	I	I	F
1.20	Review/Transmit Transaction Report	I	N/A	I	F
1.21	Establish Bank Account	I	N/A	I	F
2.20	Design and Code Mainframe Programs (to exchange claims data with customer)	I	I	F	F
3.2	Negotiate with Plaintiff Atty	I	I	F	F
3.9	Investigate Claims	F	I	F	F
3.10	Evaluate Claims	I	I	F	F

<u>Act. No.</u>	<u>Activity</u>	<u>Org.</u>	<u>IRM Plan</u>	<u>Department Dev.</u>	<u>Oper.</u>
3.11	Negotiate Settlements	I	N/A	F	F
3.12	Report to Customer	F	N/A	N/A	N/A
3.20	Process Payments	F	I	F	F
3.21	Approve Claims Payments	I	I	F	F
3.25	Handle Salvage/ Subrogation	F	N/A	N/A	F
3.28	Notify Customer of Possible Excess Expos.	I	N/A	N/A	N/A
3.30	Service Claimant Inquiries and Requests	I	N/A	N/A	N/A
8.4	Prepare Proposals	I	F	N/A	N/A
8.5	Give Proposal Presentations	I	N/A	N/A	N/A
8.6	Develop Contracts	I	N/A	N/A	N/A
15.1	Establish Account	F	I	N/A	F
15.2	Update Contract Data Base	F	N/A	I	N/A
15.3	Maintain Contract Records	F	N/A	N/A	N/A
16.1	Review Contracts by Legal Dept.	I	N/A	N/A	N/A
17.19	Keep Time Records	I	I	F	F

Table 25--Comparison of Organization and IRM Parameters:  
Location

Codes:

H - Home Office

D - District Office

Y - Yes

N - No

N/A - Not Applicable

Act. No.	Activity	Org.	IRM Department		
			Plan	Dev.	Oper.
1.2	Maintain Billing Records	H	H	N/A	N/A
1.3	Calculate Amounts to Be Billed	H	H	N/A	H
1.4	Prepare Billing Statements	H	H	N/A	N/A
1.6	Collect Amounts Due	H	H	N/A	N/A
1.19	Reconcile Bank Account	H	H	H	H
1.20	Review/Transmit Transaction Report	H	N/A	H	H
1.21	Establish Bank Account	H	N/A	H	H
2.20	Design and Code Mainframe Programs (to exchange claims data with customer)	H	H	H	H
3.2	Negotiate with Plaintiff Atty	D	H	H	H
3.9	Investigate Claims	D	H	H	H
3.10	Evaluate Claims	D	H	H	H

<u>Act. No.</u>	<u>Activity</u>	<u>Org.</u>	<u>IRM Department</u>		
			<u>Plan</u>	<u>Dev.</u>	<u>Oper.</u>
3.11	Negotiate Settlements	D	N/A	H	H
3.12	Report to Customer	D	N/A	N/A	N/A
3.20	Process Payments	D	H	H	H
3.21	Approve Claims Payments	D	H	H	H
3.25	Handle Salvage/ Subrogation	D	N/A	N/A	H
3.28	Notify Customer of Possible Excess Expos.	H&D	N/A	N/A	N/A
3.30	Service Claimant Inquiries and Requests	D	N/A	N/A	N/A
8.4	Prepare Proposals	H&D	H	N/A	N/A
8.5	Give Proposal Presentations	H&D	H	N/A	N/A
8.6	Develop Contracts	H	N/A	N/A	N/A
15.1	Establish Account	H	H	N/A	H
15.2	Update Contract Data Base	H	N/A	N/A	H
15.3	Maintain Contract Records	H	N/A	N/A	N/A
16.1	Review Contracts by Legal Dept.	H	N/A	N/A	N/A
17.19	Keep Time Records	D	H	H	H

**APPENDIX Q**  
**CASE DESCRIPTION OUTLINE**

## Case Description Outline

## I. Question 1

- A. Nature of Interviews: Management information needs to monitor Activity effectiveness and efficiency
- B. Discussion of Information Requirements
  - 1. User views of efficiency and effectiveness
  - 2. Monitoring adjuster billing time: a suboptimization problem
  - 3. Use of free-form text and problem with computer analysis
- C. Use of ABC information for costs
- D. Lack of use by management of ABC cost drivers
- E. Summary characteristics: practicability, communications, generation of ideas for automation, cost information

## II. Question 2

- A. Background on IRM Department Costs
  - 1. IRM Costs: Operations Department
  - 2. Allocating Operations Costs: the method in use
  - 3. Operations Department outsourcing experience
  - 4. IRM Costs: Systems and Programming Department
  - 5. Allocating Systems and Programming Costs: the method in use
  - 6. Systems and Programming outsourcing experience
- B. Using Application Systems to trace IRM costs to Activities
  - 1. Application Systems Serving the Claims Process
  - 2. Application Systems Serving Other Processes
  - 3. Identifying Systems Used by Activities
- C. Using ABC in the User Department: necessary for ABA to work for this analysis
- D. Using ABC in the IRM Department
  - 1. Using ABC to Cost Operations Department
  - 2. Using ABC to Cost Systems and Programming Department - different ways of defining Activities



## III. Question 3

- A. Using ABA to identify the potential customer: the Risk Manager
- B. Risk Manager's need for a Risk Management Information System (RMIS)
- C. Using ABA to identify information resources to share by Activity
- D. Using ABA to support plans for sharing already in progress
- E. Using ABA to price sharable information resources

## IV. Question 4

- A. Approach taken: parameters identified during interviews for other research questions
- B. Departmental functional organization
- C. Structural parameters examined
  - 1. Centralization
  - 2. Formalization
  - 3. Cohesion
  - 4. Coupling
  - 5. Location
- D. IRM categories
  - 1. Planning
  - 2. Development
  - 3. Operations
- E. Matching Company and IRM Organizational Parameters
  - 1. Parameters considered independently - mismatching potential offsets harmful effects of some parameters
  - 2. Parameters considered in relationships

APPENDIX R  
ESTIMATION OF COSTS OF ACTIVITIES IN THE CLAIMS PROCESS

Table 26--Total of Departmental Activity Costs (in dollars)

Activity	Acct (a)	Cust (b)	Claim (c)	Mkt (d)	Other (e)	Tot (f)
1.2 Maint Bill Rcd	188	2,358				2,545
1.3 Calc. Amts	188	3,684				3,872
1.4 Prepare Bill.	188	3,684				3,872
1.6 Collect Amount	188	1,179				1,367
1.19 Reconcile Bank	936					936
1.20 Trans. Record	375					375
1.21 Estab Bank Acc	188					188
2.20 Design/Code Pr					5,281	5,281
3.2 Negotiate Atty			16,145			16,145
3.9 Investig. Clm			44,991			44,991
3.10 Evaluate Claim			10,836			10,836
3.11 Negotiate Sett			17,996			17,996
3.12 Report to Cust			8,263			8,263
3.20 Process Paymnt			2,589			2,589
3.21 Approve Paymnt			6,021			6,021
3.25 Handle Salv/Su						
3.28 Notify Custom						
3.30 Claimant Inqui			9,794			9,794
8.4 Develop Propos				1,452		1,452
8.5 Prop. Present.				1,936		1,936
8.6 Develop Contr.				484		484
15.1 Estab Account		295				295
15.2 Update Contr						
15.3 Maint Contract						
16.1 Legal Review					953	953
17.19 Keep Time Rcrd			7,241			7,241
Totals	2,251	11,200	123,876	3,872	6,234	147,433

(a) From table 29

(b) From table 30

(c) From table 31

(d) From table 32

(e) From table 33

(f) Sum of columns (a) through (e)

Table 27--Computation of Accounting Department Activity Costs

Activity	Pct. of Mtly Exp Applied to Act. (a)	Times Mthly Exp (b)	Act. Cost (c)
1.2 Maint Bill Rcd	.01	X\$18,756	\$188
1.3 Calc. Amts	.01	X 18,756	188
1.4 Prepare Bill.	.01	X 18,756	188
1.6 Collect Amount	.01	X 18,756	188
1.19 Reconcile Bank	.05	X 18,756	936
1.20 Trans. Record	.02	X 18,756	375
1.21 Estab Bank Acc	.01	X 18,756	188
2.20 Design/Code Pr			
3.2 Negotiate Atty			
3.9 Investig. Clm			
3.10 Evaluate Claim			
3.11 Negotiate Sett			
3.12 Report to Cust			
3.20 Process Paymnt			
3.21 Approve Paymnt			
3.25 Handle Salv/Su			
3.28 Notify Custom			
3.30 Claimant Inqui			
8.4 Develop Propos			
8.5 Prop. Present.			
8.6 Develop Contr.			
15.1 Estab Account			
15.2 Update Contr			
15.3 Maint Contract			
16.1 Legal Review			
17.19 Keep Time Rcrd			
Activities not in the Claims Process	.88		
Total	1.00	X\$18,756	\$2,251

(a) Per supervisor's estimate

(b) Calculation of Average Monthly Expenses

6 months expenses per budget report \$351,672.59

Divide by 6 ÷ 6

Average monthly expenses 58,612

Percent applicable to section responsible

for Activities per supervisor x .32

Amount to be allocated to section \$ 18,756

(c) Column (a) X column (b). To table 26.

Table 28--Total of Customer Service Activity Costs

Activity	Pct. of Mtly Exp Applied to Act. (a)	Times Mthly Exp (b)	Act. Cost (c)
1.2 Maint Bill Rcd	.080	X\$29,469	\$2,358
1.3 Calc. Amts	.125	X 29,469	3,684
1.4 Prepare Bill.	.125	X 29,469	3,684
1.6 Collect Amount	.040	X 29,469	1,179
1.19 Reconcile Bank			
1.20 Trans. Record			
1.21 Estab Bank Acc			
2.20 Design/Code Pr			
3.2 Negotiate Atty			
3.9 Investig. Clm			
3.10 Evaluate Claim			
3.11 Negotiate Sett			
3.12 Report to Cust			
3.20 Process Paymnt			
3.21 Approve Paymnt			
3.25 Handle Salv/Su			
3.28 Notify Custom			
3.30 Claimant Inqui			
8.4 Develop Propos			
8.5 Prop. Present.			
8.6 Develop Contr.	.010	X 29,469	295
15.1 Estab Account			
15.2 Update Contr			
15.3 Maint Contract			
16.1 Legal Review			
17.19 Keep Time Rcrd			
Activities not in the Claims Process	.620		
Totals	1.000	X\$29,469	\$11,200

(a) Per supervisor's estimate

(b) Calculation of Average Monthly Expenses

6 months expenses per budget report

\$176,811.26

Divide by 6

÷ 6

Average monthly expenses

29,469

(c) Column (a) X column (b). To table 26.

Table 29--Total of Claims Activity Costs

Activity	Mtly Exp Applied to Act. (a)	Pct. of Act Applied to Field Adjusting (b)	Act. Cost (c)
1.2	Maint Bill Rcd		
1.3	Calc. Amt		
1.4	Prepare Bill.		
1.6	Collect Amount		
1.19	Reconcile Bank		
1.20	Trans. Record		
1.21	Estab Bank Acc		
2.20	Design/Code Pr		
3.2	Negotiate Atty	\$ 84,973 .19	16,145
3.9	Investig. Clm	236,798 .19	44,991
3.10	Evaluate Claim	52,079 .19	10,836
3.11	Negotiate Sett	94,718 .19	17,996
3.12	Report to Cust	43,492 .19	8,263
3.20	Process Paymnt	13,625 .19	2,589
3.21	Approve Paymnt	31,692 .19	6,021
3.25	Handle Salv/Su		
3.28	Notify Custom		
3.30	Claimant Inqui	51,548 .19	9,794
8.4	Develop Propos		
8.5	Prop. Present.		
8.6	Develop Contr.		
15.1	Estab Account		
15.2	Update Contr		
15.3	Maint Contract		
16.1	Legal Review		
17.19	Keep Time Rcd	38,110 .19	7,241
	Total		\$123,876

(a) From Appendix H

(b) Calculation of percent of Activity applied to Field Adjusting:

	Person. Count (d)	Pct. of Time in Person. Claims in Div. Services (e) (f)	Col (e) X Col (f) (g)
<u>Claims Div:</u>			
Claims Admin	6	N/A	
Prop & Cas Div	7	N/A	
Claims Serv	19	N/A	
WC Div	53	N/A	
E & W Div	164	.671	.285
Total	252	N/A	.19

Columns (d) and (e) come from the Claims Dept. Activity Recap

(c) Column (a) X column (b). To table 26.

Table 30--Total of Marketing Activity Costs

Activity	Pct. of Mtly Exp Applied to Act. (a)	Times Mthly Exp (b)	Act. Cost (c)
1.2			
1.3			
1.4			
1.6			
1.19			
1.20			
1.21			
2.20			
3.2			
3.9			
3.10			
3.11			
3.12			
3.20			
3.21			
3.25			
3.28			
3.30			
8.4			
8.5			
8.6			
15.1	.15	X\$9,681	\$1,452
15.2	.20	X 9,681	1,936
15.3	.05	X 9,681	484
16.1			
17.19			
Activities not in the Claims Process	.60		
Totals	1.00	X\$9,681	\$3,872

(a) Per manager's estimate

(b) Calculation of monthly expenses

One month's expenses (used one month  
because dept. had changed mission)

\$13,830.25

Pct. allocable to business acquisition  
per manager

x .70

Allocable to Claims Process

\$ 9,681

(c) Column (a) X column (b). To table 26.

Table 31--Total of Other Activity Costs

Activity	Monthly Amount	Source of Monthly Amount
1.2		
1.3		
1.4		
1.6		
1.19		
1.20		
1.21		
2.20	\$5,281	table 49 column (d)
3.2		
3.9		
3.10		
3.11		
3.12		
3.20		
3.21		
3.25		
3.28		
3.30		
8.4		
8.5		
8.6		
15.1		
15.2		
15.3		
16.1	953	See calculation below
17.19		
Totals	\$6,234	

Computation of Legal Review monthly expense:

6 months expense per budget report	\$286,013.61
Divided by 6	÷ 6
Average monthly paid expense	47,449
Percent allocable to Activity per attorney	x .02
Activity monthly cost	\$ 953



**APPENDIX S**

**ESTIMATION OF IRM COSTS IN THE CLAIMS PROCESS**

Table 32--Calculation of Total IRM Costs

Activity	Operat. Costs (a)	S&P Costs (b)	Total Costs (c)
1.2 Maint Bill Rcd	\$ 94	\$ 38	\$ 132
1.3 Calc. Amts	117	46	163
1.4 Prepare Bill.	117	46	163
1.6 Collect Amount	6	52	58
1.19 Reconcile Bank	31	265	296
1.20 Trans. Record	122	148	270
1.21 Estab Bank Acc	6	52	58
2.20 Design/Code Pr			
3.2 Negotiate Atty	462	4,290	4,752
3.9 Investig. Clm	1,155	7,426	8,581
3.10 Evaluate Claim	231	1,486	1,717
3.11 Negotiate Sett	462	2,970	3,432
3.12 Report to Cust			
3.20 Process Paymnt	231	1,486	1,717
3.21 Approve Paymnt	231	1,486	1,717
3.25 Handle Salv/Su			
3.28 Notify Custom			
3.30 Claimant Inqui			
8.4 Develop Propos		914	914
8.5 Prop. Present.			
8.6 Develop Contr.			
15.1 Estab Account		165	165
15.2 Update Contr			
15.3 Maint Contract			
16.1 Legal Review			
17.19 Keep Time Rcrd		825	825
Totals	\$3,265	\$21,695	\$24,960

(a) From table 33.

(b) From table 41.

(c) Column (a) + column (b).

Table 33--Calculation of Total Operations Costs

Activity	O/L Claims (a)	Batch Claims (b)	Gen'l Ledger (c)	Total (d)
1.2 Maint Bill Rcd		\$ 94		\$ 94
1.3 Calc. Amts		117		117
1.4 Prepare Bill.		117		117
1.6 Collect Amount			6	6
1.19 Reconcile Bank			31	31
1.20 Trans. Record		110	12	122
1.21 Estab Bank Acc			6	6
2.20 Design/Code Pr				
3.2 Negotiate Atty	\$ 462			462
3.9 Investig. Clm	1,155			1,155
3.10 Evaluate Claim	231			231
3.11 Negotiate Sett	462			462
3.12 Report to Cust				
3.20 Process Paymnt	231			231
3.21 Approve Paymnt	231			231
3.25 Handle Salv/Su				
3.28 Notify Custom				
3.30 Claimant Inqui				
8.4 Develop Propos				
8.5 Prop. Present.				
8.6 Develop Contr.				
15.1 Estab Account				
15.2 Update Contr				
15.3 Maint Contract				
16.1 Legal Review				
17.19 Keep Time Rcrd				
Totals	\$2,772	\$438	\$55	\$3,265

(a) From table 34.

(b) From table 35.

(c) From table 39.

(d) Column (a) + column (b) + column (c). Carried forward to table 32.

Table 34--Allocation of On-Line Operations Costs to Claims Activities

Activity	Pct of Dept Exp Applied to Act (a)	Pct's Applied to On-Line Sys (b)	Ratio (c)	Times Mthly Exp (d)	On-Line Exp Alloc to Act (e)
1.2					
1.3					
1.4					
1.6					
1.19					
1.20					
1.21					
2.20					
3.2	10	10	10/60	X\$2772	\$ 462
3.9	25	25	25/60	X 2772	1155
3.10	5	5	5/60	X 2772	231
3.11	10	10	10/60	X 2772	462
3.12	5				
3.20	5	5	5/60	X 2772	231
3.21	5	5	5/60	X 2772	231
3.25					
3.28					
3.30	5				
8.4					
8.5					
8.6					
15.1					
15.2					
15.3					
16.1					
17.19	5				
Activities not in the Claims Process	25				
	100	60	60/60	X\$2772	\$2772

- (a) Per manager's estimates
- (b) Since the on-line claims system supports claims adjusting, its costs were allocated by the researcher only to Activities associated with adjusting claims.
- (c) Weighing factor for Activity defined to be ratio of percentages of department budget applicable to Activity to the total of these percentages.
- (d) From table 40.
- (e) Column (c) x column (d). Carried forward to table 33.

Table 35--Total of Batch Claims Operations Costs  
Applicable to Accounting Activities

Activity	Acctg Dept Costs (a)	Cust Serv Costs (b)	Total Acctg Activ Costs (c)
1.2 Maint Bill Rcd	\$ 55	\$ 39	\$ 94
1.3 Calc. Amts	55	62	117
1.4 Prepare Bill.	55	62	117
1.6 Collect Amount			
1.19 Reconcile Bank			
1.20 Trans. Record	110		110
1.21 Estab Bank Acc			
2.20 Design/Code Pr			
3.2 Negotiate Atty			
3.9 Investig. Clm			
3.10 Evaluate Claim			
3.11 Negotiate Sett			
3.12 Report to Cust			
3.20 Process Paymnt			
3.21 Approve Paymnt			
3.25 Handle Salv/Su			
3.28 Notify Custom			
3.30 Claimant Inqui			
8.4 Develop Propos			
8.5 Prop. Present.			
8.6 Develop Contr.			
15.1 Estab Account			
15.2 Update Contr			
15.3 Maint Contract			
16.1 Legal Review			
17.19 Keep Time Rcrd			
Totals	\$275	\$163	\$438

(a) From table 36.

(b) From table 37.

(c) Column (a) + column (b). Carried forward to table 33.

Table 36--Allocation of Batch Claims Operations Costs to  
Accounting Department Activities

Activity	Pct of Dept Exp Applied to Act (a)	Pcts Applied to Batch System (b)	Ratio (c)	Times Mthly Exp (d)	Batch System Costs Applied to Act (e)
1.2 Maint Bill Rcd	1	1	1/5	X\$275	\$ 55
1.3 Calc. Amt	1	1	1/5	X 275	55
1.4 Prepare Bill.	1	1	1/5	X 275	55
1.6 Collect Amount	1				
1.19 Reconcile Bank	5				
1.20 Trans. Record	2	2	2/5	X 275	110
1.21 Etab Bank Acc	1				
2.20 Design/Code Pr					
3.2 Negotiate Atty					
3.9 Investig. Clm					
3.10 Evaluate Claim					
3.11 Negotiate Sett					
3.12 Report to Cust					
3.20 Process Paymnt					
3.21 Approve Paymnt					
3.25 Handle Salv/Su					
3.28 Notify Custom					
3.30 Claimant Inqui					
8.4 Develop Propos					
8.5 Prop. Present.					
8.6 Develop Contr.					
15.1 Etab Account					
15.2 Update Contr					
15.3 Maint Contract					
16.1 Legal Review					
17.19 Keep Time Rcrd					
Activities not in the Claims Process	88				
Totals	100	5	5/5	X\$275	\$275

- (a) Per manager's estimates.
- (b) Data from claims batch system that applies to Accounting Services Activities assumed by researcher to apply only to Accounting Activities associated with billing.
- (c) Weighing factor for Activity defined to be ratio of percentages of department budget applicable to Activity to the total of these percentages.
- (d) From table 38.
- (e) Column (c) x column (d). Carried forward to table 33.

Table 37--Allocation of Batch Claims Operations Costs to  
Customer Service Department Activities

Activity	Pct of Dept Exp Applied to Act (a)	Pcts Applied to Batch System (b)	Ratio (c)	Times Mthly Exp (d)	Batch System Costs Applied to Act (e)
1.2 Maint Bill Rcd	8.0	8.0	8/33	X\$163	\$ 39
1.3 Calc. Amts	12.5	12.5	12.5/33	X 163	62
1.4 Prepare Bill.	12.5	12.5	12.5/33	X 163	62
1.6 Collect Amount					
1.19 Reconcile Bank					
1.20 Trans. Record					
1.21 Estab Bank Acc					
2.20 Design/Code Pr					
3.2 Negotiate Atty					
3.9 Investig. Clm					
3.10 Evaluate Claim					
3.11 Negotiate Sett					
3.12 Report to Cust					
3.20 Process Paymnt					
3.21 Approve Paymnt					
3.25 Handle Salv/Su					
3.28 Notify Custom					
3.30 Claimant Inqui					
8.4 Develop Propos					
8.5 Prop. Present.					
8.6 Develop Contr.					
15.1 Estab Account					
15.2 Update Contr					
15.3 Maint Contract					
16.1 Legal Review					
17.19 Keep Time Rcrd					
Activities on in the Claims Process	88.0				
Totals	100.0	33.0	33/33	X\$163	\$163

- (a) Per manager's estimates.
- (b) Data from claims batch system that applies to Customer Service Activities assumed by researcher to apply only to Customer Service Activities associated with billing.
- (c) Weighing factor for Activity defined to be ratio of percentages of department budget applicable to Activity to the total of these percentages.
- (d) From table 38.
- (e) Column (c) x column (d). Carried forward to table 33.

Table 38--Allocation of Batch Claims System Operations Costs  
to Departmental Sections Using System

Dept	Monthly Budget (a)	Pct of (b)	Mthly System Costs (c)	Amt Alloc to Dept (d)	Pct Alloc to Sect. (e)	Amt Alloc to Sect. (f)
Acctg	58,612	.032	26,851	859	.32	275
Actuarial	83,611	.046	- not in Claims Process			
Claims	1,419,379	.775	- not in Claims Process			
Cust. Serv	29,469	.016	26,851	430	.38	163
Engin.	239,992	.131	- not in Claims Process			
	1,831,063	1.000				

- (a) Average of 6 months expenses per budget report of departments served by batch claims system
- (b) Percent of monthly budget to total of column (a)
- (c) From table 40
- (d) Column (b) X column (c)
- (e) Estimated percentages applicable to the departmental section of the Activities per managers
- (f) Column (d) X column (e). To tables 36 and 37.



Table 39--Allocation of General Ledger Operations Costs to Accounting Services Section Activities

Activity	Pct of Dept Exp Applied to Act (a)	Pcts Applied to Batch System (b)	Ratio (c)	Times Mthly Exp (d)	Batch System Costs Applied to Act (e)
1.2 Maint Bill Rcd	1				
1.3 Calc. Amt	1				
1.4 Prepare Bill.	1				
1.6 Collect Amount	1	1	1/9	X\$55	\$ 6
1.19 Reconcile Bank	5	5	5/9	X 55	31
1.20 Trans. Record	2	2	2/9	X 55	12
1.21 Estab Bank Acc	1	1	1/9	X 55	6
2.20 Design/Code Pr					
3.2 Negotiate Atty					
3.9 Investig. Clm					
3.10 Evaluate Claim					
3.11 Negotiate Sett					
3.12 Report to Cust					
3.20 Process Paymnt					
3.21 Approve Paymnt					
3.25 Handle Salv/Su					
3.28 Notify Custom					
3.30 Claimant Inqui					
8.4 Develop Propos					
8.5 Prop. Present.					
8.6 Develop Contr.					
15.1 Estab Account					
15.2 Update Contr					
15.3 Maint Contract					
16.1 Legal Review					
17.19 Keep Time Rcrd					
Activ. not in Proc.	88				
Totals	100	9	9/9	X\$55	\$55

(a) Per manager's estimates.

(b) Data from general ledger that applies to Accounting Services Activities assumed by researcher to apply only to Accounting Service Activities associated with banking and collections.

(c) Weighing factor for Activity defined to be ratio of percentages of department budget applicable to Activity to the total of these percentages.

(d) Amount applicable per table 38 \$173  
Times Pct. Applicable to Acctg Services Section (per supervisor's estimate) X.32

Amount applicable to Accounting Services Activ. \$ 55

(e) Column (c) x column (d). Carried forward to table 33.

Table 40--Calculation of Operations Costs of Systems  
Supporting the Claims Process

System	CPU Cycles for Month	Pct of all Cycles	Ops Dept Avg. Mthly Costs	Mthly Costs Assgnd to Sys	Used by
	(a)	(b)	(c)	(d)	(e)
On-Line Claims	13,661	.016	\$173,231	\$ 2,772	S.3
Claims Batch:					
Claims Accounting	129,006				
Customer Claims	11				
Total	129,017	.155	173,231	26,851	S.7
General Ledger	899	.001	173,231	173	S.8
Systems Not Used in the Claims Process	687,465	.828		143,434	
Total	831,042	1.000		\$173,230	

- (a) 1 month figures provided by Operations manager  
(b) Percent of total CPU cycles used by this system  
(c) 7 months expenses per budget report \$1,212,617.87  
Divided by 7 ÷ 7  
1 month average expenses \$ 173,231  
(d) Column (b) X column (c)

Table 41--Allocation of Total Systems and Programming Costs to Activities

Activity	Application System:					Total (f)
	Batch Clms (a)	Gen Ledg (b)	On- Line Clms (c)	Mktg (d)	Other (e)	
1.2 Maint Bill Rcd	\$ 38					38
1.3 Calc. Amts	46					46
1.4 Prepare Bill.	46					46
1.6 Collect Amount		\$ 52				52
1.19 Reconcile Bank		265				265
1.20 Trans. Record	42	106				148
1.21 Estab Bank Acc		52				52
2.20 Design/Code Pr						
3.2 Negotiate Atty			\$ 2,970		\$1,320	4,290
3.9 Investig. Clm			7,426			7,426
3.10 Evaluate Claim			1,486			1,486
3.11 Negotiate Sett			2,970			2,970
3.12 Report to Cust						
3.20 Process Paymnt			1,486			1,486
3.21 Approve Paymnt			1,486			1,486
3.25 Handle Salv/Su						
3.28 Notify Custom						
3.30 Claimant Inqui						
8.4 Develop Propos				\$914		914
8.5 Prop. Present.						
8.6 Develop Contr.						
15.1 Estab Account					165	165
15.2 Update Contr						
15.3 Maint Contract						
16.1 Legal Review						
17.19 Keep Time Rcrd					825	825
Totals	\$172	\$475	\$17,824	\$914	\$2,310	\$21,695

(a) From table 42.

(b) From table 46.

(c) From table 47.

(d) From table 48.

(e) From table 49.

(f) Sum of columns (a) through (e). Carried forward to table 32.

Table 42--Allocation of Batch Claims Systems and Programming Costs to Activities

Activity	Acctg Dept (a)	Cust Serv Dept (b)	Total Alloc to Act (c)
1.2 Maint Bill Rcd	\$ 22	\$16	\$ 38
1.3 Calc. Amt	22	24	46
1.4 Prepare Bill.	22	24	46
1.6 Collect Amount			
1.19 Reconcile Bank			
1.20 Trans. Record	42		42
1.21 Estab Bank Acc			
2.20 Design/Code Pr			
3.2 Negotiate Atty			
3.9 Investig. Clm			
3.10 Evaluate Claim			
3.11 Negotiate Sett			
3.12 Report to Cust			
3.20 Process Paymnt			
3.21 Approve Paymnt			
3.25 Handle Salv/Su			
3.28 Notify Custom			
3.30 Claimant Inqui			
8.4 Develop Propos			
8.5 Prop. Present.			
8.6 Develop Contr.			
15.1 Estab Account			
15.2 Update Contr			
15.3 Maint Contract			
16.1 Legal Review			
17.19 Keep Time Rcrd			
Totals	\$108	\$64	\$172

(a) From table 43.

(b) From table 44.

(c) Column (a) + column (b). Carried forward to table 41.

Table 43--Allocation of Batch Claims Systems and Programming Costs to Accounting Services Section

Activity	Pct of Dept Exp Applied to Act (a)	Pcts Applied to Batch System (b)	Ratio (c)	Times Mthly Exp (d)	Batch System Costs Applied to Act (e)
1.2 Maint Bill Rcd	1	1	1/5	\$108	\$ 22
1.3 Calc. Amts	1	1	1/5	108	22
1.4 Prepare Bill.	1	1	1/5	108	22
1.6 Collect Amount	1				
1.19 Reconcile Bank	5				
1.20 Trans. Record	2	2	2/5	108	42
1.21 Estab Bank Acc	1				
2.20 Design/Code Pr					
3.2 Negotiate Atty					
3.9 Investig. Clm					
3.10 Evaluate Claim					
3.11 Negotiate Sett					
3.12 Report to Cust					
3.20 Process Paymnt					
3.21 Approve Paymnt					
3.25 Handle Salv/Su					
3.28 Notify Custom					
3.30 Claimant Inqui					
8.4 Develop Propos					
8.5 Prop. Present.					
8.6 Develop Contr.					
15.1 Estab Account					
15.2 Update Contr					
15.3 Maint Contract					
16.1 Legal Review					
17.19 Keep Time Rcrd					
Activities not in the Claims Process	88				
Totals	100	5	5/5	-	\$108

- (a) Per manager's estimates.
- (b) Data from claims batch system that applies to Accounting Services Activities assumed by researcher to apply only to Accounting Activities associated with billing.
- (c) Weighing factor for Activity defined to be ratio of percentages of department budget applicable to Activity to the total of these percentages.
- (d) From table 45.
- (e) Column (c) x column (d). Carried forward to table 42.

Table 44--Allocation of Batch Claims Systems and Programming Costs to Customer Service Department Activities

Activity	Pct of Dept Exp Applied to Act (a)	Pcts Applied to Batch System (b)	Ratio (c)	Times Mthly Exp (d)	Batch System Costs Applied to Act (e)
1.2 Maint Bill Rcd	8.0	8.0	8/33	X\$64	\$16
1.3 Calc. Amt	12.5	12.5	12.5/33	X 64	24
1.4 Prepare Bill.	12.5	12.5	12.5/33	X 64	24
1.6 Collect Amount					
1.19 Reconcile Bank					
1.20 Trans. Record					
1.21 Estab Bank Acc					
2.20 Design/Code Pr					
3.2 Negotiate Atty					
3.9 Investig. Clm					
3.10 Evaluate Claim					
3.11 Negotiate Sett					
3.12 Report to Cust					
3.20 Process Paymnt					
3.21 Approve Paymnt					
3.25 Handle Salv/Su					
3.28 Notify Custom					
3.30 Claimant Inqui					
8.4 Develop Propos					
8.5 Prop. Present.					
8.6 Develop Contr.					
15.1 Estab Account					
15.2 Update Contr					
15.3 Maint Contract					
16.1 Legal Review					
17.19 Keep Time Rcrd					
Activities on in the Claims Process	88.0				
Totals	100.0	33.0	33/33	X\$64	\$64

- (a) Per manager's estimates.
- (b) Data from claims batch system that applies to Customer Service Activities assumed by researcher to apply only to Customer Service Activities associated with billing.
- (c) Weighing factor for Activity defined to be ratio of percentages of department budget applicable to Activity to the total of these percentages.
- (d) From table 45.
- (e) Column (c) x column (d). Carried forward to table 42.

Table 45--Allocation of Batch Claims System Systems and  
Programming Costs to Departmental Sections  
Served by System

Dept	Monthly Budget (a)	Pct of (b)	Mthly System Costs (c)	Amt Alloc to Dept (d)	Pct Alloc to Sect. (e)	Amt Alloc to Sect. (f)
Acctg	\$ 58,612	.032	\$10,562	\$338	.32	\$108
Actuarial	83,611	.046	-	not in Claims Process		
Claims	1,419,379	.775	-	not in Claims Process		
Cust. Serv	29,469	.016	10,562	\$169	.38	64
Engin.	239,992	.131	-	not in Claims Process		
	\$1,831,063	1.000				

- (a) Average of 6 months expenses per budget report of departments served by batch claims system
- (b) Percent of monthly budget to total of column (a)
- (c) From table 51
- (d) Column (b) X column (c)
- (e) Estimated percentages applicable to the departmental section of the Activities per managers
- (f) Column (d) X column (e). To tables 45 and 46.

Table 46--Allocation of General Ledger Systems and  
Programming Costs to Accounting Services  
Section's Activities

Activity	Pct of Dept Exp Applied to Act (a)	Pcts Applied to Gen Ledger (b)	Ratio (c)	Times Mthly Exp (d)	Gen Led Costs Applied to Act (e)
1.2 Maint Bill Rcd	1				
1.3 Calc. Amts	1				
1.4 Prepare Bill.	1				
1.6 Collect Amount	1	1	1/9	X\$475	52
1.19 Reconcile Bank	5	5	5/9	X 475	265
1.20 Trans. Record	2	2	2/9	X 475	106
1.21 Estab Bank Acc	1	1	1/9	X 475	52
2.20 Design/Code Pr					
3.2 Negotiate Atty					
3.9 Investig. Clm					
3.10 Evaluate Claim					
3.11 Negotiate Sett					
3.12 Report to Cust					
3.20 Process Paymnt					
3.21 Approve Paymnt					
3.25 Handle Salv/Su					
3.28 Notify Custom					
3.30 Claimant Inqui					
8.4 Develop Propos					
8.5 Prop. Present.					
8.6 Develop Contr.					
15.1 Estab Account					
15.2 Update Contr					
15.3 Maint Contract					
16.1 Legal Review					
17.19 Keep Time Rcrd					
Activities not in the Claims Process	88				
Totals	100	9	9/9	X\$475	\$475

(a) Per manager's estimates.

(b) Data from general ledger that applies to Accounting Services Activities assumed by researcher to apply only to Accounting Service Activities associated with banking and collections.

(c) Weighing factor for Activity defined to be ratio of percentages of department budget applicable to Activity to the total of these percentages.



(d)	System costs from table 49 column (e)	\$1,485
	Percent allocable to Accounting Section with Activities in the Claims Process per supervisor	X .32
	Amount allocable to section	\$ 475
(e)	Column (c) x column (d). Carried forward to table 33.	

Table 47--Allocation of On-Line Claims System Systems and Programming Costs to Claims Adjusting Activities

Activity	Pct of Dept Exp Applied to Act (a)	Pcts Applied to Clms System (b)	Ratio (c)	Times Mthly Exp (d)	Claims System Costs Applied to Act (e)
1.2					
1.3					
1.4					
1.6					
1.19					
1.20					
1.21					
2.20					
3.2	10	10	10/60	X\$17,824	\$ 2,970
3.9	25	25	25/60	X 17,824	7,426
3.10	5	5	5/60	X 17,824	1,486
3.11	10	10	10/60	X 17,824	2,970
3.12	5				
3.20	5	5	5/60	X 17,824	1,486
3.21	5	5	5/60	X 17,824	1,486
3.25					
3.28					
3.30	5				
8.4					
8.5					
8.6					
15.1					
15.2					
15.3					
16.1					
17.19	5				
Activities not in the Claims Process	25				
Totals	100	60	60/60	X\$17,824	\$17,824

(a) Per manager's estimates.

(b) Since the on-line claims system supports claims adjusting, its costs were allocated by the researcher only to Activities associated with adjusting claims.

(c) Weighing factor for Activity defined to be ratio of percentages of department budget applicable to Activity to the total of these percentages.

(d) From table 50 column (b).

(e) Column (c) x column (d). Carried forward to table 33.

Table 48--Allocation of Marketing Systems and Programming Costs to Marketing Activities

Activity	Pct of Dept Exp Applied to Act (a)	Pcts Applied to Mktg System (b)	Ratio (c)	Times Mthly Exp (d)	Mktg System Costs Applied to Act (e)
1.2					
1.3					
1.4					
1.6					
1.19					
1.20					
1.21					
2.20					
3.2					
3.9					
3.10					
3.11					
3.12					
3.20					
3.21					
3.25					
3.28					
3.30					
8.4	15	15	15/65	X\$3,961	914
8.5					
8.6					
15.1					
15.2					
15.3					
16.1					
17.19					
Activities not in the Claims Process	85	50	50/65	X 3,961	\$3,047
Total	100	65	65/65	X\$3,961	\$3,961

- (a) Per manager's estimates.  
 (b) Data from Marketing information has customer information and is used for proposals.  
 (c) Weighing factor for Activity defined to be ratio of percentages of department budget applicable to Activity to the total of these percentages.  
 (d) From table 51.  
 (e) Column (c) x column (d). Carried forward to table 35.

Table 49--Assignment of Other Systems and Programming Costs

Activity	Lit Mgmt (a)	Time- Keep (b)	Cust Serv (c)	Total Total (d)
1.2				
1.3				
1.4				
1.6				
1.19				
1.20				
1.21				
2.20				
3.2	\$1,320			\$1,320
3.9				
3.10				
3.11				
3.12				
3.20				
3.21				
3.25				
3.28				
3.30				
8.4				
8.5				
8.6				
15.1			\$165	\$165
15.2				
15.3				
16.1				
17.19		\$825		\$825
Totals	\$1,320	\$825	\$165	\$2,310

(a) From table 50 column (a).

(b) From table 50 column (g).

(c) From table 50 column (h).

(d) Column (a) + column (b) + column (c). Carried forward to table 41.

Table 50--Calculation of Ratios for Allocating Systems  
and Programming Department Monthly Costs  
to Application Systems Supporting  
the Claims Process

Project	Project Hours Expended on Application Systems:							
	Lit. Mgmt	O/L Clms	Batch Clms	Cust Spec	Gen Led	Mktg	Time- Keep	Cust Serv
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
1504		3,125						
1641			2					
1709			158					
1750		24						
1780						39		
1798			11					
1812							195	
1813				1,033				
1854						533		
1857								41
1869		459						
1878			16					
1889						101		
10601			1,982					
10603					114			
10625					156			
10626						34		
10648					38			
12041							9	
14013					42			
17005				59				
17008	7							
17010	133							
17011			24					
17012			36					
17013				5				
17017		151						
17020	53							
17025						166		
17026		378						
17027				32				
17028			143					
17030						104		
17031		153						
17035				20				
17037	64							
17041		28						
17047	46							

Project Hours Expended on Application Systems:								
Project	Lit. Mgmt	O/L Clms	Batch Clms	Cust Spec	Gen Led	Mktg	Time-Keep	Cust Serv
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
17015				52				
17016				6				
17022			52					
17034				9				
17038				12				
17043				38				
17044				6				
17045			116					
Ttl Hrs	303	4,318	2,540	1,272	350	977	204	41
% of Hr.008		.108	.064	.032	.009	.024	.005	.001
X \$165,036*								
System Cost	1,320	17,824	10,562	5,281	1,485	3,961	825	165
								165,036

\* Calculation of Systems and Programming Department monthly expenses:  
7 months expenses per budget report \$1,155,250.64  
Divide by 7 ÷ 7  
Average monthly expense \$ 165,036

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