THE STRUCTURE OF PROJECT TEAMS

FACING DIFFERENTIATED ENVIRONMENTS:

A STUDY OF PUBLIC ACCOUNTING FIRMS

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By

David John Hopetoun Watson, B.Com., M.A.

* * * * *

The Ohio State University
1972

Approved by

[Signature]

Department of Accounting
To my mother,

Thelma G. Watson

The Moving Finger writes; and, having writ,
Moves on; nor all thy Piety nor Wit
Shall lure it back to cancel half a Line,
Nor all thy Tears wash out a Word of it.

--The Rubáiyát of Omar Khayyám
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David J. H. Watson
VITA

January 29, 1945 . . . Born - Sydney, Australia

1968 . . . . . . . B.Com., University of Queensland,
Brisbane, Australia

1971 . . . . . . . M.A., The Ohio State University
Columbus, Ohio

1968-1972 . . . . Teaching Associate and Research Associate,
Department of Accounting
The Ohio State University, Columbus, Ohio

PUBLICATIONS

"On the Use of Surrogates in Behavioral Experimentation," Accounting
Review, XLI Supplement (1972), 455-71 (with John W. Dickhaut and
J. Leslie Livingstone).

FIELDS OF STUDY

Major field: Accounting

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Economics
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CHAPTER I

An Overview

Given a theory $T$, producing result $R$, an alternative theory $T^1$ producing result $R^1$, and a set of transformations $\{\tau_j\}, j = 0, 1, \ldots, 5$, consistent with both $T$ and $T^1$, then an experiment is the set

$$E = < \{\tau_j\}, j = 0, 1, \ldots, 5, (T, R), (T^1, R^1)>.$$ 

The purpose of conducting $E$ is to choose $T$ or $T^1$ on the basis of whether $R$ or $R^1$ obtains upon application of the transformation $\{\tau_j\}, j = 0, 1, \ldots, 5,$ to $\Omega$ [the universe of potential observations]. If some (but not all) of the $\{\tau_j\}$ are known, then we have the conditions for an investigation rather than an experiment. If the theory is imprecise and none of the $\{\tau_j\}$ are known, the study is an exploration.¹

This study is an exploration. The purpose of this (or any) exploration is to provide a basis for future investigations on the same subject, which in turn should eventually lead to experimentation. Perhaps the present research study can best be described by elaborating upon the above quotation and linking the broad explanation of the research to this elaboration.

Mackenzie and Barron provide the following synopsis of an experimenter's decision process.

His (the experimenter's) theory suggests a set of results, $R$, which would allow discrimination among several possible alternatives. Given $R$ and hypothesis testing techniques, there is

a relevant set of data, \( D_{HT} \), which would yield \( R \) given the hypothesis testing technique. The set \( D_{HT} \) is obtained from a set of measures, \( M \), which are applied to a set of raw data \( D_R \). The set of raw data, usually in the form of symbols like numbers, is the result of coding his recorded observations, \( D \). The set \( D \) constitutes a subset of possible observations in the experimental environment \( \Omega_E \) which is itself a very restricted subset of the real world, \( \Omega \).²

This process is shown schematically below.³

\[
\begin{array}{cccccc}
\{\Omega\} & \xrightarrow{\tau_0} & \{\Omega_E\} & \xrightarrow{\tau_1} & \{D\} & \xrightarrow{\tau_2} & \{D_R\} & \xrightarrow{\tau_3} & \{M\} & \xrightarrow{\tau_4} & \{D_{HT}\} & \xrightarrow{\tau_5} & \{R\}
\end{array}
\]

Recording  Coding  Hypothesis Model testing

universe potential recorded raw measures data results
observations observations data for hypothesis testing
under the "chosen experiment"

Fig. 1.--The states of data and transformation of the experimenter's decision process.

The dissertation research was undertaken to examine some environmental and structural aspects of organizations, in particular, public accounting firms. The universe of potential observations is not limited by the theory to any particular organization or any particular organizational aspects. However, the "chosen experiment" consisted of public accounting firms (one in particular) because of the researcher's background and the availability of the public


³Ibid., B-227.
accounting firms as a research site. The exploration was also limited
to environmental and structural aspects of public accounting firms.
The reasoning for this limitation is developed in the second chapter of the dissertation.

The recorded observations were made on a subset of structural dimensions and environmental variables. The dimensions of structure chosen were some of those thought to be particularly relevant to small work groups, and the environment dimensions were restricted to those of the organization's task environment. The raw data were recorded as numbers, letters and patterns during semi-structured interviews. These were then converted into measures through the use of ordinal and ratio scaling. These transformations are discussed in detail in Chapters II and III.

The data analysis is the subject of Chapter IV. The results are discussed in terms of the hypotheses developed in the paper and the organization theory of other authors. Some limited statistical analysis is also employed (principally the parametric t test and the nonparametric Mann Whitney U test) to give the reader some idea of the strength of the suggested associations. Chapter V completes the dissertation. This last chapter records some suggested changes in the transformations used in the research and records a few speculative thoughts.
The Philosophy of the Research

Little is known about the origin of hunches, theories, and hypotheses. The proper strategy for developing human knowledge is still a controversial question. One viewpoint, argued incisively by Popper, is that experimentation is the only proper means of expanding human knowledge.⁴ However, such experimentation relies on well developed theories and these, at present, are found only in the physical sciences. A less dogmatic viewpoint is offered by Simon.⁵ He describes five phases in the research process:

1. The enterprise (research process) generally begins with empirical data, rather than a hypothesis out of the blue.⁶
2. Striking features of the data provide for a simple generalization that summarizes them approximately.⁷
3. We search for limiting conditions that will improve the approximation by manipulating variables that will affect its goodness.⁸
4. We construct simple mechanisms to explain simple generalizations—showing that the latter can be deduced from the former.⁹


⁵Herbert A. Simon, "On Judging the Plausibility of Theories," Ibid., 439-58.

⁶Ibid., 457-8.

⁷Ibid.

⁸Ibid.

⁹Ibid.
5. The explanatory theories generally make predictions that go beyond the simple generalizations in a number of respects and hence suggest new empirical observations and experiments that allow them to be tested further.\(^{10}\)

Step 5 is the experimental phase used to test well developed theories. However, in the absence of well developed theories other forms of research seem appropriate. To summarize, in terms used by Mackenzie and Barron, when theories lack sufficient clarity to allow a priori specification of the transformations, \(r_0, r_1, \ldots, r_5\), required to proceed from \(\Omega\) to \(R\) explorations and investigations are the appropriate research vehicles.\(^{11}\)

While the aim of the behavioral sciences is to develop generally valid theories, this end has not yet been achieved. Basic concepts such as structure, change, attitude, power, etc., need a lot more work. What theories do exist are usually not well specified either in their theoretical constructs or in their operational interpretation and measurement of these constructs. Consequently, more investigative and exploratory research is required to help refine and develop these theories.

The fundamental importance and relevance of the behavioral sciences to accounting is exemplified by the number of recent

\(^{10}\)ibid.

\(^{11}\)Mackenzie and Barron, op. cit.
behaviorally oriented accounting research studies. A subset of these studies has been concerned with organizational and social psychological aspects of public accounting firms. These types of studies have been an outgrowth of the concerns of a rapidly expanding public accounting profession. Although limited by undeveloped behavioral sciences these studies seem to have the potential for contributing to both the accounting profession and the behavioral sciences in general. The purpose of this present exploration is to make such a contribution with particular relevance to understanding professional accounting organizations and secondly to organization theory.

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12 For a summary of these recent articles see:

13 As examples see:

Don T. DeCoste and John Grant Rhode, "The Accountant's Stereotype: Real or Imagined, Desired or Unwarranted," Accounting Review, XLVI (October, 1971), 651-64.
CHAPTER II

The Research Focus

One framework useful for analyzing organizational behavior, particularly the great importance open systems theory attaches to the interaction between an organization and its immediate environment, is reproduced below. Notice, that this paradigm gives the environment prominence in three of the four cells and interaction between the organization and its environment in two of the four cells.

With this addition, we may now state the following general proposition: That a comprehensive understanding of organizational behavior requires some knowledge of each member of the following set, where L indicates some potentially lawful connection, and the suffix 1 refers to the organization and the suffix 2 to the environment:

\[
L_{11} \quad L_{12} \\
L_{21} \quad L_{22}
\]

$L_{11}$ here refers to processes within the organization—the area of internal interdependencies; $L_{12}$ and $L_{21}$ to exchanges between the organization and its environment—the area of transactional interdependencies, from either direction; and $L_{22}$ to processes through which parts of the environment become related to each other—i.e. its causal texture—the area of interdependencies that belong within the environment itself.\(^1\)

Obviously, any discussion of organizational behavior and any research on organizational behavior could range over all cells in the

above paradigm. But equally obvious is that any in depth discussion or research on organizations is necessarily going to be limited in scope. Practical limitations force, from any single research effort, the exclusion of many important interdependencies. The research reported in this paper excludes each cell in the Emery and Trist paradigm except cell L_{21}, the area of environmental influence on the organization. Within this narrower framework the research only examines the influence that subparts of the task environments faced by a public accounting organization have on subsystems of that organization.\(^2\) In particular, some structural characteristics of these subsystems and how these characteristics vary with the relevant subenvironment stability are examined.\(^3\)

\(^2\)Thompson defines the task environment as "those parts of the environment which are relevant or potentially relevant to goal seeking and goal attainment." James D. Thompson, Organizations in Action (New York: McGraw-Hill Book Company, 1967), 27.

For an excellent discussion of the Emery and Trist paradigm, especially of the importance of other interdependencies see: Shirley Terrebbery, "The Evolution of Organizational Environments," Administrative Science Quarterly, XII (March, 1968), 590-613.

\(^3\)Along a similar view, the concentration on sociological or structural variables in the research results in the absence of psychological and anthropological variables. Again the reason is the obvious impracticality of including all possible variables in one piece of research and so which variables are "arbitrarily" included (or excluded) depends upon the individual researcher, his background and what he deems most interesting and productive.
Relation to Previous Organizational Research

The impetus for the research was the work of Lawrence and Lorsch. In their own work Lawrence and Lorsch draw on a number of previous studies, but none more heavily than Burns and Stalker. It was their research in the electronics industry which provided substantial insight into environmental influence on the internal structure of organizations.

Burns and Stalker suggest that organizations can be placed on a continuum, one end of which is defined as a mechanistic type of organization and the other extreme is defined as an organic or organismic type of organization. Burns and Stalker describe these types or organization in the following passages. The mechanistic type is first described.

In mechanistic systems the problems and tasks facing the concern as a whole are broken down into specialisms. Each individual pursues his task as something distinct from the real tasks of the concern as a whole, as if it were the subject of a sub-contract. 'Somebody at the top' is responsible for seeing to its relevance. The technical methods, duties, and powers attached to each functional role are precisely defined. Interaction within management tends to be vertical, i.e., between superior and subordinate. Operations and working behavior are governed by instructions and decisions issued by superiors. This command hierarchy is maintained by the implicit assumption that all knowledge about the situation of the firm and its tasks is, or should be, available only to

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6Ibid.
the head of the firm. Management, often visualized as the complex hierarchy familiar in organization charts, operates a simple control system, with information flowing up through a succession of filters, and decisions and instructions flowing downwards through a succession of amplifiers.\(^7\)

In describing organic systems they state:

Organic systems are adapted to unstable conditions, when problems and requirements for action arise which cannot be broken down and distributed among specialist roles within a clearly defined hierarchy. Individuals have to perform their special tasks in the light of their knowledge of the tasks of the firm as a whole. Jobs lose much of their formal definition in terms of methods, duties, and powers, which have to be redefined continually by interaction with others participating in a task. Interaction runs laterally as much as vertically. Communication between people of different ranks tends to resemble lateral consultation rather than vertical command. Omniscience can no longer be imputed to the head of the concern.\(^8\)

Burns and Stalker, as well as Lawrence and Lorsch, have concluded, in general terms, that a mechanistic system is appropriate for organizations facing stable environments, but for organizations facing unstable environments (conditions of change) an organismic system is the more appropriate structural form.\(^9\)

Another vigorous attempt at explaining organizational structure is the research examining the relationship of organizational technology and organizational structure. The conceptual framework for this

\(^7\)Ibid., 5.

\(^8\)Ibid., 5-6.

\(^9\)Burns and Stalker, Ibid.
Lawrence and Lorsch, op. cit.
research is well developed by Charles Perrow. He defines technology as:

... the actions that an individual performs upon an object, with or without the aid of tools or mechanical devices in order to make some change in that object. The object or "raw material" may be a living human being or otherwise, a symbol or an inanimate object.

Perrow elaborates on those aspects of technology and raw materials he considers crucial to organizational structure. According to Perrow, the crucial aspects of technology are the number of exceptional cases encountered in the work and the nature of the search process undertaken by the individual concerned, while the understandability of the nature of the raw material and its stability and variability are the crucial characteristics of raw material.

Pugh, Hickson and their colleagues have conducted a variety of investigations on organizational structure, one of which is particularly pertinent here. These researchers refine the concept of technology by suggesting three facets of the concept:

1. **operations technology**, the techniques that an organization uses in its work flow activities,

---


11Ibid., 195. 12Ibid., 195-96. 13Ibid., 196-97.

2. **materials technology**, a concept that is concerned with the characteristics of the materials used in the workflow, and

3. **knowledge technology**, which is the characteristics of the knowledge used in the workflow.\(^\text{15}\)

The theoretical schemes of Hickson, et al., and Perrow are very similar. The concepts of materials technology and knowledge technology are basically the same as the crucial aspects of raw materials enumerated by Perrow, while the concept of operations technology is similar to Perrow's definition of technology.\(^\text{16}\)

The empirical research reported by the above authors is limited primarily to organizational structure and operations technology, and this is in the Hickson, Pugh and Pheysey paper.\(^\text{17}\) In all of their studies, while some correlations were established between structure and technology, the empirical support for the authors' predictions was not overwhelming. This comment is also true of the results of another study on the relationship between organizational structure and organizational technology. Hage and Aiken based their research

\(^{15}\text{Ibid.}, 380. Note, the authors also give a stricter definition of operations technology when they define the concept as "the equiping and sequencing of activities in the workflow." Ibid.}\)

\(^{16}\text{These comparisons are based on the two articles by the respective authors cited above.}\)

\(^{17}\text{Other relevant articles by Pugh and Hickson include: D. S. Pugh, D. J. Hickson, and C. R. Turner, "An Empirical Taxonomy of Structures of Work Organizations," Administrative Science Quarterly, XIV (March, 1969), 115-26.}\)

on the Perrow paradigm and found some limited relation between technology (defined as routineness of work) and social structure.\textsuperscript{18} Mohr, however, proposes a less optimistic interpretation on the reported results suggesting that, "there is not a great deal of reliable evidence that the social structure of organizations is strongly affected by technology."\textsuperscript{19} Mohr further suggests, "Research on the determinants of most dimensions of social structure in organizations should probably emphasize independent variables other than technological characteristics."\textsuperscript{20}

One of the most disturbing aspects of the above literature is the absence of any really clear conception of what is meant by technology.\textsuperscript{21} Additionally, most of the research has been conducted in industrial organizations where the conceptual definition of technology seems to reflect only the scientific and physical attributes of the production processes studied. This is evident in the Woodward study where the technological distinctions were unit and small batch

\textsuperscript{18}Jerald Hage and Michael Aiken, "Routine Technology, Social Structure, and Organization Goals," \textit{Administrative Science Quarterly}, XIV (September, 1969), 366-76.

\textsuperscript{19}Lawrence B. Mohr, "Organizational Technology and Organizational Structure," \textit{Administrative Science Quarterly}, XVI (December, 1971), 444-59.

\textsuperscript{20}Ibid., 444.

\textsuperscript{21}One reason for the confusion is offered by Mohr. He suggests that "technology" is a multi-dimensional concept not capable of uni-dimensional interpretation. \textit{Ibid.}
production, large batch and mass production, and process production. The same problem appears in the Hickson, Pugh and Pheysey article investigating the relation of operations technology to organizational structure. Even though their research effort includes a number of service organizations the majority of the analysis is concerned with the manufacturing firms in the survey and much of the article is concerned with a reconciliation between their results and Woodward's results using the latter's technological classification. Mohr summarizes the theme of the above criticism when he states, "There is little cumulative theoretical profit in treating crude collective categories, such as mass-production industries, as single points or a scale of technology."

Lawrence and Lorsch appear to have broken somewhat with the above tradition when they studied the relationship of the environment to an organization's structure. While they have recognized the technological variable this has been absorbed in the broader variable, environment. This view is supported by Perrow, at least in so far as

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23 Hickson, Pugh and Pheysey, op. cit.

24 Ibid. Woodward, op. cit.

25 Mohr, op. cit. The underlying philosophical issue has been well aired in the philosophy of science literature. For a forceful presentation of the problems empirical research may encounter see: Karl R. Popper, The Logic of Scientific Discovery (New York: Science Editions, Inc., 1961).

26 Lawrence and Lorsch, op. cit.
the original Lorsch study is concerned.\textsuperscript{27} Perrow states:

The key role is reserved (in the Stinchcombe study) for market factors and this is true of two other comparative studies—the study of two business concerns by Dill and an ambitious study of two industrial firms by Lorsch. In both of these cases it would appear that technology is an important variable but is absorbed in the broader variable, environment.\textsuperscript{28}

The research presented in this thesis also reserves the key role for the environment and as an explanation of this position a short re-examination of the above studies and some additional studies is undertaken.

Consider first the definitions of materials technology and knowledge technology presented by Hickson, Pugh and Pheysey (and indirectly by Perrow).\textsuperscript{29} These researchers view the concept they are discussing as a \textit{technological} variable, but the concept could easily be conceived of as an \textit{environmental} variable. Consider, for example, the manufacturing of steel plate. The iron ore \textit{input} can vary widely in quality. A firm's reaction to this quality variance seems to be more of a reaction to environmental variation than technological variation. Granted the organization may react so that the variation has technological consequences (for example, if the iron ore quality was too low, steel scrape may be added to raise the quality) but, the

\begin{flushleft}
\textsuperscript{27} Perrow, op. cit.
\textsuperscript{28} Perrow, op. cit.
\textsuperscript{29} Perrow, \textit{ibid.}
Hickson, Pugh and Pheysey, op. cit.
\end{flushleft}
reaction could also be such that no technological consequences follow (for example, the firm could just reject--send back to the supplier--the low grade iron ore). To extend the above example, how the firm upgrades the iron ore input could be interpreted as reflecting "the state of the art" of steel manufacturing (an environmental variable from a single organization's viewpoint) rather than reflecting some aspect of the technology employed by the organization.

Possibly the clearest example of this confusion between technological and environmental effects on organizational structure is found in an article by Harvey.\textsuperscript{30} Harvey defines technology as "the mechanism or processes by which an organization turns out its product or service."\textsuperscript{31} He suggests two bases of classifying firms:

1. the number of major product changes during the last ten years, and

2. the average number of different kinds of products used in the last ten years.

Because of the high correlation between these two bases Harvey chose to classify his firms as technically specific, technically intermediate and technically diffuse on the first dimension only.\textsuperscript{32}


\textsuperscript{31}Ibid., 247.

\textsuperscript{32}Ibid., 252.
In comparing Harvey's conceptual definition of technology and his operational classification of the firms Harvey appears to have moved from an independent variable based on technology to an independent variable based on environmental contingencies. Lawrence and Lorsch certainly interpret questions similar to the basis used by Harvey as reflecting environmental demands. Interestingly, Harvey also interprets Stinchcombe's results on a technological basis although Stinchcombe placed an environmental interpretation on his own results.

As noted above, this thesis also employs environmental stability as the independent variable. A number of factors, two to be explored in detail in the following sections, suggest using the environmental variable. First, if the definition of technology as given by Perrow is accepted, there seems to be no clear way of distinguishing between subsystems of one public accounting firm. Each subsystem uses the same organizing methodology. Second, and this is an extension of the first argument, public accounting firms employ what Thompson has labelled as intensive technology, no matter which subsystem is considered. All the public accountants' work is client oriented.

33Lawrence and Lorsch, op. cit. See especially question 10(a) of their environmental interview questionnaire.

34Harvey, op. cit.

35This is discussed in more detail in Chapter III.

36Thompson, op. cit., 17.
Finally, the criticisms voiced by Mohr on the above studies give some academic impetus for examining explanatory variables other than technology. 37

A Model of the CPA Firm

An organization can be modeled on a cycle consisting of three basic units, namely:

1. an input unit, leading to
2. a transformation process, leading to
3. an output unit.

Many closed system and open system theorists view the organization in this way. To be consistent with open systems theory we only need to incorporate interaction between the subunits and their environment. This is essentially what Thompson has proposed in his firm model (an open system subject to rationality norms) and what Katz and Kahn have proposed in their model (an energetic cycle). 38 These systems can easily be made dynamic and more complex by insisting that the cycle repeats itself continuously, by the addition of interaction effects among subsystems, and by magnifying the subsystems to expose their own cycles.

37 Mohr, op. cit.

38 Thompson, op. cit.

Public accounting firms are professional service oriented organizations and the following interpretation of the above cycle for this type of organization seems appropriate. The inputs may be thought of as unresolved problems (client problems in particular). An example of an auditing section's problem could be a client's set of unaudited financial statements. For the management services section an example is the problem of designing a new information system. The transformation process is the application of knowledge (technology or expertise) by the professional practitioner to the client's problem. The output thus becomes the solution set generated by the practitioner during the transformation process. To extend the above examples, the output for the auditing section may be a set of audited financial statements while for the management services section the solution set may be a set of possible information system designs. A diagrammatic presentation of the basic static model then is as follows:

<table>
<thead>
<tr>
<th>Abstract Model</th>
<th>input</th>
<th>transformation process</th>
<th>output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Model</td>
<td>client problem</td>
<td>application of expertise to client problem by practitioner</td>
<td>solution to client problem</td>
</tr>
</tbody>
</table>

This model can be expanded to include a cycle for each of the functional areas typical of public accounting firms and could easily be thought of as dynamic if the effects of any output on future inputs...
were considered or the cross functional area effects were incorporated. In this research the only expansion was to include the two functional areas of auditing services and management services. The basic reasons for this limited expansion were practical ones, namely, the need to limit the research task so that the research could be completed within a reasonable period; and the difficulty for the present in obtaining an acceptable operational definition of the project teams for the third major function of public accounting firms, the taxation services area. Another reason for the exclusion of the taxation services function was the immense difficulty (present impossibility) of developing a priori assertions on the environmental stability of the taxation services subenvironment.

Environment of the Public Accounting Firm

Since only the auditing services and management services sections are examined in the research, only the subenvironments as they relate to these functional areas are discussed.

The input environment

The input (raw material) to the transformation process is a client problem. Generally, the auditing area subenvironment was expected to be relatively stable while the management service sub-environment was expected to be relatively uncertain.

Audit engagements in no way represent a completely standardized input. Different client organizations have different accounting
Accounting systems are either tailored for an organization or they evolve as the organization evolves. Consequently each accounting system has some idiosyncrasies representing the particular characteristics and information requirements of the organization. However, and this is important, all financial accounting systems have substantially the same constraints. Accounting systems are based upon the principals of double entry bookkeeping and each system needs to produce financial information acceptable to the investing public, the public accounting profession and governmental agencies (for example, the Security and Exchange Commission and the Public Utilities Commissions). The auditor's challenge is to determine whether the financial information produced by the accounting system has been produced according to generally accepted accounting principles and the requirements of the law. Once the accounting system has been specified the problem facing the auditor becomes somewhat routine.

A second, and possibly the more important point, is that audit engagements are usually repeated. This means that the one accounting firm retains the audit of a corporation for several consecutive years. A major reason for this stability in the client—accounting firm relationship is the tremendous amount of learning required (of the client's accounting system, internal control procedures and general business) for the initial audit and consequently, the time and cost involved. Once the initial audit is completed subsequent audits should require minimal new learning, since most organizational changes
are only marginal changes in existing activities.

Client problems in the management services area are not con-
strained in the above ways. Problems arise in the normal organizational
activity and for various reasons management decides outside experts are
needed to solve the problem. The problem received by the accounting
firm is in a way a matter of chance. Each case is, in many respects,
unique in that the problem depends upon the particular client organi-
zation, the client's goals, economic conditions, task environment and
a myriad of other details. In many cases the problem is poorly defined.

A second significant contrast is that problems are not likely
to repeat themselves, especially within a client organization. In
fact, the following seems a viable professional position, namely, that
the more successful the public accounting firm is in solving a partic-
ular client's problem, the less likely the problem is to reappear for
that client.

These general comments regarding management service engagements
remain true even when the type of client problem is restricted to the
design and installation of electronic data processing (EDP) systems.
Requirements still vary widely among clients and still depend upon the
numerous variables suggested above. Even here the client's definition
of his problem may be quite unclear. In the accounting firm studied
their own booklet on EDP system assignments suggests, that where the
objectives of the engagement have not been clearly stated by the client
it is the accounting firm's responsibility to assist the client in
developing the objectives and when the scope and objectives have been
stated in a disorganized or inappropriate fashion the accounting firm's responsibility is to assist the client in structuring the objectives differently.39

Even so, the restriction to the design and installation of EDP systems limits the possible range of variation in management service problems. However, in this initial research effort, concentrating on EDP system type of problem seemed rational, as over fifty percent of the management service engagements in the accounting firm studied were concerned with the design and installation of EDP systems. Also, this area is probably one of the most rapidly expanding areas for public accounting firms. A similar cost-benefit rationale led to the exclusion of initial audit assignments from the empirical research. The great majority of audit assignments are second or subsequent year end audits for clients and so this audit problem type received the empirical research attention.

The transformation environment

The transformation process in public accounting involves the application of professional expertise, knowledge and available techniques by the practitioner to the client's problem. The totality of available techniques, knowledge and expertise is referred to as the

39 The booklet also suggests that the firm should not define the client's business or goals but should only help organize and communicate the client's requirements. Advice must be given but not in a manner that may jeopardize the accounting firm's objectivity and independence.
technology of the industry (or society) or "the state of the art."

The state of the art of auditing does not seem to be expanding or changing as quickly as the state of the art in management services. Certainly there have been recently some important changes in the techniques of auditing, for example, the extensive use of statistically based sampling. Other important changes in auditing techniques have resulted from the growing number of electronic data processing systems. New methods had to be developed for extracting the required audit information from the accounting records. However, these changes do not match the scientific boom in the EDP area with the resultant repercussions on system design and installation. Consequently, the auditing subenvironment was expected to be relatively stable while the management services subenvironment was expected to be relatively unstable.

The output environment

The output of the transformation process should be a solution to the client's problem. In the case of auditing this is an audited set of financial statements with the accounting firm's opinion attached. For the management service area the solution is a systems design or the design and installation of the system.

The auditors' prime responsibility is to ensure the opinion issued is based upon a professional performance during the transformation process. The auditor does need to meet certain legal and moral obligations but these are usually met if a professional performance
if forthcoming during the audit.\textsuperscript{40} Also, in theory, a professional performance is all that needs concern the client. In practice however, what is stated in the accounting firm's opinion may at times assume some importance for the client.\textsuperscript{41}

A management service engagement presents slightly different constraints on the solution. The public accountant must again ensure a professional performance. However he must also insure the client's needs are met and that the client is completely satisfied. With respect to the system the client has certain expectations regarding the output and usefulness of the system. These expectations, even though they probably change over time, must be fulfilled. Whether the system design can be implemented, whether output does meet client expectations and is useful to the client can only be fully answered once the system has been installed and has been fully operational for a reasonable length of time. Consequently the auditing output

\textsuperscript{40}Recently, there has been an increasing number of law suits brought against the major public accounting firms particularly by client creditors and shareholders. This is provoking some serious debate within the accounting profession and is of some concern to accounting firms. As yet, considering the volume of opinions issued the suits have not been too serious.

\textsuperscript{41}This is especially true where qualifications are made by the accounting firm. The nature and strength of the qualifications are important to the client (because of legal and financial repercussions). However, any implications drawn from this interdependence regarding the audit would be highly political and speculative and are therefore not discussed in this paper.
environment was expected to be more stable than the management services output environment.

**Project Teams**

Lawrence and Lorsch examined industrial organizations which were composed of distinct subsystems and where, within the functional classification, the same type of work assignment was continuously repeated.\(^{42}\) For example, the production divisions were distinct from the marketing divisions, and within the production divisions the one type of production activity was constantly repeated (this was true even in the chemical and food processing industries where production faced the greatest uncertainty because of changing production runs, product changes, etc.). The divisions appear to be the basic operating units. Consequently, the division as a whole was seen as the applicable unit to investigate.

The functional units of auditing and management services represent subdivisions of the organization developed for handling a differentiated task environment. However, they are not the basic operating units. The basic operating unit in the public accounting firm is the project team. This description is used to cover both an audit team—a team composed of auditing staff—and a management service team—a team composed of management service staff.

\(^{42}\)Lawrence and Lorsch, op. cit.
A project team can be defined as: a small group of practitioners who are members of the accounting firm under investigation and who are working on a well defined assignment for the firm. This definition is sufficiently broad to cover members of both functional areas. The definition is also sufficiently broad to cover all assignments the firm undertakes whether large or small and whether the project team had (or will have) a short or long life. As a practical matter, the project teams researched were only those that existed for a reasonable length of time. Essentially, only teams working on large audit assignments or large management service assignments were investigated. In summary, temporary systems were investigated but, so they could be investigated, an arbitrary period for their existence was defined. This is specified further in the following chapter.

Environmental Uncertainty Hypothesis

The discussion above has attempted to indicate a difference in the relative uncertainty of the subenvironments facing project teams within the public accounting firm. There is a substantial amount of circumstantial evidence suggesting a difference. However, to this writer's knowledge no systematic evidence has been collected supporting such a view. In addition, a priori arguments suggest that the management services subenvironment reflects greater uncertainty than the audit subenvironment. As such the following hypothesis is offered:
\( H_1 \) That the subenvironment faced by the management service project teams exhibits greater uncertainty than the subenvironment faced by audit project teams.

**Structure Hypothesis**

Earlier in this chapter a number of studies were mentioned that suggested the formality of a systems structure is related to the uncertainty in the task environment.\(^{43}\) The present research simply applies this general notion to the basic working units in a public accounting firm. The following hypothesis is offered as the second major hypothesis of the study:

\( H_2 \) The greater the stability of the relevant task environment the more formalized the structure of the project team.

\(^{43}\) See for example:
Burns and Stalker, op. cit.
Lawrence and Lorsch, op. cit.

The dimensions of structure used and the rationale for their use are discussed in Chapter III.
CHAPTER III

A Description of the Work Methodology of Public Accounting Firms

The basic instrument used in a public accounting firm to guide and control the firm's personnel in determining a solution to a client problem is called a program, commonly termed an audit program in the functional area of auditing and a work program in the functional area of management services. Audit programs have been used by public accounting firms in their conduct of audit engagements for some time, and undoubtedly the success of the program approach here led to its adoption in the management services area. What follows is a description of the general approach used in conducting an audit or a management service assignment.¹

The first step in an assignment is a "quick" review of the client's situation. In an audit the review consists primarily of evaluating the client's accounting procedures and his system of internal control. The management services review consists of reviewing the client's present procedures and defining the problem and the objectives of the project. Essentially, the review involves gathering sufficient detail to enable the development of the program. The program then

¹The chronological phases of audit and management service assignments with a suggested equivalence of the phases is diagrammed on the following page.
Fig. 2.—Chronologically equivalent stages of auditing and management service engagements.
defines the scope of the work contemplated and the manner in which the engagement is conducted.

After the program development, the next step is to carry out the specifications in the program. This phase is called the field work in the auditing function. The field work involves working through the audit procedures (subprograms) specified in the audit program. At times these procedures may be altered slightly because actual conditions encountered in the field differ from those conditions expected. This reflects some uncertainty or instability in the input environment. Once the field work is completed, the auditor issues an opinion on the fairness and conformity with generally accepted accounting principles of the client's financial representations. This completes the audit engagement.

The third step of a management service assignment relates to the system design and installation. The system design phase includes designing the system, developing an installation schedule, evaluating the electronic equipment available, and performing an economic evaluation of the proposed system. At this time, the assignment could be terminated by the client.\(^2\) If, however, the engagement isn't terminated, the installation phase proceeds. This will include detail

\(^2\)A few obvious reasons for termination at this stage are:
(a) the client decides on the basis of the economic evaluation not to proceed,
(b) the system cannot meet management's technical expectations,
(c) the client just decides to wait, and
(d) the client decides to install a "package system" from one of the computer firms.
system designing suitable for programming (and debugging), designing of forms, conversion preparation and conversion, and the evaluation or development and modification of software. Once the system is operating and the conversion complete, the engagement is completed.

Project Team Definition

The program represents a guide and control device used by the accounting firm. The program also acts as a coordinating mechanism. The coordination mechanism is necessary since most projects involve a project team. A project team has been defined previously as a small group of practitioners who are members of the accounting firm under investigation and who are working on a well defined firm assignment. Project teams are temporary systems since each project has a limited life. Therefore, for the empirical research, an arbitrary period for the teams' existence was defined subject to the following constraints:

1. sufficient time had to be given for any structural relations to form and stabilize,
2. while the empirical data was being collected, the teams had to be clearly identifiable both by the researcher and by the participants,
3. a sufficiently short length of time had to be specified to ensure a number of these teams were in existence when the data was collected, and
4. the teams had to be representative in size of a reasonable segment of the accounting firm's work.
With these constraints in mind, the operational definition of "temporary" was related to chargeable hours. Chargeable hours is a standard measure used by accounting firms to define the size of a project. From discussions with some partners of the accounting firm researched, 1500 chargeable hours was accepted as the (approximate) minimum number of chargeable hours appropriate for defining a temporary project team. This figure was then used as a guide in selecting the projects and, therefore, the project teams.

The Questionnaire

Introductory comments

A separate questionnaire was formulated for each functional area.\(^3\) The major differences between the two questionnaires were:

1. the interchange of certain key technical words which had equivalent meanings, for example, in the audit questionnaire the term "audit program" was used, whereas in the management services questionnaire the equivalent term "work program" was used, and

2. in the management services questionnaire some questions were expanded to obtain detailed information on the two major phases in an EDP assignment of design and installation.

\(^3\)The audit questionnaire is reproduced as Appendix I, and the management services questionnaire is reproduced as Appendix II.
The questionnaires consist of two major sections. The first section (questions 1 to 11 inclusive) examines the environmental stability of the functional areas. Most questions in this section are couched in terms of the basic methodology of public accounting firms described earlier. The second section (questions 12 to 26 inclusive) was used to collect data on team structure. Work choices represent the most important measure of structure, although more traditional dimensions are also considered.

Environmental items

General comments

Questions in this section examine the stability of the three subenvironments faced by the functional areas and discussed in the previous chapter. The first point that should be observed regarding this section of the questionnaire is the type of scaling used. Most questions are repeated. The first time the question is posed, a response on an ordinal scale is required. When the question is repeated, a ratio scale is used to collect the response (except question 9, where a different ordinal scale is used). Essentially, the respondent had to first verbalize his response and then quantify his response.

Obtaining meaningful ratio scaled responses from subjects is in most research less likely than obtaining meaningful ordinally scaled responses. However, in the present research reliable ratio scaled responses were expected. The participants were professional people whose training and occupation involves quantifying data and using
quantified data continuously. Using ratio scales, far from being
unusual for these subjects, is common and readily understood by them.
This reasoning was supported in discussions with public accountants
during the designing and the pre-testing of the questionnaires.

Second, the method of measuring task environment stability is
based on the basic organizing methodology of the public accounting firm,
the audit or work program. Questionnaire items concentrate on different
aspects of the program. The assumption made is that the program re-
fects environmental conditions or, more accurately, that differences
in audit and work programs reflect differences in environmental con-
straints. The questions are similar in intent to those asked by
Lawrence and Lorsch in section (a) of their environmental questionnaire.4

Other approaches for measuring environmental uncertainty have
been used. Lawrence and Lorsch questioned their subjects on the signi-
ficant changes in marketing and technical conditions in the chosen
industries and the extent of major modifications in activities such as
product lines, techniques, manufacturing facilities and research
effort.5 As previously suggested, Harvey, in his technical classifi-
cation of firms, used what could be considered an environmental
variable--the number of product changes.6 In the present study,

4Paul R. Lawrence and Jay W. Lorsch, Organization and Environ-

5Ibid., 248.

6Edward Harvey, "Technology and the Structure of Organizations,"
American Sociological Review, XXXIII (April, 1968), 247-59. See
Chapter II.
question 9 (the number of technical changes) represents this type of question. However, this direct type of question seems inappropriate in most contexts in the present study since the questions need to be so general that little or no usable information is obtained.  

Questionnaire items

Question 1 is an attempt to understand the clarity of the requirements of the assignment. This question parallels the "job requirements" question of Lawrence and Lorsch. The assumption involved in this question is that programs cannot be clearly developed if client problems are not well defined and if the problem solution techniques are problematical. The thread of this argument is to be found in numerous theses in organization theory, particularly with respect to decision making and role specification. The question called for a response on a ratio scale, and position of the response was interpreted

7As will be seen later, questions 5 and 6 represent an attempt to obtain this type of information in a comparative style.

8Lawrence and Lorsch, op. cit., 249.

9For a discussion of decision making, including clarity of the problem and solution techniques applicable, and the programability of decision making see:


For a discussion of role specification and programability see:

as the degree of clarity of the problem and the solution procedure applicable.

Question 2 required a comparison of the program for the project at the time of the interviews and the most recent project program for the same client before the current program. For the audit area, this simply involved a comparison of the current audit program with the audit program of the previous year. For the management service area, this question involved the comparison of the two most recent assignments. The assumption of the question is that similar projects require similar work programs. The response then indicated the degree of similarity of the projects.

Question 3 involves the same assumptions as question 1 and is an attempt to obtain similar information. The question tries to extract information on how much of the solution procedure is undefined when work on the solution begins. The response on both scales used gives information on how much of the solution procedure is undeveloped and, by definition, for the ratio scale, how much of the solution procedure is developed. Question 4 is then used to gather information on the importance of the problem areas (undeveloped solution procedures) to the successful completion of the project.

Questions 5 and 6 are designed to obtain comparative information on the current project. The questions inquired of the similarity between the current project and other assignments with which the participant was familiar (question 5) and on which the subject had participated (question 6). A basic problem with these questions is their generality.
However, more specific questions were not chosen mainly because of the number of such questions required before any significant refinement was achieved in the data collected.

Questions 7 and 8 ask for a comparison of the assignment at the time of the interview and at another point in time. These questions are attempting to measure the change in the state of the art over time. The questions assume that changes in the state of the art will be reflected in different approaches to solving the same problem at two points in time, which will be reflected in the programs. The questions called for responses on how different the programs are at the two points. For the ratio scale, this also gives how similar the programs are.

Question 10 asks how confident the practitioner is in his proposed solution to the client's problem. The practitioner needs to decide whether the proposed solution is really a solution to the problem and whether this solution will survive the scrutiny of the environment. The response measures how confident the practitioner is that he has met environmental demands. Finally, question 11 is an extra question in the audit questionnaire only. This attempts to measure how much the audit program changes during the assignment because of unexpected events encountered during the field work.

**Structural items**

**General comments**

Organizational structure has been the subject of a number of theoretical expositions and empirical research. The literature cannot be sensibly reviewed here, but a few important points will be noted.
First, the concept of organizational structure is a multi-dimensional concept, and obviously an organization can vary along any dimension. Different researchers have used different dimensions in their studies and this makes any comparison among studies difficult. The absence of any widely accepted key dimensions creates difficulties in deciding which dimensions to examine. Second, the research must clearly identify what level of organizational generality is being examined, since what is an applicable dimension at one level of generality may not be applicable at another level. For example, if the present research concentrated on the functional areas as a whole (auditing and management services) rather than project groups within the functional areas, the structural dimensions chosen for the study could well be different.

The dimensions of structure actually chosen for study in the research were:

1. choice (or work) relations in the team,
2. work flow patterns,
3. communication patterns,
4. supervision patterns,
5. importance of formal rules, and
6. evaluation criteria of role occupants.

These dimensions leave out many attributes of structure typically studied in organizational research, for example, the span of control, the number of levels of authority (or levels to a shared supervisor), subordinate and superordinate ratios, functional specialization and
others. These dimensions were not measured for two important reasons. First, most of these dimensions have been developed and used for research at a level of organizational generality greater than that studied in this research, and their applicability in the different setting was not at all obvious. Second, a number of these dimensions are related to the size of the group studied, and in public accounting firms the team size is related to three important factors, one, the normal or expected work in the assignment, two, the time available to complete the engagement, and three, the number of unexpected problems that arise. While some control could be exercised over the first variable, the other two variables could not be controlled.

The three dimensions, supervisory patterns, importance of formal rules, and evaluation criteria for role occupants, are attributes of structure commonly studied in organizational research. These

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10 For the use of other dimensions see as examples:
Lawrence and Lorsch, op. cit.

11 In fact, to control for the problems that arise would mean controlling the environment variable (at least in part) which would defeat the purpose of the study.

12 As well as the references of footnote 10 see:
dimensions also appeared applicable to the research at hand, since each small problem solving group was composed of members from various echelons in the accounting firm and each higher echelon member supervises and evaluates lower echelon members. Also, all members are bound by general firm rules or guidelines.

The study of group structure is one of the principle concerns of the discipline, group dynamics. While a number of approaches have been used, one approach concentrates directly on the relations between individuals.¹³ Individual members are the components of the group, and the group structure is defined as the pattern of relations between each pair of members (interpersonal relations). According to Cartwright and Zander, the research conducted on the interpersonal structure of groups has investigated primarily four types of relations:

1. the relation A chooses B (sociometric choice),
2. the relation can communicate,
3. the interpersonal relation has power over, and
4. the pattern of task interdependence.¹⁴

The three dimensions of structure first specified in this thesis (choice [work] relations, work flow patterns and communication patterns) can be classified as the fourth type of relation mentioned by Cartwright and Zander, although the first and third dimensions could be classified as

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¹³For a summary of these approaches see: D. Cartwright and A. Zander, eds. Group Dynamics: Research and Theory (Evanston, Illinois: Row Peterson, 1968).

¹⁴Ibid., 490-91.
the first and second types of relations respectively. In either case, the dimensions are acceptable for investigating group structure.

Questionnaire items

Question 12 has two objectives. The first is to obtain as complete a picture as possible of the division of the task among members of the project team. This question gives a broad idea of the work flow patterns. The second objective is to force the respondent to think about all the work flows between himself and other firm personnel on the particular project.

Question 13 followed quite naturally from question 12. The subject is required to choose three people with whom he worked most closely on the project. The individuals chosen could be either accounting firm or client personnel. This question aimed to obtain the "core" of the work relationships. The question then proceeds to ask that a dominance relationship be ascribed to the work flow relations between the subject and each of the three individuals chosen. Question 13 is one of the most important questions in the study.

Questions 14 and 15 are simply lead-in questions for the three questions on supervisory patterns. Question 16 examines the extent of supervision; question 17, the frequency of supervision; and question 18, the form the supervision follows. These questions are asked of each individual in a supervisory position of the project with respect to all people subordinate to him on the project. Another type of supervisory question is item 24. However, this question examines not the supervision of individuals but the supervision, more explicitly the review,
of the project team's performance.

Question 19 is used to solicit the types of problems that arose during the engagement, and question 20 is an attempt to gain a comparison between the project on which the team was engaged and other projects. Each of these questions provides interesting information in its own right, but the main purpose of question 19 is to provide the basis for question 21. This latter question is meant to gather information of the group's communication patterns with respect to the solving of significant problems encountered during the engagement.

The influence of organizational rules in an intensive technology industry is difficult to measure. Questions 22 and 23 are attempts to measure this influence. Question 22 asks how differently the individual might approach solving the client's problem if he were in practice for himself rather than in practice with the accounting firm. The question assumes that any differences are the result of the accounting firm's constraints (or rules) since all other variables remain constant (the ceteris paribus assumption). Question 23 asks the individual to rank the influence of a number of sources, one being organizational rules, on the design of the program.

Finally, items 25 and 26 consider the evaluation of the performance of team personnel. The questionnaire utilizes the evaluation forms used in the firm for the evaluation of staff personnel (juniors and seniors). The evaluation forms contain over forty categories, which means that numerous questions regarding the forms could be formulated. The question accepted simply asks that twenty-five percent of the
categories be ranked. Half of these checked categories are devoted to rating categories that are most important and the other checked categories are devoted to rating the categories that are of least importance.

The Appropriateness of Statistics

Hypothesis testing is the sixth transformation (τ₅) in the Mackenzie and Barron paradigm presented in Chapter One.¹⁵ While this transformation is important, it is no more important than the other transformations. Unfortunately, this does not seem to be understood by many researchers in the social sciences most of whom use elaborate statistical designs but very poor measures. This point is well expressed by Mackenzie.

I think that relatively greater attention paid to hypothesis testing procedures with the attending incorrect belief that these minor aspects of methodology can be separated from theory and measurement has been harmful. It is like developing a species of crab with only one claw and no other legs. It may be a very powerful claw but such a creature is not likely to survive because it is overspecialized.¹⁶

... the emphasis placed on τ₅ is an overspecialization like our one clawed crab.¹⁷

Classical statistical techniques are quite appropriate for an


¹⁷Ibid., 6.
experiment. Whether or not they are appropriate for an exploration or an investigation is a mute point.\textsuperscript{18} Some of these techniques are used in this research, since techniques explicitly applicable for handling data produced by explorations or investigations have not been developed.\textsuperscript{19}

The statistical tests used in this research are:

1. the t test,
2. the Mann Whitney U test,
3. Fisher's exact probability test.

The use of these tests raises a number of other points. First, there is some debate concerning the use of parametric tests when the data is not at least intervally scaled. Some statisticians argue that parametric statistics are only applicable when the data is irrelevant to the use of the statistical model.\textsuperscript{20} This controversy is side stepped in this

\textsuperscript{18}A number of authors have argued that statistical models do not ask from where the numbers, patterns, etc., come, but simply give the probability of their being from the same populations. See for example:
James R. Erickson, "A Critique" in Behavioral Experiments in Accounting, Thomas J. Burns, editor (Columbus, Ohio: College of Administrative Science, The Ohio State University, 1972), 445-57.

\textsuperscript{19}Some authors who have addressed this problem are:
Mackenzie and Barron, op. cit.

research. The parametric test was used only on the ratio scaled data, and the nonparametric Mann Whitney U test was used on both ordinally scaled and ratio scaled data. Second, each of these statistical models is based on certain assumptions which are rarely, if ever, met completely in empirical research. However, one reason for choosing these tests is that they have been shown to be particularly robust with respect to the violation of their assumptions. Third, the tests are used only as guides in the interpretation of the data and to give an indication of the strength of the suggested associations. While the statistical tests are useful they are not central to the research. Finally, while additional statistical tests could have been conducted, little additional information could be obtained from such tests. Also, if further tests had been run, the research may have been likened to a "one clawed crab."

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21 W. L. Hays, Statistics for Psychologists (New York: Holt, Rinehart and Winston, 1963). This is particularly true with respect to the assumption of homogeneity of the variance and normality of the population.
CHAPTER IV

Data Collection Methods

The observations reported in this paper were collected during semi-structured interviews with the project teams. The procedure used in all interviews consisted of the following major events.

1. Each member of the project team was required to complete a written questionnaire without discussing any of the questionnaire items with fellow team members or the researcher. Although the members were in the physical presence of one another, the requirement of no verbal interaction was enforced to ensure independence of responses.

2. Once every member of the project team had completed the questionnaire, a group discussion of the questionnaire items (including each individual's response to an item) took place. The group discussion had three aims, to ensure consistency of an individual's interpretation of the question over time, to ensure consistency among members in the interpretation of questionnaire items, and to allow individuals to elaborate on the answers they gave on the written questionnaire.

The actual interviews followed the general pattern described below.

1. The procedure to be used during the interview was explained
to the group. At this time their consent to tape record the verbal discussion was obtained.

2. One group member presented a synopsis of the client firm.
3. Each member completed his written questionnaire.
4. The group discussion took place.
5. A brief explanation of the purpose of the research was presented by the researcher.

Description of the Projects

The particular projects were selected by the local offices at which the interviews took place and along the general guidelines specified in Chapter III. The firms chosen were in a variety of industries and of various sizes. In the auditing area the client organizations were in the garments industry (a fabrics retailer), the utilities industry and the electronics industry (a medium sized manufacturing company with diversified interests). The management services client organizations were in the entertainment industry, the utilities industry (a different type of utility from that of the audit area) and a small to medium sized manufacturer (foundary).

The team members interviewed usually consisted of a partner, a manager and a senior. ¹ However, in one management service project the

¹Public accounting firms are partnerships. The highest rank (ownership) in any partnership is a partner and this is the terminology used in a public accounting firm. The next rank down from partner is manager, and after the manager is a senior. A junior (or staff) is the lowest rank. These are generic terms and to maintain anonymity of both the firm and practitioners, only generic terminology is employed.
senior was missing from the interview. In another management service team the senior started the project as a senior, but was promoted during the life of the project to a manager. However, he was still not the job manager and in most respects was still subordinate to the job manager. For convenience in the description he is still referred to as the senior on the project.

Environmental Stability

Introduction

The first concern of the empirical research was to establish whether there existed any difference between the environmental stability of the two functional areas. A priori reasoning had led to the hypothesis:

$H_1$ that the subenvironment faced by the management service project teams exhibits greater uncertainty than the sub-environments faced by audit project teams.  

The reasons for hypothesizing a difference in environmental stability between the two functional areas were examined in Chapter II and these are recapitulated below.

1. Client problems are likely to be more routine in the auditing area than in the management service area because

\[2\text{Since this is a directional hypothesis, all statistical hypotheses were also directional. The data is summarized in tables included in the text. The general format followed in the table is, first, a summary statement of the question used in the interview and second, a summary of the data, significance level and interpretation of the question scale (where applicable).}\]
a. of the general constraints operating on financial accounting systems and the relative absence of these constraints on information systems in general, and,
b. audit engagements usually repeat whereas management service engagements do not usually repeat.

2. The state of the art of EDP is changing at a faster rate than the state of the art of auditing.

3. The solutions of client problems in management services are less clear and more likely to change than the solutions of client problems in auditing.

The empirical appraisal of the first hypothesis is contained in the following subsection.

**Indicated support**

Chapter III indicated that if differences existed between the two subenvironments of auditing and management services, then this will be reflected in their respective programs. In particular, the argument suggested that if the audit environment were more stable than the management services environment, then the audit program will be better developed.

Questions 1 and 3 employed the above methodology to gauge the environmental stability of the input and transformation environments. The data (Tables 1 and 2) indicate that the audit programs were more clearly developed than the work programs, thus suggesting that client problems in auditing were better understood and that techniques for
**TABLE 1**

AUDIT AND WORK PROGRAM DEVELOPMENT

**QUESTION 1(a)** Development of the program before field work or design phase.

<table>
<thead>
<tr>
<th>Team</th>
<th>Audit</th>
<th>Management Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>86.6</td>
<td>58.0</td>
</tr>
<tr>
<td>2.</td>
<td>85.3</td>
<td>66.6</td>
</tr>
<tr>
<td>3.</td>
<td>91.0</td>
<td>77.5</td>
</tr>
</tbody>
</table>

**Average (all three teams)** 87.67  66.1

**Scale**

100 indicates very clear.

0 indicates very unclear.

**Significance level**

<table>
<thead>
<tr>
<th>Test</th>
<th>Significance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>t test</td>
<td>.01</td>
</tr>
<tr>
<td>Mann Whitney U test</td>
<td>.001</td>
</tr>
</tbody>
</table>

**Pattern of responses** (rank order)

M M M M M A A A A M M M A A A A A A A A

A indicates audit personnel.

M indicates management service personnel.

__________ indicates a tie in the rank order.
TABLE 2
COMPARISON OF PROBLEM AREAS IN AUDIT AND WORK PROGRAMS

QUESTION 3 Problem areas for which no solution procedure has been selected before the commencement of the field work (design phase).

(a) Response Category Audit Management Service
    (a) 0 0
    (b) 0 1
    (c) 2 6
    (d) 7 1
    (e) 0 0

Not significant at .05 point.--Mann Whitney U test.

(b) Team Audit Management Service
    1. 88.3 68.3
    2. 86.6 50.0
    3. 77.66 58.0
Average (all teams) 84.22 58.88

Scale: The higher the score the less the program consists of unsolved problem areas.

Significance level

\[
t\text{ test } .001 \\
\text{Mann Whitney U test } .025
\]

Pattern of responses (rank order)

\[\text{M M M M M A A A A A A A} \]

A indicates audit personnel.

M indicates management service personnel.

\[\text{ indicates a tie in the rank order.}\]
solving the problems were better specified in the audit area. Given the definition of environmental stability developed in Chapter II, the data support quite strongly the first research hypothesis.

The questions from which the data above were drawn concentrated on how well developed the programs were before the field work was commenced. This means the questions took observations at the beginning of stage 3 (or the end of stage 2) as shown in Figure II (page 30).

Stage 3 is the implementation of the program. During this implementation period one might predict a number of developments, three of which can be partially explored. First, since the public accounting industry is an intensive technology industry, this should be reflected in changes in the programs during stage 3. Second, and a related point to the first, as a project moves further into stage 3, the program should become better specified. Third, the uncertainty involved in the project should diminish the further into stage 3 the project progresses.

With regard to the first point, question 11 (Table 3) provides data for the audit area. A number of minor modifications take place in the audit program to reflect the unexpected conditions encountered in the field. Although not explicitly explored during the research, the responses may reflect the preponderance of technical problems encountered during the audits (Table 14, page 77). The occurrence of technical problems could be expected to lead to changes in the program whereas the occurrence of, say, client associated problems may be less likely to require program changes.

Although no data was collected for the management service function on the above point, data was collected for this function on the
related second point. Initially the work program, when compared to the audit program, was relatively unspecified. However, as the project moved through stage 3 (from the design phase to the installation phase), the work program became clearer (compare questions 1(a) and 1(b), Tables 1 and 4). In other words the work program also changed (actually developed) as the field conditions and problem became clearer. The change recorded in question 1 parallels the reduction in uncertainty with respect to the problem solution that occurs from the beginning of the design phase to the beginning of the installation phase (see Tables 5 and 6, question 10). This is, of course, the third expectation noted above. Further, this point and the third reason for the difference in environmental stability summarized above are related.

3The difference observed between questions 1(a) and 1(b) of the management service questionnaire was not statistically significant at the .05 point (Mann Whitney U test and the t test). Under the Mann Whitney U test, the actual significance level was between .117 and .139 (U = 20.5).

4There were no questions equivalent to questions 1(b), 10(c), and 10(d) of the management service questionnaire in the audit questionnaire. However, any increase in the degree of clarity of the audit program or reduction of uncertainty during the audit stage 3 should be minimal. First, the audit program is very well developed at the beginning of the field work, and so cannot become much clearer (Table 2). Second, since most audits are repeat engagements there should be little uncertainty at the beginning. Finally, from comments during the design of the questionnaire the researcher gained the impression that if potential problems regarding the issue of an opinion did exist, these were usually discovered during the reviews of the client's internal control and procedures (stage 1) and in most cases solved at that point. It was suggested that this was true even on a first time audit.

The reduction in uncertainty as indicated by a comparison of questions 10(b) and 10(d) in the management service questionnaire, was significant at the .05 point (t test) and the .019 point (Mann Whitney U test). There was no significant difference between the means of 10(b) (audit questionnaire) and 10(d) (management service questionnaire).
TABLE 3
COMPARISON OF AUDIT PROGRAMS

QUESTION 11 Simplicity of audit program before and after the field work.

<table>
<thead>
<tr>
<th>(a) Response Category</th>
<th>Audit</th>
<th>(b) Team</th>
<th>Audit</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td>0</td>
<td>1.</td>
<td>61.40</td>
</tr>
<tr>
<td>(b)</td>
<td>6</td>
<td>2.</td>
<td>73.33</td>
</tr>
<tr>
<td>(c)</td>
<td>3</td>
<td>3.</td>
<td>69.66</td>
</tr>
<tr>
<td>(d)</td>
<td>0</td>
<td></td>
<td>Average (all teams) 68.11</td>
</tr>
<tr>
<td>(e)</td>
<td>0</td>
<td></td>
<td>Scale: The higher the score the less change in the program during the audit.</td>
</tr>
</tbody>
</table>

TABLE 4
WORK PROGRAM DEVELOPMENT

QUESTION 1(b) Development of work program before the installation phase.

<table>
<thead>
<tr>
<th>Team</th>
<th>Audit</th>
<th>Management Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>NA</td>
<td>65.0</td>
</tr>
<tr>
<td>2.</td>
<td>NA</td>
<td>76.6</td>
</tr>
<tr>
<td>3.</td>
<td>NA</td>
<td>91.0</td>
</tr>
<tr>
<td>Average (all three teams)</td>
<td>NA</td>
<td>75.88</td>
</tr>
</tbody>
</table>

Scale

100 indicates very clear.

0 indicates very unclear.
TABLE 5

COMPARISON OF CONFIDENCE IN PROBLEM SOLUTION
BETWEEN AUDITING AND MANAGEMENT SERVICE PERSONNEL

QUESTION 10  The degree of confidence the practitioner has in his solution to the client's problem at the completion of the field work or design phase.

(a)  

<table>
<thead>
<tr>
<th>Response Category</th>
<th>Audit</th>
<th>Management Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>(b)</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>(c)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>(d)</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>(e)</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Significant at .025 level.—Mann Whitney U test.

(b)  

<table>
<thead>
<tr>
<th>Team</th>
<th>Audit</th>
<th>Management Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>91.3</td>
<td>48.3</td>
</tr>
<tr>
<td>2.</td>
<td>74.6</td>
<td>63.3</td>
</tr>
<tr>
<td>3.</td>
<td>95.33</td>
<td>88.0</td>
</tr>
</tbody>
</table>

Average (all teams) 87.11 63.88

Scale: The higher the score the more confidence the practitioners have in their solution.

Significance level

- t test .01
- Mann Whitney U test .025

Pattern of responses (rank order)

M M M M A A M, M A A, M, M A A, A A A

A indicates audit personnel.
M indicates management service personnel.

_________ indicates a tie in rank order.
TABLE 6

INDICATED CONFIDENCE OF MANAGEMENT SERVICE PERSONNEL
AT THE INSTALLATION PHASE

QUESTION 10  The degree of confidence the practitioner
has in his solution to the client's problem at the completion of the installation
phase.

<table>
<thead>
<tr>
<th>(c)</th>
<th>Response Category</th>
<th>Management Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>(b)</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>(c)</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>(d)</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>(e)</td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(d)</th>
<th>Team</th>
<th>Management Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td>1.</td>
<td>78.3</td>
</tr>
<tr>
<td>(b)</td>
<td>2.</td>
<td>86.6</td>
</tr>
<tr>
<td>(c)</td>
<td>3.</td>
<td>93.5</td>
</tr>
<tr>
<td>(d)</td>
<td>Average (all teams)</td>
<td>85.25</td>
</tr>
</tbody>
</table>
Audit personnel are more confident of their solution than management service personnel. This is especially true when the comparison is between the point of completion of the field work in auditing and the completion of the design phase in management services (Table 5—significance level of less than .025).  

The uncertainty at the completion of the design phase arises from two sources:

1. the design may not be practical,
2. the client may change his specifications.

On this latter point, one management service partner stated, "I know there will be changes; that phone will ring next week and he (the client) will want something different."

The difference in the confidence exhibited at this stage is interesting for two reasons. First, some engagements are complete at this point. At times the client takes the suggested design and installs a package system. Second, during pre-testing and designing the questionnaire, statements by some management service personnel indicated that about seventy percent of the work and thinking on the project had been done at the completion of the design phase. This seems to indicate

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5Two means in question 10(b) (the means of audit team 2 and management service team 3) are slightly different from the others. The audit team's mean is explainable in part by the existence of an outstanding technical problem on the audit. This problem had been unresolved the previous year and was still unresolved in the current year. The management service team's mean undoubtedly reflects the management service partner's biases from being one of ten partners on the accounting firm's committee that designed the firm's EDP booklet. His philosophy is reflected in his statement, "We believe in work programs."
that for a large part of the project, management service personnel work under considerable uncertainty.

The discussion above has covered generally the question of differences in environmental stability between the two functional areas. The data discussed have been favorable to the research hypothesis. The discussion now turns to other data concerned with specific subparts of the reasons for differences in environmental stability summarized in the introduction.

In Chapter II, an important variable discussed was the variability in raw materials (or materials technology). Routineness of the client problem is a variable of the above type and is included in the present research. A practical problem that arises in using this class of variable is defining and measuring what is meant by variability or routineness. In some cases the definitions of variability may be quite straightforward and the measure quite direct. For example, in a mental hospital one may be able to define patient variability in terms of the critical medical symptoms of the patient and measure variability for the hospital in terms of the number of distinct medical classes treated or admitted. An obvious approach in the public accounting firm would be

---

6If the reader remembers these were terms used by Perrow and Pugh, et al. respectively, interpreted by them as a technological variable, but interpreted in this research as an environmental variable.


to try to classify client problems in a critical symptom manner.

The major problem with this obvious approach is the difficulty in defining critical dimensions that are appropriate to both audit and management service client problems. The problem was never satisfactorily solved in this study. Instead, a less direct approach was used. This approach simply involved the respondent comparing the project on which he was working and other projects in his functional area. As explained in Chapter III, because of the number of questions needed to gain specific information, only two general questions were asked (questions 5 and 6). The data from these questions (Tables 7 and 8) did not provide any additional insight into the comparative routineness of the environment of the two functional areas to the insight already obtained in the general questions addressed earlier. As far as future research strategy is concerned, one thing learned from this study is that a concentration on the critical symptom approach seems to hold at least as much promise of obtaining meaningful empirical results.

Routineness of the client problem was also addressed in question 2 of the questionnaires. The audit problems had been restricted to repeat audits. There was substantial similarity between the programs of two consecutive years indicating a fair degree of stability in the

---

7The respondents found both questions to be quite similar. They suggested there was little difference between those projects with which they were familiar and those on which they had participated. That is, they were usually only familiar with those projects on which they had participated. Neither the extreme answers nor the complete rank orderings demonstrated any statistical significant differences.
TABLE 7

SUMMARY OF EXTREME ANSWERS:
QUESTIONS 5 and 6

**QUESTION 5** Comparison of the similarity (or differences) of the project and other projects with which the practitioner was familiar.

**QUESTION 6** Comparison of the similarity (or differences) of the project and other projects on which the practitioner participated.

<table>
<thead>
<tr>
<th>Team</th>
<th>Response Category</th>
<th>Question 5(a)</th>
<th>Question 5(b)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>a  d</td>
<td>a  d</td>
</tr>
<tr>
<td>Audit</td>
<td></td>
<td>5  0</td>
<td>1  3</td>
</tr>
<tr>
<td>Management Services</td>
<td></td>
<td>3  2</td>
<td>4  2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Team</th>
<th>Response Category</th>
<th>Question 6(a)</th>
<th>Question 6(b)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>a  d</td>
<td>a  d</td>
</tr>
<tr>
<td>Audit</td>
<td></td>
<td>5  0</td>
<td>2  3</td>
</tr>
<tr>
<td>Management Services</td>
<td></td>
<td>2  2</td>
<td>3  3</td>
</tr>
</tbody>
</table>
TABLE 8

SUMMARY OF EXTREME ANSWERS:
QUESTIONS 5 and 6

**QUESTION 5** Comparison of the similarity (or differences) of the project and other projects with which the practitioner was familiar (at the installation phase).

**QUESTION 6** Comparison of the similarity (or differences) of the projects on which the practitioner was familiar (at the installation phase).

<table>
<thead>
<tr>
<th>Team</th>
<th>Response Category</th>
<th>Question 5(c)</th>
<th>Question 5(d)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>a</td>
<td>d</td>
</tr>
<tr>
<td>Audit</td>
<td></td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Management Services</td>
<td></td>
<td>0</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Team</th>
<th>Response Category</th>
<th>Question 6(c)</th>
<th>Question 6(d)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>a</td>
<td>d</td>
</tr>
<tr>
<td>Audit</td>
<td></td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Management Services</td>
<td></td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
environment from one year to another (Table 9).\footnote{Note, however, the mean of the third audit team was substantially lower than the other two teams. There was in this case a significant change in the client firm—namely, a sale of a subsidiary which involved some quite complex conditions. These conditions were tied closely to the final audit of the subsidiary thus involving more than the usual environmental pressure on the public accounting firm.} In the management service area the projects were usually first time management service projects for the client.\footnote{One partner did indicate that a management service assignment had been performed previously for the client but that the two assignments and associated work programs were completely different. There was little, if any, transfer of learning.}

The second reason suggested for the difference in environmental stability between the two functional areas is concerned with the technological environment facing each area. The discussion in Chapter II has already argued that the management service technological environment should be more dynamic than the auditing technological environment. This statement was supported strongly in the answers to question 9 (Table 10—significance level of less than .01). Management service personnel thought that a significant number of major technical changes had occurred during the five year span covered by the question and that these changes had an important influence on the problem solution.\footnote{One individual in the management service area is prominent because of his response on question 9(b). He was the only person in the management services area to indicate he thought less than five major technical changes had occurred. During the verbal discussion he stated that he was thinking of the broad categories (for example, hardware, software, etc.) that had major changes rather than the number of individual changes. Once he considered the latter interpretation of the question his response would be in category (g) as there had been many changes within each of the broad areas.}
**TABLE 9**

**COMPARISON OF PROGRAMS FOR CONSECUTIVE YEARS**

**QUESTION 2** Similarity of the audit and work programs of two consecutive years.

(a) | Response Category | Audit Personnel | M.S. Personnel |
---|-----------------|----------------|----------------|
(a) | 0               | NA             |
(b) | 3               | NA             |
(c) | 6               | NA             |
(d) | 0               | NA             |
(e) | 0               | NA             |

**no previous project**

| Team | Audit |
---|-------|
1.   | 81.0  |
2.   | 80.0  |
3.   | 68.33 |

**Average (all teams)** 76.44

(i) **NA** indicates there was no data collected on this question as the question was not applicable.

(ii) **Scale:** The higher the score the more similarity between programs.
TABLE 10

COMPARISON OF THE NUMBER OF MAJOR TECHNICAL CHANGES IN AUDITING AND EDP

QUESTION 9 The number of major technological changes that occurred in a five year period.

<table>
<thead>
<tr>
<th>(a)</th>
<th>Response Category</th>
<th>Audit</th>
<th>Management Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>(b)</td>
<td>6</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>(c)</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>(d)</td>
<td>0</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>(e)</td>
<td>0</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

Significance level

Mann Whitney U test .01 point

<table>
<thead>
<tr>
<th>(b)</th>
<th>Response Category</th>
<th>Audit</th>
<th>Management Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>(b)</td>
<td>6</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>(c)</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>(d)</td>
<td>1</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>(e)</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>(f)</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>(g)</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Significance level

Mann Whitney U test .001 point
With respect to this point, one management service partner stated, "I think the end, the solution of problems for clients is extremely different today than a few years ago." While this type of response indicates that the management services technology had been changing quite rapidly, the responses of the auditing personnel indicated that few major technical changes had taken place (Table 10). In contrast to the management service partner, an audit partner suggested that "much of the change in the audit is not because of changes in the accounting profession but because clients have changed." This is an interesting observation and will be returned to later.

Questions 7 and 8 were also designed to measure the change in the technological environment over time. Both questions produced some unexpected results (Tables 11 and 12). In question 7 the responses from both functional areas were very similar, while the responses to question 8 indicate that the auditing personnel expect greater change in the state of the art in the future than the management service personnel.

There was a problem for the management service teams with question 7. The problem was expressed by one partner in these words:

If we had done this five years ago the approach would have been the same, but five years ago we couldn't even have done it. The costs (for the client) would have been prohibitive.

Question 7 constrained the situation so that the problem and the client were the same and only the point of reference (in time) was different. The question that arose in the management service practitioners' minds was whether the similarity in approach was being sought or whether the similarity in details and solutions was being sought. The respondents finally combined the two dimensions in their answers.
TABLE 11

COMPARISON OF AUDIT AND WORK PROGRAMS
FIVE YEARS APART

QUESTION 7 Differences in programs five years apart due
to past technological changes.

(a) Response Category  Audit  Management Service
(a)  0  1
(b)  3  2
(c)  4  4
(d)  2  0
(e)  0  1

Not significant at .05 point.—Mann Whitney U test.

(b) Team  Audit  Management Service
1.  81.6  55.6
2.  60.0  66.6
3.  30.0  42.5
Average (all teams)  57.22  56.75

Scale: The higher the score the less change in the
program experienced over time.

Significance level

Not significant at the .05 point.

Pattern of responses (rank order)

M M A A A A M M A A M A M M A M

A indicates audit personnel.

M indicates management service personnel.

___________ indicates a tie in the rank order.
TABLE 12
COMPARISON OF PRESENT AND FUTURE PROGRAMS

Question 8 Differences in programs five years apart due to expected technological changes.

(a) Response Category Audit Management Service
    (a) 0 0
    (b) 1 3
    (c) 4 3
    (d) 4 1
    (e) 0 1

Not significant at .05 point.--Mann Whitney U test.

(b) Team Audit Management Service
    1. 43.33 58.3
    2. 30.00 50.0
    3. 50.60 82.0

Average (all teams) 41.33 61.13

Scale: The higher the score the less change in the program expected.

Significance level

Not significant at the .05 point.

Pattern of responses (rank order)

M A M A A A A M A A M M M M A M M M A M

A indicates audit personnel.

M indicates management service personnel.

_________ indicates a tie in the rank order.
However, this "problem" with the question doesn't really explain the similar results. One would expect some compromising (or averaging) to be made by the respondents in answering these questions as all relevant variables in the program design could not be expected to change at the same rate. If anything, the most reasonable interpretation of the above is that the management service technological environment is changing rapidly. Then, why do the audit personnel have similar responses?

The answer could be that the auditing technological environment has also been very dynamic. However, this explanation doesn't seem to be consistent with most of the answers to the environmental questions. The answer seems to lie in a quotation already noted, namely, "[that] much of the change in the audit is not because of changes in the accounting profession but because clients have changed." The reader may recall the earlier discussions (in Chapter II) regarding marginal changes in the audit program from one year to the next. That a number of minor modifications are incorporated in each year's audit program was also suggested by the responses to question 2 of the audit questionnaire. Over a five year span the number of marginal changes could be quite numerous in both the client and the audit program, thus suggesting a significant difference between two programs five years apart. The changes in the client problem do not necessarily mean that the state
of the art of auditing has changed significantly over this time period.\textsuperscript{11}

"Even though there hasn't been much change in the past we're optimistic about the future." This statement by one audit manager summarizes the impression given by the auditing practitioners regarding their hope for the state of the art of auditing in the future. The hope held by the audit personnel may be the result of the current pressures the accounting profession is experiencing from shareholder suits and government intervention, or it may reflect some characteristic of this particular firm. The management service personnel also expected significant change in the state of the art of EDP but, somewhat surprisingly, the results of question 8 suggest that management service personnel do not expect as great a change as audit personnel expect (Table 12).

The results of this section seem to support the first research hypothesis. The data from some questions lend strong support to the hypothesis, but just as significant is the overall consistency in the responses to the various questions. The internal consistency of some of these questions will become even more evident in the next section on organizational structure.

\textsuperscript{11}The argument may seem to imply that the input environment is therefore unstable. This does not necessarily follow. The client's business or accounting system may change marginally or even quite considerably from one year to the next and yet the auditing problem could still be well defined. This was just the case of the third audit team where the client sold a subsidiary (see Tables 1, 2, 9, and 16).
Organizational Structure

Introduction

Open systems theory suggests that the internal structure of organizations is affected by their task environments. Burns and Stalker have suggested that organizations facing unstable environments have a less formalized structure than organizations facing stable environments. Consequently, for the subsystems studied in this research, the second research hypothesis offered is:

$$H_2$$ the greater the stability of the relevant task environments the more formalized the structure of the project teams.

The dimensions of structure chosen for the study are recapitulated below:

1. choice (or work) relations in the team,
2. work flow patterns,
3. communication patterns,
4. supervisory patterns,
5. importance of formal rules, and
6. evaluation criteria of role occupants.

The following subsection appraises the second hypothesis in light of the data gathered of the six structural dimensions.

Analysis

Work choices and communication patterns

Probably the most intriguing data collected during the research was on the first three dimensions above, particularly the data on the work flow patterns (question 13). All the work relations specified by
respondents are shown in Figure 3.

One difference in the team structure lies in the number of client personnel chosen by the respective team members. The management service team members tended to choose more client personnel as their co-workers than did members of the audit teams.\textsuperscript{12} To some extent this probably reflects the nature of the client problem. The audit problem may simply involve client personnel less since in some respects it is the work of the client personnel that is being evaluated. On the other hand, it is the aim of the management service function to involve the client as much as possible especially in systems installation. After all, it is the client's employees that have to use the installed system.

There is undoubtedly some relationship between the responses noted in Figure 3 and the responses to questions 19 and 21, that is, between the significant problems that evolved during the assignment and the communication pattern used in solving the problems (Tables 13 and 14.).\textsuperscript{13} The audit projects had more technical problems than the

\textsuperscript{12}Notice the partner in the second management service team made only two choices and the senior in the third team was never contacted. There was some indication in the interview that the partner's third choice would have been a client person. Also, the differences, in the proportions of client and firm personnel chosen by the respective functional areas, were not statistically significant at the .05 point.

\textsuperscript{13}In the management service questionnaire one person (by mistake) did not answer question 19. This accounts for the slight discrepancy between the figures of question 19 and question 20.

The patterns that emerged are fairly gross representations and are summarized in Table 14. A little more detail is provided in Figures 5 and 6.
KEY 1

The following relationships hold in the graphs in Figures 3 and 7.

X \rightarrow Y  implies X chose Y.

X \leftarrow Y  implies X chose Y and Y chose X.

P stands for Partner.
M stands for Manager.
S stands for Senior.
a stands for staffman or junior.
C stands for Client employee.
Fig. 3.--Indicated choices by Partners, Managers and Seniors of the individuals with whom they worked the closest.
Management Service Teams

Audit Teams

Key: \(x \rightarrow y\) implies the work flow was predominantly from \(x\) to \(y\).

\(x \leftrightarrow y\) implies the work flow between \(x\) and \(y\) was approximately equal.

Fig. 4.--Indicated directional choices by Partners, Managers and Seniors of the individuals with whom they worked the closest.
**TABLE 13**

**COMPARISON OF MANAGEMENT SERVICE AND AUDIT PROBLEM AREAS**

**QUESTION 20** Extent of problem areas encountered during the project.

**Technical Problems**

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>M</th>
<th></th>
<th>A</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. no significant problems</td>
<td>2</td>
<td>4</td>
<td>a. fewer than usual</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>b. a few significant problems</td>
<td>7</td>
<td>1</td>
<td>b. about same as usual</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>c. many significant problems</td>
<td>0</td>
<td>2</td>
<td>c. more than usual</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

**Client Associated Problems**

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>M</th>
<th></th>
<th>A</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. no significant problems</td>
<td>7</td>
<td>0</td>
<td>a. fewer than usual</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>b. a few significant problems</td>
<td>2</td>
<td>7</td>
<td>b. about same as usual</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>c. many significant problems</td>
<td>0</td>
<td>0</td>
<td>c. more than usual</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

**Staff Problems--Personal**

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>M</th>
<th></th>
<th>A</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. no significant problems</td>
<td>8</td>
<td>5</td>
<td>a. fewer than usual</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>b. a few significant problems</td>
<td>1</td>
<td>2</td>
<td>b. about same as usual</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>c. many significant problems</td>
<td>0</td>
<td>0</td>
<td>c. more than usual</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

**Staff Problems--Technical**

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>M</th>
<th></th>
<th>A</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. no significant problems</td>
<td>5</td>
<td>2</td>
<td>a. fewer than usual</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>b. a few significant problems</td>
<td>4</td>
<td>5</td>
<td>b. about same as usual</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>c. many significant problems</td>
<td>0</td>
<td>0</td>
<td>c. more than usual</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

A indicates audit personnel.

M indicates management service personnel.
TABLE 14
SUMMARY OF COMMUNICATION CHOICES

QUESTION 20 The communication choices by team members in solving problems encountered on the project.

<table>
<thead>
<tr>
<th></th>
<th>Technical Problems</th>
<th>Client Associated Problems</th>
<th>Staff Problems--Personal</th>
<th>Staff Problems--Technical</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Choices inside firm</td>
<td>Choices outside firm</td>
<td>Choices inside firm</td>
<td>Choices outside firm</td>
</tr>
<tr>
<td>Audit team choices</td>
<td>11</td>
<td>5</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>Management service team choices</td>
<td>13</td>
<td>2</td>
<td>8</td>
<td>7</td>
</tr>
</tbody>
</table>
management service projects while the latter had more client associated problems. ¹⁴ A second point, graphed clearly in Figure 5, is that client associated problems tended to involve a good deal of interaction between the project team and client employees particularly in the management service but also in one auditing team. Third, technical problems in each functional area tend to be solved within the team although some client-team interaction was evident (Figure 6). ¹⁵

The responses to question 13(a) can be compared at the individual level rather than at the group level. The managers' choices provide the most interesting data. The graphs of Figure 7 demonstrate a major difference in the structure of the working relations of the teams in each functional area. Managers in audit teams always chose the partner and the senior, a strict hierarchical choice, as two of the three people with whom they worked closest on the assignment. However, the management service managers never chose the partner as one of the individuals with whom they worked closest on the project. This in effect leaves the management service partner as an isolate in the working relations of the group. ¹⁶

¹⁴Unfortunately, the cause-effect relationship on the apparent association between the preponderence of client associated problems in the management service area and the greater interaction with client employees is impossible to establish from the data.

¹⁵Note, staff problems (both technical and personal) were solved within the firm (Table 14) and primarily within the team. The office manager was at times brought in on the solving of these problems.

¹⁶Fisher's Exact Probability test was run on the managers' choices in the respective areas and this showed the difference to be significant at the .05 point.
Fig. 5.--Comparison of communication patterns--client associated problems.
Management Service Teams

Audit Team

Fig. 6.—Comparison of communication patterns—technical problems.
Fig. 7.--Indicated choices by Managers only of the individuals with whom they worked the closest.
A detailed analysis of the data of questions 3(b), 4(a) and 4(b) reveals a nice consistency between the data of these questions and the structure data. First, consider the data of question 3(b) (Table 15).

### TABLE 15

**COMPARISON OF PARTNERS' AND MANAGERS' RESPONSES ON THE EXTENT OF THE PROBLEM AREAS**

**QUESTION 3** Problem areas for which no solution procedure has been selected before the commencement of the field work (design phase).

<table>
<thead>
<tr>
<th>Management Service Teams</th>
<th>Audit Teams</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Partners</strong></td>
<td><strong>Managers</strong></td>
</tr>
<tr>
<td>90</td>
<td>45</td>
</tr>
<tr>
<td>50</td>
<td>20</td>
</tr>
<tr>
<td>80</td>
<td>36</td>
</tr>
</tbody>
</table>

Average 73 34 83 81

In each management service team, the partner thought the program was more developed than the manager, and the difference in every case was quite substantial. Also notice that the partners and managers of the audit teams were in substantial agreement. Second, consider the data of question 4(a) (Table 16). Here two management service personnel responded to the question by checking the "not important" choice. Both people were partners in charge of the assignments. Finally, consider the

---

17 The difference was significant at the .05 point (Mann Whitney U test).
TABLE 16

COMPARISON OF IMPORTANCE OF PROBLEM AREAS IN AUDIT AND WORK PROGRAMS

QUESTION 4 Importance of problem areas for which no solution procedure has been selected before the commencement of the field work (design phase).

(a) **Response Category** | **Audit** | **Management Service**
--- | --- | ---
(a) | 2 | 1
(b) | 2 | 3
(c) | 5 | 2
(d) | 0 | 2
(e) | 0 | 0

Not significant at .05 point.—Mann Whitney U test.

(b) **Team** | **Audit** | **Management Service**
--- | --- | ---
1. | 33.33 | 28.0
2. | 86.66 | 56.6
3. | 47.33 | 42.5

Average (all teams) | 55.77 | 42.38

Scale: The higher the score the more important the unresolved problem areas.

Significance level

Not significant at the .05 point

Pattern of responses (rank order)

M M M A A A A M A A A M A

A indicates audit personnel.

M indicates management service personnel.

_____ indicates a tie in the rank order.
data of question 4(b) (Table 17). In each management service team the

<table>
<thead>
<tr>
<th>Management Service Teams</th>
<th>Audit Teams</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partners Managers</td>
<td>Partners Managers</td>
</tr>
<tr>
<td>00</td>
<td>40</td>
</tr>
<tr>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>30</td>
<td>60</td>
</tr>
<tr>
<td>Average</td>
<td>60</td>
</tr>
</tbody>
</table>

unresolved problems were thought to be more important by the manager than by the partner.\(^{18}\) In two of the management service teams the differences between the manager and partner were quite large. In the audit teams, however, the unresolved problems were thought to be more important by the partner than by the manager. Again the salient feature of the audit team data is the close agreement between the partners and the managers. These data, together with the data of question 13(a) suggest a break in the communication channel and work flow between the manager and partner on management service engagements.

\(^{18}\)The difference was not statistically significant at the .05 point. The actual probability was .200 (Mann Whitney U test).
Work flow patterns

Question 12 was a general question and provided a substantial number of observations on the work flow patterns. Although the observations collected were too complex to derive any simple general work flow pattern, some interesting remarks can be made concerning team structure by analyzing subsections of the question.\(^{19}\) There were three parts to the question, namely:

1. to whom did you delegate work,
2. from whom did you receive work, and
3. with whom did you share work.

Many techniques exist for the study of group structure.\(^{20}\) However, the techniques which are most highly developed and based upon a coherent mathematical theory are those techniques developed from the theory of directed graphs.\(^{21}\) The structural indices used here are based upon the distance matrix of a digraph (directed graph). Obviously, no detailed explanation of digraph theory can be developed in this paper,

---

\(^{19}\) Question 12 was virtually an open-ended question with regard to each of the subparts. This was one problem. Another problem was that there were no weights attached to the choices (for example, how much work was delegated (received, shared) or how important was the work delegated, etc.). These problems become particularly important in trying to combine and simplify the subparts.


\(^{21}\) The structural analysis of this paper is based upon: Frank Harary, Robert Z. Norman, and Dorwin Cartwright, Structural Models: An Introduction to the Theory of Directed Graphs (New York: John Wiley and Sons, Inc., 1965).
but the following summary from Harary et al. on the distance matrix will introduce the basic terminology.

The distance sum $a_i$ from a point $v_i$ of $D$ (a digraph) is the sum of the finite distances $d(v_i, u)$ for all $u$ in $D$. Thus, $a_i$ is the sum of all finite entries in the $i$th row of the distance matrix $N(D)$. The distance sum $b_j$ to a point $v_j$ is the sum of the finite distances $d(u, v_j)$ for all $u$ in $D$. Thus, $b_j$ is the sum of the finite entries in the $j$th column of $N(D)$. The total distance $\Sigma_{d_{ij}}$ within a digraph $D$ is the sum of all the finite distances $d(v_i, v_j)$ in $D$. Thus, $\Sigma_{d_{ij}}$ is the sum of all the finite entries in $N(D)$.\(^{22}\)

\[D_1:23\]

\[\begin{array}{cccccc}
\bullet & \bullet & \bullet & \bullet & \bullet \\
\circ & & & & \\
v_1 & v_2 & v_3 & v_4 & v_5 \\
\end{array}\]

\[N(D_1) = \begin{bmatrix}
0 & 1 & 2 & 3 & 4 \\
1 & 0 & 1 & 2 & 3 \\
2 & 1 & 0 & 1 & 2 \\
3 & 2 & 1 & 0 & 1 \\
4 & 3 & 2 & 1 & 0 \\
\end{bmatrix} \begin{array}{c}
10 \\
7 \\
6 \\
7 \\
10 \\
\end{array}\]

\[b_j \begin{array}{cccc}
10 & 7 & 6 & 7 & 10 \\
\end{array} \quad \Sigma_{d_{ij}} = 40.\]

\[D_4:24\]

\[\begin{array}{cccccc}
\bullet & \bullet & \bullet & \bullet & \bullet \\
\circ & & & & \\
v_1 & v_2 & v_3 & v_4 & v_5 \\
\end{array}\]

\[N(D_4) = \begin{bmatrix}
0 & \infty & \infty & \infty & \infty \\
1 & 0 & \infty & \infty & \infty \\
2 & 1 & 0 & 1 & 2 \\
\infty & \infty & \infty & 0 & 1 \\
\infty & \infty & \infty & \infty & 0 \\
\end{bmatrix} \begin{array}{c}
0 \\
1 \\
6 \\
1 \\
0 \\
\end{array}\]

\[b_j \begin{array}{cccc}
3 & 1 & 0 & 1 & 3 \\
\end{array} \quad \Sigma_{d_{ij}} = 8.\]

\(^{22}\)Ibid., 185.

\(^{23}\)Ibid., 186.

\(^{24}\)Ibid.
In analyzing the data from question 12(a) (to whom did you delegate work) two related measures will be used. The first, an index of "relative centrality," was used by Bavelas in research on communication networks.\textsuperscript{25} Stated in digraph terminology, the relative centrality of \(v_i\) is \(\frac{\Sigma d_{ij}}{a_i}\). For example, in \(D_1\) above, the relative centrality of \(v_1\) is \(40/10 = 4\). The second measure was developed by Harary quite independently of the Bavelas measure and is particularly useful in analyzing delegated authority (or work) in an organization.\textsuperscript{26} The measure is the "relative status" of a person \((N_1)\) and is defined as \(\frac{a_i}{\Sigma d_{ij}}\).\textsuperscript{27} Obviously, the relative status of \(v_1\) is the reciprocal of the relative centrality of \(v_1\).\textsuperscript{28}


\textsuperscript{26}Harary, Norman and Cartwright, op. cit., 190.

\textsuperscript{27}Harary suggested the following reasonable requirements for the status of a person:

"... in general, call \(v\) a subordinate of \(u\) if \(v\) is reachable from \(u\). Call the subordinate vector of \(u\) the sequence \((e_1, e_2, \ldots, e_{n-1})\) where \(e_n\) is the number of points at distance \(n\) from \(u\). ... For any point \(u\) in this digraph, a status measure \(s(u)\) is wanted such that (1) \(s(u)\) is an integer, (2) \(s(u) = 0\) if and only if \(u\) has no subordinates, (3) if the subordinate vector of \(v\) is obtained from that of \(u\) by adding one subordinate (at any distance from \(v\)), the status of \(v\) is greater than that of \(u\), and (4) if the subordinate vector of \(v\) is obtained from that of \(u\) by increasing the distance of any one subordinate, the status of \(v\) is again greater than that of \(u\)." \textit{Ibid.}, 189.

\textsuperscript{28}Because of the structure of the question and the number of persons interviewed in each team, the sum of the relative status' (the sum of the fraction \(a_i/\Sigma d_{ij}\)) of the team members interviewed must be one. This property means that the total status of the partner, manager and senior in the team is constant no matter what the team size is. Notice the total relative centrality of the team varies.
The results of analyzing question 12(a) are shown in Table 18.

**TABLE 18**

COMPARISON OF THE AUDIT AND MANAGEMENT SERVICE TEAMS' RELATIVE STATUS AND RELATIVE CENTRALITY

**QUESTION 12(a)** To whom did you delegate work.

**Relative Status Measures**

<table>
<thead>
<tr>
<th>Partners</th>
<th>Managers</th>
<th>Seniors</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>A</td>
<td>M</td>
</tr>
<tr>
<td>.667</td>
<td>.537</td>
<td>.333</td>
</tr>
<tr>
<td>.59</td>
<td>.435</td>
<td>.272</td>
</tr>
<tr>
<td>.50</td>
<td>.392</td>
<td>.267</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Relative Centrality Measures**

<table>
<thead>
<tr>
<th>Partners</th>
<th>Managers</th>
<th>Seniors</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>A</td>
<td>M</td>
</tr>
<tr>
<td>1.497</td>
<td>1.862</td>
<td>3.003</td>
</tr>
<tr>
<td>1.695</td>
<td>2.299</td>
<td>3.676</td>
</tr>
<tr>
<td>2.000</td>
<td>2.551</td>
<td>3.745</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*This was the senior promoted to manager during the assignment.

M stands for management services.

A stands for auditing.

The first point to note is the hierarchical nature of the relative status (and relative centrality). In both functional areas the partners
tend to have the highest relative status (lowest relative centrality), managers are in the middle, and the seniors the lowest relative status (highest relative centrality). However, the audit partners tend to have a higher relative centrality than management service partners while the reverse is true for the manager level. This seems to indicate that management service partners delegate more to the managers than do audit partners and have less interaction with lower echelon members. This is consistent with the observations of question 13 where the management service partner was considered an isolate (in the working relations) by the management service managers.

Part (b) of question 12 posed the question from whom did you receive work. Again, measures of relative centrality and relative status can be calculated. However, in this case the relative status measure does not possess the convenient mathematical property of adding to a constant for the partner, manager and senior. There may also be a conceptual (or interpretative) problem. Relative status was a measure particularly appropriate when considering delegation and the question arises as to what the measure means when it is reception that is of concern.

A solution to this problem is provided by the directional dual, b_i. Harary has called this the "contrastatus of v_i" or "the amount of status weighing down on an individual from his superordinate."  

---

29 The difference between the partners was significant at the .100 point while the difference at the manager level was significant at the .057 point (Mann Whitney U test).

Although Harary \textit{et al.} do not develop this concept further it seems that a measure termed the "relative contrastatus" of $v_i$ can be developed and defined as \frac{b_{ij}}{d_{ij}}. 

As the results in Table 19 suggest, the relative contrastatus

\begin{table}
\centering
\caption{Comparison of the Teams' Relative Contrastatus}
\begin{tabular}{llllll}
\textbf{Relative Contrastatus Measures} & & & \\
\textbf{Partners} & \textbf{Managers} & \textbf{Seniors} & \\
\textbf{M} & \textbf{A} & \textbf{M} & \textbf{A} & \textbf{M} & \textbf{A} \\
.500  & .250  & .615* & .375  & .714  & .666  \\
.143  & .223  & .500  & .333  &    & .444  \\
.077  & .117  & .308  & .117  &    & .375  \\
 &    & .143  &    &    &    \\
\end{tabular}
\end{table}

*This is the senior promoted to manager during the assignment.
M stands for management services.
A stands for auditing.

is also hierarchically distributed. The seniors tend to receive more work than managers and managers more work than partners.\footnote{This is because of the structure of the question this measure also has the property that the individual fractions (for the partner, manager and senior) add to one in each project team.}

\footnote{The differences within each echelon were not statistically significant.}
consistent with the delegation results of question 12(a).  

**Summary**

These work relations described above seem not only to be consistent with the data from other questions but also consistent with the prescriptions laid down for mechanistic and organismic systems of organization. Systems facing stable environments tend to develop a hierarchical structure of activities while systems facing unstable environments should have a less hierarchical structuring of activities. The data thus seem to support the second research hypothesis quite strongly.

Three dimensions of structure (supervisory patterns, rules and evaluation criteria) remain to be discussed. Each of these was similar

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33Question 12(c) was concerned with the sharing of work. Relative centrality and relative status measures were also developed for this data. Unfortunately in half of the teams the raw sum \( a_i \) was zero for some members. This made the measures somewhat erratic and of course made the relative status ratio, \( Ed_{ij}/a_i \), meaningless (for these members).

34There is, however, one unsettling point. The communication patterns for solving significant problems do not exhibit the same consistency as the work relations nor the same patterns. There appear to be two possible explanations. One is that the work relations and problem solving communication patterns do differ. This particular explanation is not really consistent with the other data. The second possible explanation lies in the design of the questions themselves. Question 13 really asks the respondents to combine and expand their answers to question 21. In doing this they had to weight the various variables involved. Possibly in auditing where technical problems dominated and the work was fairly programmed, the hierarchical structure endured, whereas in management services where client associated problems dominated and work was less programmed the less formal hierarchy developed.
to dimensions used by Lawrence and Lorsch in their research. On their dimensions Lawrence and Lorsch found, "... that subsystems (the functional areas of fundamental research, applied research, sales and production) within each organization did tend to rank from low to high structure in relation to the uncertainty of their subenvironments..." Because of the Lawrence and Lorsch research and the environmental hypothesis (and the data of the present research) the following seemed to be reasonable expectations:

1. the audit team members would experience greater (in extent, frequency and rigidity of format) supervision than management service team members,
2. more importance would be placed on organizational rules in the auditing area than in the management service area, and
3. the evaluation criteria emphasized would be different in each area, in particular, they would be "mechanistic" in the audit area and "organismic" in the management service area.

The expectations were only partially fulfilled.

Supervisory style

As indicated above, three aspects of supervision were examined, namely, the extent of supervision by superordinates of subordinates


36 Ibid.
(question 16), the frequency of supervision (question 17) and the format of the supervision (question 18).\textsuperscript{37} The results are summarized verbally and graphically below.\textsuperscript{38}

**Question 16**

<table>
<thead>
<tr>
<th>Person Supervising</th>
<th>Individual Supervised</th>
<th>Extent of Supervision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partner</td>
<td>Manager</td>
<td>both functional areas: selected working papers</td>
</tr>
<tr>
<td>Manager</td>
<td>Senior</td>
<td>auditing area: most or all working papers reviewed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>management service area: selected or most working papers reviewed</td>
</tr>
<tr>
<td>Senior</td>
<td>Staff</td>
<td>auditing area: reviewed all working papers for most staff and for the remainder (more senior staff) selected working papers reviewed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>management service area: for 50% of the staff all working papers reviewed and for the other 50% selected or most working papers reviewed</td>
</tr>
</tbody>
</table>

\textsuperscript{37}Questions 14 and 15 were used to lead into the questions on supervisory patterns.

\textsuperscript{38}The graphic representation is simply to illustrate the difference between the two areas. The monotonic transformation from the ordinal to the interval scale is done by simply adding a distance assumption (equal interval in this case) to the ordinal scale (from the questionnaire $a = 5$, $b = 4$, $c = 3$, $d = 2$, $e = 1$). Note, any arbitrary distance function could have been made, providing the transformation was monotonic to give a similar graphic representation. The scale on the vertical axis would be different but the ordinal ranking of the tuples at each subordinate level would be the same.
Fig. 8.--A comparison of the extent of supervision in the two functional areas.

**Question 17**

<table>
<thead>
<tr>
<th>Person Supervising</th>
<th>Individual Supervised</th>
<th>Frequency of Supervision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partner</td>
<td>Manager</td>
<td>both functional areas: less than weekly</td>
</tr>
<tr>
<td>Manager</td>
<td>Senior</td>
<td>both functional areas: usually weekly</td>
</tr>
<tr>
<td>Senior</td>
<td>Staff</td>
<td>auditing area: daily</td>
</tr>
</tbody>
</table>

management service area: at least weekly and usually daily
Fig. 9.—A comparison of the frequency of supervision in the two functional areas.

Question 18

<table>
<thead>
<tr>
<th>Person Supervising</th>
<th>Individual Supervised</th>
<th>Format of Supervision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partner, Manager &amp; Senior</td>
<td>Manager, Senior &amp; Staff respectively</td>
<td>A review of working papers followed by an oral discussion.\textsuperscript{39}</td>
</tr>
</tbody>
</table>

The results imply that the extent and frequency of supervision is greater in the auditing area than in the management service area.

\textsuperscript{39}The response categories to question 18 can be ordinally ranked from high to low formality with the categories "a review of working papers (or a written report) followed by oral discussion" being the most formal. All respondents (except one) answered the question by checking the category "review of working papers followed by oral discussion." The one who didn't picked "written report followed by oral discussion" and during the discussion stated he would have chosen the former category had he not overlooked that category when initially answering the question.
However, the differences seem fairly small (notice that in three of the six tuples of the graphic representation the elements are the same number) and each subordinate level is fairly extensively supervised. The suggestion has been made previously that the programs represent the major integrating device of the public accounting firms. Working papers are the basic documents of programs. The answers probably reflect the emphasis placed on working paper evidence in the audit area and the supervision pattern that was established around these papers. The same basic routine may have been transferred to the management service function.

A fourth supervisory question was question 24. This asked what review was made of the team's performance. The standard answer (in both functional areas) was that the project was always a candidate for a comprehensive review by the accounting firm's evaluation team. The evaluation teams, comprised of partners from other offices who review completely the working papers of the project, represent the firm's system of internal quality control. These teams evaluate the project on both its quality and efficiency. At times other types of reviews are made (for example, another partner from the same office as the project team reviews the audit, or in the management service area, if the client is also an audit client of the firm, the audit partner may review the assignment), however, these are less rigorous than the

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40For example, if the answers are transformed (approximately) into the Lawrence and Lorsch scaling categories both areas seem to be quite structured. Both areas have a structure score of approximately 19. Lawrence and Lorsch, op. cit. The results were not statistically different.
quality control review. The threat of a detailed review is always present but an actual review is probably not likely to occur.

Organizational rules

A number of practitioners thought the most interesting questions on the questionnaire were those concerning organizational rules. Question 22 asked to what extent organizational rules affected the design of the program. Two situations were given and the practitioner had to decide how much the situations affected the program design. It was assumed that the greater the number of differences in the program design, the more organizational rules affected the task. The results indicate that rules were considered to be more restrictive in the auditing area than in the management service area (Table 20). From the discussion on the question it became apparent that the practitioners understood the full intent of the question and for this reason some substance can be placed in the general direction of the answer. However, according to the data from question 23 (Table 21) organizational rules were emphasized more in the management service area than in the audit area. This could be explained in part by the fact that the professional code of ethics and the American Institute of Certified

41 The results (Table 20) just failed to be statistically significant at the .05 point. The question did produce one interesting interview situation. In one audit team, the senior checked response (b) (a few differences in design) while the partner and manager checked response (a) (exactly the same design). The senior was subjected to significant pressure (in the form of questions, counter arguments and understanding) and was eventually persuaded that response (a) was the correct response. This type of situation did not occur at any other time in this team or in other teams.
TABLE 20
COMPARISON OF PROFESSIONAL FREEDOM ON PROGRAM DESIGN

QUESTION 22 The restrictions in professional freedom because of operating within the firm.

<table>
<thead>
<tr>
<th>Response Category</th>
<th>Audit Team*</th>
<th>Management Service Team</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>unrevised</td>
<td>revised</td>
</tr>
<tr>
<td>(a)</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>(b)</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>(c)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>(d)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>(e)</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

*The "unrevised" and "revised" headings refer to the senior's response documented in the text.

TABLE 21
COMPARISON OF THE IMPORTANCE OF RULES IN PROGRAM DESIGN

QUESTION 23 The importance of rules in the design of programs.

<table>
<thead>
<tr>
<th>Assigned Rank of &quot;Organizational Rules&quot;</th>
<th>Audit Team Responses</th>
<th>Management Service Teams Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>2.</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>4.</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Public Accountants (AICPA) standards are minimal in the area of management services. Therefore, the choice for the most important influence was restricted to the alternatives "organizational rules" and "professional judgement." However, the alternatives "professional code of ethics" and "AICPA Standards" were usually ranked third or fourth in the auditing area, so even here the choice for the most important influence was essentially restricted to the same two alternatives as in the management service area. Audit personnel tended to rank "organizational rules" second.42

A possible explanation for the answers to question 23 is that the firm's booklet on EDP practice had been issued only since 1969. There was a continuing drive to get firm members to follow the general guidelines of the booklet especially members with limited EDP background and this "sales" pressure may have made these guidelines (one may interpret these as rules) prominent in the minds of the management service personnel. Another possible reason is the professionalization or non-professionalization of different firm members. The basic professionalism in a public accounting firm stems from the traditional auditing function. Management service personnel may not feel the professional pressure (socialization) as much as the auditing personnel. As part of the professional image concerns "professional judgement" a question which essentially compares "rules" to "professional

42 The result was statistically significant at the .025 point.
judgement" could be touching on a "sensitive" issue for auditors.43

Evaluation criteria

Finally, the question of the evaluation criteria will be considered. The questions employed the accounting firm's own evaluation reports. The categories on these forms were trichotomized into those that emphasized adaptability of the project, those that emphasized a ritualistic approach, and those categories that could not be classified in either of the above ways (Table 22). Each practitioner had to check a number of categories that provided "the greatest benefit if marked above average," and a number of categories that caused "the least harm if marked requires improvement." The first type of response was interpreted as placing a positive emphasis on the category (an individual trait sought by the practitioner) and the second response type was interpreted as placing a negative emphasis on the category (a trait not particularly sought by the practitioner). The expected number of checks (if each category was equally emphasized) and the actual number of checks is given in Table 23. Both areas tended to emphasize adaptability although this was emphasized to a greater extent in the management services area.

Given two systems, each characterized as intensive technology systems, one facing a relatively stable environment and the other facing

43Note, Sorensen found that a "bureaucratic" attitude was more common at the higher echelons in the public accounting firms he studied. James E. Sorensen, "Professional and Bureaucratic Organization in the Public Accounting Firm," Accounting Review, 62 (July, 1967), 558.
### TABLE 22
THE CLASSIFICATION OF THE FIRM'S EVALUATION FORM CATEGORIES

<table>
<thead>
<tr>
<th>Trichotomy</th>
<th>Evaluation Form Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Audit Area</td>
</tr>
<tr>
<td><strong>Organismic</strong></td>
<td>2, 3, 9, 10, 15, 23, 29, 30, 36, 37, 43, 49, 50</td>
</tr>
<tr>
<td><strong>Mechanistic</strong></td>
<td>4, 11, 12, 13, 22, 24, 35, 38, 46</td>
</tr>
<tr>
<td><strong>Neutral</strong></td>
<td>All other categories</td>
</tr>
<tr>
<td>(neither classifi-</td>
<td></td>
</tr>
<tr>
<td>cation above)</td>
<td></td>
</tr>
</tbody>
</table>

### TABLE 23
ACTUAL AND (EXPECTED) OBSERVATIONS ON THE FIRM'S EVALUATION FORM

<table>
<thead>
<tr>
<th>Trichotomy</th>
<th>Audit Area</th>
<th>Management Service Area</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organismic</strong></td>
<td>28 (15)</td>
<td>27 (13)</td>
</tr>
<tr>
<td>Positive Emphasis</td>
<td>13 (15)</td>
<td>6 (13)</td>
</tr>
<tr>
<td>Negative Emphasis</td>
<td>6 (10)</td>
<td>3 (4)</td>
</tr>
<tr>
<td><strong>Mechanistic</strong></td>
<td>11 (10)</td>
<td>1 (4)</td>
</tr>
<tr>
<td>Positive Emphasis</td>
<td>6 (10)</td>
<td>3 (4)</td>
</tr>
<tr>
<td>Negative Emphasis</td>
<td>11 (10)</td>
<td>1 (4)</td>
</tr>
</tbody>
</table>
a relatively unstable environment what kind of evaluative criteria should be employed in each case? A reasonable theoretical suggestion, and the one implied by the data of this research, is that each would include criteria associated with adaptability (to reflect the intensive technology), but the system facing the relatively unstable environment would place greater emphasis on adaptability criteria possibly to the virtual exclusion of other criteria. This is broaching the issue of the evaluation of individuals and the assessment of organizational components. These are interesting subjects especially in organizations

44(a) Thompson provides some discussion worth repeating here on the assessment of organizational components which is fairly compatible with the stance taken.

"Proposition 7.8: When knowledge of cause/effect relationships is known to be incomplete, organizations under rationality norms evaluate component units in terms of organizational (rather than technical) rationality (Chapter 2).

With clearly imperfect technologies, technical rationality cannot be assessed with confidence, and the organization must fall back to a less precise but fundamental question: does the unit contribute to the organization's needs? The closed system of logic is inapplicable when the technology is imperfect: for, by definition, unrecognized variables are affecting technical results, or known variables are operating in unpredictable ways. The organization must therefore rely on open-system logics and less precise evidence of fitness for future action."


(b) Question 25 demonstrated that the firm's evaluation report does provide a vehicle for inquiring into the importance of particular evaluation criteria. Also question 26 did not provide any additional data.
facing dynamic environments. In a professional organization facing various environments the issue is particularly interesting and complicated because of the professional's sensitivity to being evaluated. However, going beyond the data above is the subject of some future research, not the present study.

**Conclusion**

The data collected suggest that the contengency model of organization theory is a viable framework for analyzing one type of professional organization—the large public accounting firm. The mechanistic-organismic dichotomy appears applicable in the organization studied, as there was a difference indicated in the environmental stability facing different organizational subunits. A potential difference in environmental stability had been used in Chapter II to predict differences in subunit structure. The data indicated there was a difference in the structure of the different subunits (on some of the six structure dimensions used) and that this difference was consistent with observed environmental differences.

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45 This also makes collecting data on this subject somewhat difficult.

46 "Contengency theory" is the generic term used by Lawrence and Lorsch to summarize the approach they adopted and the conclusions in their research.

CHAPTER V

Introduction

The objective of this final chapter is to relate the present study to selected studies by other researchers. In particular, the chapter will cover the results of Sorensen, who adopted a sociological perspective in examining public accounting firms, and also attempt to integrate the present study and the Lawrence and Lorsch study.¹ In pursuing this course, the discussion will also suggest possible implications for future research of the results of the present study.

Other Accounting Research

There are only a handful of studies that have examined the public accounting firm from an organizational viewpoint.² One of the


²A study similar to Sorensen's, but, in this researcher's opinion, not so well performed is:
Another study on a similar topic and including public accounting firms can be found in:
and "Some Organizational Considerations in the Professional-Organizational Relationship," Administrative Science Quarterly, XII (December, 1967), 461-78.
more important studies is that by Sorensen.\(^3\) He initially suggested a relationship between bureaucratic and professional orientations and the job satisfaction and migration plans of certified public accountants (CPA's). Sorensen further suggested that the new college graduate choosing a CPA firm career possesses "a high but unrealistic professional orientation and a low but unrealistic bureaucratic orientation on entering the firm."\(^4\) This problem, of unreal (inaccurate) expectations on the part of new entrants to the profession, is the focus of another current study by Sorensen (together with Rhode and Lawler).\(^5\) The current importance attached to this line of research provides the impetus for analyzing the original Sorensen questions.

Sorensen makes three observations which can be refined by the present study.\(^6\) Briefly, these are:

1. there is a conflict between bureaucratism and professionalism in large CPA firms,

---

\(^3\)Sorensen, op. cit.

\(^4\)Ibid., 565.

\(^5\)James E. Sorensen is a faculty member of the University of Denver, John Rhode is a member of the University of Washington faculty, and Edward Lawler III is a well known psychologist (Yale University). The research project was discussed by Professor Rhode during a recent (April, 1972) visit by him to The Ohio State University where he presented a paper to the Accounting Research Colloquium.

The problem of a high turnover of employees is beginning to disturb the accounting profession as is evidenced by the financial support of the above study by the American Institute of Certified Public Accountants.

\(^6\)One may suggest that there are some logical and empirical questions regarding the validity of the comparisons (for example, questions of differences in time and samples). However, the comments are speculative in nature and the subject of future verification or falsification.
2. job satisfaction is affected by bureaucratic orientation
(low bureaucratic orientation implies low satisfaction),

3. migration is affected by the task of managing a hybrid
professional-bureaucratic orientation.

The suggested refinements in the above observations stem principally
from the observed differences in the two functional areas studied in
the present research.

With respect to the first observation above, there is now
reason to suspect the conflict between bureaucraticism and professional-
ism in large CPA firms is not constant within the firm. The present
study noted the mechanistic organization of the auditing function. As
such, it is not surprising to find conflict between the bureaucratic
and professional orientations in this functional area.7 However, in
the management service function an organismic organization was noted.
It is suggested that an organismic system orientation is fairly com-
patible with the professional orientation, thus reducing the conflict
between professionalism and "bureaucraticism" in the management

7 This comparison is only valid to the extent that the mechan-
istic system and bureaucratic mode of organization are similar. On
the organizational dimensions studied during the present research
(rules--as categoricals, closeness of supervision, and delegation [of
work]) the prescriptions of the two systems are quite similar. See
for example:
Victor A. Thompson, "Bureaucracy and Innovation," Administrative
Science Quarterly, X (June, 1965), 3 and 4, and
Tom Burns and G. M. Stalker, The Management of Innovation
(London: Tavistock Institute, 1961), 5.
The second and third observations are concerned with job satisfaction and migration habits. If the first refinement above proves correct, then some difference in job satisfaction and migration habits should be expected between the functional areas. Specifically, job satisfaction should be higher while migration should be lower. This is reinforced by the present study. Both managers and seniors in the management service function had greater relative centrality than their counterparts in auditing. If, as is suggested in the literature, relative centrality is related to an individual's morale (the greater the relative centrality, the higher the morale) this would be another reason for expecting a difference between the two functional areas.

These comments are not meant to invalidate Sorensen's past study or any current study on the role of individual expectations with respect to job satisfaction. What is suggested is that there are some structural variables that are of major concern in the analysis. For

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8In the management service function, other professionals (non-accountants) are also employed. Although a professional training tends to homogenize orientations, training in different professions also encourages differentiation. Consequently there may be conflicts caused by different professional orientations within the firm which must be distinguished from a bureaucratic-professional conflict.

9Different migration habits could also be related to different recruiting habits, if these exist, between the two functional areas.

10See, Alex Bavelas, "Communication Patterns in Task-oriented Groups," in Group Dynamics: Research and Theory, D. Cartwright and A. Zander, editors (Evanston, Illinois: Row Peterson, 1968), Chapter 37. The assumption implicit here is that morale is related directly to job satisfaction and inversely to migration.
example, why do two individuals with similar expectations have different career patterns with a firm or in different firms? Such a question cannot be answered if only the question of individual expectations is addressed. However, the identification of structural variation between the two work situations, similar to the structural variations noted in the present research, would aid in developing a complete explanation.

The Lawrence and Lorsch Framework

In this section the relationship between the Lawrence and Lorsch research and the present study will be examined under two headings:

1. environmental uncertainty and differentiation, and
2. integration.\textsuperscript{11}

Environmental uncertainty and differentiation

Since these topics have been the subject of the research and have been covered intensively in early chapters, they are only briefly recapitulated here. Only the question of integration will receive any major attention.

Lawrence and Lorsch used the components, clarity of information, certainty of causal relationships and timespan of definitive feedback to measure environmental uncertainty.\textsuperscript{12} The present study employed only

\textsuperscript{11} The comparison made in the next few pages is based upon their book cited previously. Lawrence and Lorsch, op. cit.

\textsuperscript{12} Ibid., Chapter 2.
the first two components. Essentially, the research found that clarity of information (clarity of the client problem) and certainty of causal relationships differed between the two functional areas of management services and auditing. The auditing environment tended to be significantly more certain than the management service environment. In this respect, the auditing environment can be likened to the container industry environment of the Lawrence and Lorsch study. On the other hand, the management service function has an uncertain environment more similar to the food or plastics industry of the Lawrence and Lorsch study. There is one interesting difference in the industry environments of the two studies. In the Lawrence and Lorsch research, the techno-economic environment of each industry was very similar (and fairly certain) because each had a processing type technology. In the present study, there was substantial difference in the technological environments of each functional area with the management service technological environment being quite uncertain.

Only structural differentiation was considered in the present research (Lawrence and Lorsch also considered differentiation in terms of time, goal and interpersonal orientations). This was measured on some traditional organizational dimensions as well as on some typically small group dimensions (the latter was not done by Lawrence and Lorsch).

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13 Ibid., 91.
14 Ibid.
15 Ibid.
The traditional organizational dimensions indicated a high degree of similarity between the two functional areas. When an approximation was made to the structural scales of the Lawrence and Lorsch research, the functional areas exhibited a structure score similar to the sales departments in the latters' research. However, the small group dimensions showed significant differences in the working relations (structure) in the two areas. These differences were consistent with the demands of the different environments facing the functional areas.

Integration

Integration for Lawrence and Lorsch revolves around the major competitive issues facing the organization.\(^{16}\) Thus, in the food and plastics industries, where the major competitive issue was innovation, integration between sales and research and between production and research became crucial. In the container industry, where customer service was the major competitive issue (products standardized), integration between sales and production was crucial. Considered from Thompson's framework of pooled, sequential and reciprocal interdependence, the major integrating problems occur where there is reciprocal interdependence between the sub-units.\(^{17}\) These two frameworks will facilitate some speculation on integration within public accounting firms.

\(^{16}\)Ibid., 90.

When each of the functional areas is servicing separate clients, there exists between these areas only pooled interdependence. The major integrating problem lies within the project team. Various devices may be used, but, as indicated in earlier discussion, the program represents the major integrative mechanism within the team. After this, the team's hierarchy is most likely called into play, at least in the auditing teams. Given the working relations found in the management service teams, peer group and superior-subordinate consultative interaction may be more common in these teams.

However, the major integration problem occurs when each functional area is servicing the same client, for in this case there exists reciprocal interdependence between the project teams. The key to understanding this integration lies in the answer to the question, "What is the major competitive issue facing public accounting firms?" The answer appears to be "service to the audit client." First of all, public accounting firms exist because of their professional services in the audit field. Second, the majority of the public accounting firm's revenues still comes from the auditing function. Because of the professional and financial considerations involved, the auditors need (or at least perceive they need) to exercise substantial influence on any matter involving an audit client. In other words, it is "service to the audit client" that is seen as the major issue facing the firm rather than "service to the client." This difference in attitude is subtle but possibly very important. Whereas "service to the client" implies reciprocal interdependence between the project teams, "service
to the audit client" may result in interpreting an inherently reciprocally interdependent situation as a sequential interdependence situation.

This helps explain why the audit partner is the nexus of the integration process between management service and audit teams. The audit function is first preserved and other functions adapt to the audit requirements. Presumably, therefore, the only person who can make major policy decisions regarding the firm's interaction with the client is the audit partner.

From this study, it is not possible to gauge whether this integration mechanism is efficient or inefficient. However, it is probably worth summarizing what Lawrence and Lorsch see as the prerequisites for a successful integrator:

1. he should possess orientations equidistant among the departments being integrated,

2. he should be seen as having an important voice in decisions because of both positional authority and knowledge-based authority, and

3. he should be rewarded on the basis of the combined performance of all the departments he is integrating rather than just one department.18

It is doubtful whether an audit partner necessarily meets all of these prerequisites.

18Lawrence and Lorsch, op. cit., Chapter 3.
Lawrence and Lorsch would class this type of integrating mechanism as a low level integrating device.
requirements since he is primarily an audit team member, considered a specialist in auditing and being rewarded basically on the performance of his audit function. Consequently, it is quite possible that this integrating mechanism is not optimal.  

A Concluding Comment

The public accounting profession provides a rich setting in which to conduct organizational research. Only a small fraction of this richness has been exposed during the course of this study. Hopefully, however, this is sufficient to encourage research, particularly imaginative research, equal to the richness of the setting.

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19 Possibly a better mechanism, if it could be convincingly divorced from the above tradition, would be the establishment of a client partner (not necessarily an audit person) who would be responsible for the total service to the client and rewarded on this basis.
APPENDIX I

I would like to assure you again that the answers to the following questions will be kept in the strictest confidence. Whenever the data is published, it will appear in an aggregate form so that to attribute an answer to any one firm member or to any particular team will be impossible. The only individuals having access to the completed questionnaires will be me and my three dissertation advisers, all of whom are professors at The Ohio State University. Neither I nor my advisers hold any position in __________. No one within __________ will have access to the original questionnaire or to the unpublished data.
I would like you to answer each of the following questions as it applies to the ________ audit. In other words, when the questions specify "this audit," I mean the ________ audit. Similarly, "the audit program" refers to the ________ audit program, and "this (or the) audit team" means the team performing the ________ audit. I would like you to answer the questions in relation to your experience on the above audit and/or what you expect your experience to be. Therefore, there are no right or wrong answers. I am simply seeking your opinion in each question asked.

Please read and answer each question carefully. Some questions differ from a previous question in only small but significant ways (e.g., the response scale used). Some questions may appear difficult to recall, and for others an answer may appear difficult to choose. However, I would greatly appreciate your answering each and every question as accurately as you can. Thank you very much.
1. Please circle the point on the scale provided which most nearly describes the degree to which the audit program for this audit was clearly developed before the field work commenced.

0 \hspace{1cm} 100

very unclear \hspace{2cm} very clear
2. (a) Please circle the alternative below which most nearly describes the extent to which this audit program is similar to the audit program used last year.

(a) exactly the same program
(b) substantially the same—a few minor modifications
(c) similar—many minor or a few major modifications
(d) many major modifications
(e) completely different program

2. (b) Please circle the point on the scale below which most nearly describes the extent to which the audit program is similar to the audit program used last year.

0

100
completed

different

exactly the same program
3. (a) I would like you to consider the following position--namely, that the audit program has been prepared but the field work has not been conducted. I would like you to choose the alternative below which best describes how much of the audit program consists of problem areas for which no detail solution procedure has been selected and for which decisions on this have been postponed.

(a) almost all of the program
(b) most of the program
(c) some of the program
(d) very little of the program
(e) none of the program
--- no such problem areas

3. (b) I would like you to consider the following position--namely, that the audit program has been prepared but the field work has not been conducted. I would like you to select the point on the scale below which best describes how much of the audit program consists of problem areas for which no detail solution procedure has been selected and for which decisions on this have been postponed.

0 100
completely different program exactly the same program
4. (a) I would like you to consider the following position--namely, that the audit program has been prepared but the field work has not been conducted. I would like you to choose the alternative below which best describes how important for the successful completion of the audit are problem areas for which no solution procedure has presently been selected and for which decisions on this have been postponed.

(a) very important
(b) important
(c) somewhat important
(d) not important
(e) unimportant
--- no such problem areas

4. (b) I would like you to consider the following position--namely, that the audit program has been prepared but the field work has not been conducted. I would like you to select the point on the scale below which best describes how important for the successful completion of the audit are problem areas for which no solution procedure has presently been selected and for which decisions on this have been postponed.

100

very important

unimportant
5. (a) For the moment would you please consider the field work of this audit. I would like you to consider how the field work of this audit compares to the field work of other audits with which you are familiar and have been completed within the last 5 years. Specifically, will you please estimate for how many of these other audits the field work of this audit is exactly the same or almost exactly the same (very few minor differences)?

(a) very few of them, 0% → 25%
(b) some of them, 26% → 50%
(c) most of them, 51% → 74%
(d) nearly all of them, 75% → 100%

5. (b) Continue for the present to think about the field work of this audit. Again, I would like you to consider how the field work of this audit compares with the field work of other audits with which you are familiar and have been completed within the last 5 years. Specifically, will you please estimate for how many of these other audits the field work of this audit is completely different or almost completely different (very few minor similarities)?

(a) very few of them, 0% → 25%
(b) some of them, 26% → 50%
(c) most of them, 51% → 74%
(d) nearly all of them, 75% → 100%
6. (a) For the moment would you please consider the **field work** of this audit. I would like you to consider how the field work of this audit compares to the field work of other audits on which you have participated during the last 5 years. Specifically, will you please estimate for how many of these other audits the field work of this audit is exactly the same or almost exactly the same (very few minor differences)?

(a) very few of them, 0% → 25%
(b) some of them, 26% → 50%
(c) most of them, 51% → 74%
(d) nearly all of them, 75% → 100%

6. (b) Continue for the present to think about the **field work** of this audit. Again, I would like you to consider how the field work of this audit compares with the field work of other audits on which you have participated during the last 5 years. Specifically, will you please estimate for how many of these other audits the field work of this audit is completely different or almost completely different (very few minor similarities)?

(a) very few of them, 0% → 25%
(b) some of them, 26% → 50%
(c) most of them, 51% → 74%
(d) nearly all of them, 75% → 100%
7. (a) Assume you had to perform this audit 5 years ago (1966).*
Please circle the alternative below which most nearly describes the extent to which technical conditions (state of the art) of auditing in 1966 would have made the audit program different.

(a) exactly the same program
(b) substantially the same--a few minor modifications
(c) similar--many minor or a few major modifications
(d) many major modifications
(e) completely different program

7. (b) Assume you had to perform this audit 5 years ago (1966).*
Please circle the point on the scale below which most nearly describes the extent to which technical conditions (state of the art) of auditing in 1966 would have made the audit program different.

\[
\begin{array}{ccccccc}
100 & & & & & & 0 \\
\hline
\text{completely different program} & & & & & & \text{exactly the same program}
\end{array}
\]

*If you have been engaged in practice for less than five years, please indicate here how long you have been in public practice and answer the question accordingly. ______ number of years in practice.
8. (a) Assume you have to perform this audit 5 years from now (1976). Please circle the alternative below which most nearly describes how different you expect the audit program in 1976 to be, because of expected changes in technical conditions (state of the art) in the next 5 years.

(a) exactly the same program
(b) substantially the same—a few minor modifications
(c) similar—many minor or a few major modifications
(d) many major modifications
(e) completely different program

8. (b) Assume you have to perform this audit 5 years from now (1976). Please circle the point on the scale below which most nearly describes how different you expect the audit program in 1976 to be, because of expected changes in technical conditions (state of the art) in the next 5 years.

0                100

exactly the same program

completely different program
9. (a) In the past 5 years how many major technical developments have occurred in auditing techniques that have resulted in an improvement in your ability to perform an adequate audit for this client (developments could have resulted in an improvement in quality and/or a lowering of costs to the client)?

   (a) none at all
   (b) a few developments
   (c) many major developments
   (d) very many major developments
   (e) exceedingly many major developments

9. (b) In the past 5 years how many major technical developments have occurred in auditing techniques that have resulted in an improvement in your ability to perform an adequate audit for this client (developments could have resulted in an improvement in quality and/or a lowering of costs to the client)?

   (a) zero
   (b) 1 or 2
   (c) 3 or 4
   (d) 5 or 6
   (e) 7 or 8
   (f) 9 or 10
   (g) 10 or more
10. (a) Please circle the alternative below which most nearly describes the degree of certainty you feel that, once the audit is completed, further information will not disclose material inadequacies in the audit.

(a) certain
(b) very confident
(c) confident
(d) non-confident
(e) uncertain

10. (b) Please circle the point on the scale provided which most nearly describes the degree of certainty you feel that, once the audit is completed, further information will not disclose material inadequacies in the audit.

0

uncertain

100
certain
11. (a) I would like you to consider the final form of the audit program once the audit is completed. Please circle the alternative below which most nearly describes the extent of the necessary changes in the original audit program as a result of conditions found in the field.

(a) exactly the same program
(b) substantially the same—a few minor modifications
(c) similar—many minor or a few major modifications
(d) many major modifications
(e) completely different program

11. (b) I would like you to consider the final form of the audit program once the audit is completed. Please circle the point on the scale provided which most nearly describes the extent of the necessary changes in the original audit program as a result of conditions found in the field.

0

100

exactly the same program
completely different program
12. On the present audit I would like you to recall the following three sets of details:

(a) from whom (if anyone) have you received work to complete,
(b) to whom (if anyone) have you delegated work to complete,
(c) with whom (if anyone) have you reached an understanding on sharing the work to be completed.

(a) Received work from:

**Partners:**

1. 

2. 

3. 

**Managers:**

1. 

2. 

3. 

**Seniors:**

1. 

2. 

3. 

**Staff Assistants:**

1. 

2. 

3. 

4. 

(b) Delegated work to:

Partners:
1. 
2. 
3. 

Managers:
1. 
2. 
3. 

Seniors:
1. 
2. 
3. 

Staff Assistants:
1. 
2. 
3. 
4. 
5. 
6. 

(c) Share work with:

Partners:
1. 
2. 
3. 
Managers:
1. _____________
2. _____________
3. _____________

Seniors:
1. _____________
2. _____________
3. _____________

Staff Assistants:
1. _____________
2. _____________
3. _____________
4. _____________
13. (a) I would like you to think of the three people on this audit with whom you work (or worked) most closely. (Would you please specify if these were firm or client personnel?)

1. 
2. 
3. 

13. (b) The following are some relationships I would like you to consider:

\[
y \rightarrow ? \quad \text{implies the work flow was predominantly from you to the other person.}
\]

\[
y \leftarrow ? \quad \text{implies the work flow was predominantly from the other person to you.}
\]

\[
y \leftrightarrow ? \quad \text{implies the work flow from you to the other person and from him to you was approximately equal.}
\]

For each person you have listed in 13(a) above, I would like you to pick which of the following work relationships held between you and him.

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<th>You and 1.:</th>
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<th>(ii)</th>
<th>(iii)</th>
<th>Answer</th>
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14. Could you please indicate below how many firm employees are
(or were) subordinate to you on this audit?

_____ employees.
15. Could you please indicate below who these employees subordinate to you were?

**Partners:**
1. ________________
2. ________________
3. ________________

**Managers:**
1. ________________
2. ________________
3. ________________

**Seniors:**
1. ________________
2. ________________
3. ________________
4. ________________

**Staff Assistants:**
1. ________________
2. ________________
3. ________________
4. ________________
5. ________________
6. ________________
7. ________________
8. ________________
16. For each employee mentioned above, I would like you to indicate which of the following alternatives best describes to what extent you supervised his work on the audit.

   (a) all detailed working papers reviewed
   (b) most detailed working papers reviewed
   (c) selected detailed working papers reviewed
   (d) general review, no detailed working papers
   (e) no review necessary
   (f) other, please specify

Employee:

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<th>Employee</th>
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17. How frequently have you supervised the progress of this assignment through directly supervising employees subordinate to you on the audit? Could you please specify, by circling the appropriate alternative below, the frequency of supervision of each employee?

(a) daily
(b) weekly
(c) about once each two weeks
(d) monthly
(e) other, please specify—once, twice, 4 times, etc.

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<th>Employee:</th>
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18. For each of the employees mentioned above, could you please indicate which alternative below best describes the format of the supervision?

- (a) oral discussion with employee
- (b) written report from employee reviewed
- (c) written report from employee reviewed and oral discussion with employee
- (d) review of working papers only
- (e) review of working papers followed by oral discussion
- (f) other, please specify

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<th>(c)</th>
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19. The following categories represent a classification of the types of problems you may come across in the audit.

1. **Technical problems**: For example, insufficient supportive evidence, client not following generally accepted accounting principles.

2. **Client associated problems**: For example, lack of cooperation from client employees.

3. **Staff problems**:
   
   (a) **Personal problems**: For example, sickness, morale problems.

   (b) **Technical problems**: Coordination, estimation of manpower requirements.

For each problem classification I would like you to choose the alternative below which most nearly describes the extent to which you had (or have) significant problems in each of these classifications on this audit.

**Technical problems**:

(a) no significant problems

(b) a few significant problems

(c) many significant problems

**Client associated problems**:

(a) no significant problems

(b) a few significant problems

(c) many significant problems
Staff problems:

Personal problems:
(a) no significant problems
(b) a few significant problems
(c) many significant problems

Technical problems:
(a) no significant problems
(b) a few significant problems
(c) many significant problems
20. For each problem classification I would like you to choose which alternative below most nearly describes how similar (in the number of significant problems) this audit is to other audits of approximately the same size (chargeable hours).

**Technical problems:**
(a) fewer than usual
(b) about the same as usual
(c) more than usual

**Client associated problems:**
(a) fewer than usual
(b) about the same as usual
(c) more than usual

**Staff problems:**

**Personal problems:**
(a) fewer than usual
(b) about the same as usual
(c) more than usual

**Technical problems:**
(a) fewer than usual
(b) about the same as usual
(c) more than usual
21. Continue for the present to consider the problem categories enumerated above and the significant problems you have encountered on this audit. I would like you to recall the names of the two people, either _________ employees or the client's employees, with whom you tended to discuss the problems most often.

**Technical problems:**

1. _________ (position: ________________)
2. _________ (position: ________________)

**Client associated problems:**

1. _________ (position: ________________)
2. _________ (position: ________________)

**Staff problems:**

(a) **Personal problems:**

1. _________ (position: ________________)
2. _________ (position: ________________)

(b) **Technical problems:**

1. _________ (position: ________________)
2. _________ (position: ________________)
22. Consider for the moment that you are in public practice for yourself, and that you have been engaged by the client to perform this audit. Assume that all other things remain the same (including the fee, availability of internal resources, etc.). How different would the design of the audit program be under the above conditions?

(a) exactly the same design
(b) similar—a few differences in design
(c) a substantial number of differences in design
(d) a great many differences in design
(e) a completely different design
23. I realize there are many sources of influence on the design of any audit program. However, I would like for the moment to consider only the following sources: professional code of ethics; formal organizational (firm) rules; personal (professional) judgment; and the AICPA standards relating to auditing. Could you please rank these sources according to their importance in influencing the design of any audit program, with the most influential source ranked first, the second most influential source ranked second, and so on.

1. ____________________________ (most influential)
2. ____________________________
3. ____________________________
4. ____________________________ (least influential)
24. (a) Are the audit working papers or problem areas reviewed by any member of the firm not a member of the audit team?

(a) yes

(b) no

(b) Who is this person (or who are these persons)?

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<tr>
<th>Name</th>
<th>Position</th>
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(c) How often is this review performed?

(a) only once at the end of the audit

(b) at the end of the audit and one other time

(c) at the end of the audit and two other times

(d) at the end of the audit and three other times

(e) other, please specify
25. The following form is an evaluation form commonly used in your firm. I would like some information on how you view the form.

(a) First, I would like you to check (in the "above average" column) the seven (7) rating categories that would provide you the greatest benefit if marked "above average."

(b) Second, I would like you to check (in the "requires improvement" column) the seven (7) rating categories that would cause you the least harm if marked "requires improvement."
AUDIT STAFF EVALUATION REPORT

1. Proper planning of assignment.
2. Resourcefulness in the development of audit program.
3. Relating scope of work to internal control.
4. Advising superiors immediately of reasons for increases in time requirements.
5. Utilization of client personnel.
7. Effective on-the-job training of assistants.
8. Gaining respect of associates.
9. Imagination in the development of blueback points.
10. Detection of the need of our auxiliary services for client development.
11. Meeting of scheduled deadline dates.
12. Effective completion of assignment within time allotted.
13. Documentation of work performed, including adequate cross referencing.
14. Conciseness with due regard to clearness of expression.
15. Practical solutions to problems.
17. Sound conclusions and explanations.
18. Completeness.
20. Legible handwriting.
22. Adherence to generally accepted accounting principles.
23. Auditing knowledge and application.
27. Statement preparation.
29. Inquisitiveness.
30. Creativeness.
31. Aptitude for associating with people.
32. Maintaining client relationships.
34. Interest in professional advancement.
35. Advising superiors promptly of problems.
36. Willingness to accept responsibility.
37. Ability to accept responsibility.
38. Ability to follow instructions.
40. English--Written.
41. Appearance.
42. Poise.
43. Tact.
44. Personality.
45. Conduct.
46. Cooperation--Appreciation of mutuality of interests--personal and firm.

47. Energy.

48. Stability.

49. Initiative.

50. Decisiveness.

51. Judgment.

52. Maturity.

53. Leadership.

54. Integrity.

55. Attitude

56. Desirable self-confidence.
26. Are there any criteria not mentioned on the evaluation form that you have noticed are important for progress in the firm? If so, would you please state briefly what these criteria are?
APPENDIX II

I would like to assure you again that the answers to the following questions will be kept in the strictest confidence. Whenever the data is published, it will appear in an aggregate form so that to attribute an answer to any one firm member or to any particular team will be impossible. The only individuals having access to the completed questionnaires will be me and my three dissertation advisers, all of whom are professors at The Ohio State University. Neither I nor my advisers hold any position in __________. No one within __________ will have access to the original questionnaire or to the unpublished data.
I would like you to answer each of the following questions as it applies to the _________ assignment. In other words, when the questions specify "this project" or "this assignment," I mean the _________ assignment. Similarly, "the work program" refers to the _________ work program, and "this (or the) project team" means the team performing the _________ assignment. I would like you to answer the questions in relation to your experience on the above assignment and/or what you expect your experience to be. Therefore, there are no right or wrong answers. I am simply seeking your opinion in each question asked.

Please read and answer each question carefully. Some questions differ from a previous question in only small but significant ways (e.g., the response scale used). Some questions may appear difficult to recall, and for others an answer may appear difficult to choose. However, I would greatly appreciate your answering each and every question as accurately as you can. Thank you very much.
1. (a) Please circle the point on the scale provided which most nearly describes the degree to which the work program for this assignment was clearly developed before the start of the design phase.

0

very unclear

very clear

100

1. (b) Please circle the point on the scale provided which most nearly describes the degree to which the work program for this assignment was clearly developed before the start of the installation phase.

0

very unclear

very clear

100
2. (a) Please circle the alternative below which most nearly describes the extent to which the work program for this assignment is similar to the work program of the most recent (but within the last three years) EDP assignment for this client.

(a) exactly the same program
(b) substantially the same—a few minor modifications
(c) similar—many minor or a few major modifications
(d) many major modifications
(e) completely different program

--- no EDP assignment for the client within the last 3 years

2. (b) Please circle the point on the scale below which most nearly describes the extent to which the work program for this assignment is similar to the work program of the most recent (but within the last three years) EDP assignment for this client.

0

|---------------------------------| 100
completely
different
program

exactly the
same program
3. (a) I would like you to consider the following position—namely, that the work program has been prepared, but the **design phase** has not been conducted. I would like you to choose the alternative below which best describes how much of the work program consists of problem areas for which no detail solution procedure has been selected and for which decisions on this have been postponed.

   (a) almost all of the program
   (b) most of the program
   (c) some of the program
   (d) very little of the program
   (e) none of the program

--- no such problem areas

3. (b) I would like you to consider the following position—namely, that the work program has been prepared, but the **design phase** has not been conducted. I would like you to select the point on the scale below which best describes how much of the work program consists of problem areas for which decisions on this have been postponed.

```
100  [---------------------------]  0
all of the program               none of the program
```
4. (a) I would like you to consider the following position—namely, that the work program has been prepared, but the design phase has not been conducted. I would like you to choose the alternative below which best describes how important for the successful completion of the project are problem areas for which no solution procedure has presently been selected and for which decisions on this have been postponed.

(a) very important
(b) important
(c) somewhat important
(d) not important
(e) unimportant

--- no such problem areas

4. (b) I would like you to consider the following position—namely, that the work program has been prepared, but the design phase has not been conducted. I would like you to select the point on the scale below which best describes how important for the successful completion of the project are problem areas for which no solution procedure has presently been selected and for which decisions on this have been postponed.

\[ \begin{array}{c}
\text{very}
\text{important} \\
0
\end{array} \]
5. (a) For the moment would you please consider the design phase of this assignment. I would like you to consider how the initial design phase of this EDP assignment compares to the design phase of other EDP assignments with which you are familiar that have been completed within the last 5 years. Specifically, will you please estimate to how many of these other EDP assignments the EDP application of this assignment is exactly the same or almost exactly the same (very few minor differences)?

(a) very few of them, 0\% \rightarrow 25\%  
(b) some of them, 26\% \rightarrow 50\%  
(c) most of them, 51\% \rightarrow 74\%  
(d) nearly all of them, 75\% \rightarrow 100\%

5. (b) Continue for the present to think about the design phase. Again, I would like you to consider how the design phase of this EDP assignment compares to the initial design phase of other EDP assignments with which you are familiar that have been completed within the last 5 years. Specifically, will you please estimate to how many of the other EDP assignments the EDP application of this assignment is completely different or almost completely different (very few minor similarities)?

(a) very few of them, 0\% \rightarrow 25\%  
(b) some of them, 26\% \rightarrow 50\%  
(c) most of them, 51\% \rightarrow 74\%  
(d) nearly all of them, 75\% \rightarrow 100\%
5. (c) For the moment would you please consider the installation phase of this assignment. I would like you to consider how the installation phase of this EDP assignment compares to the installation phase of other EDP assignments with which you are familiar that have been completed within the last 5 years. **Specifically,** will you please estimate to how many of these other EDP assignments the installation phase is exactly the same or almost exactly the same (very few minor differences)?

(a) very few of them, 0% → 25%
(b) some of them, 26% → 50%
(c) most of them, 51% → 74%
(d) nearly all of them, 75% → 100%

5. (d) Continue for the present to think about the installation phase. Again, I would like you to consider how the installation phase of this EDP assignment compares to the installation phase of other EDP assignments with which you are familiar that have been completed within the last 5 years. **Specifically,** will you please estimate to how many of the other EDP assignments the installation phase is completely different or almost completely different (very few minor similarities)?

(a) very few of them, 0% → 25%
(b) some of them, 26% → 50%
(c) most of them, 51% → 74%
(d) nearly all of them, 75% → 100%
6. (a) For the moment would you please consider the design phase of this assignment. I would like you to consider how the design phase of this EDP assignment compares to the initial design phase of other EDP assignments on which you have participated during the last 5 years. Specifically, will you please estimate to how many of these other EDP assignments the EDP application of this assignment is exactly the same or almost the same (very few minor differences)?

(a) very few of them, 0% → 25%
(b) some of them, 26% → 50%
(c) most of them, 51% → 74%
(d) nearly all of them, 75% → 100%

6. (b) Continue for the present to think about the design phase. Again, I would like you to consider how the design phase of this EDP assignment compares to the initial design phase of other EDP assignments on which you have participated during the last 5 years. Specifically, will you please estimate to how many of the other EDP assignments the EDP application of this assignment is completely different or almost completely different (very few minor similarities)?

(a) very few of them, 0% → 25%
(b) some of them, 26% → 50%
(c) most of them, 51% → 74%
(d) nearly all of them, 75% → 100%
6. (c) I would now like you to consider the **installation phase** of the assignment. I would like you to consider how the installation phase of this EDP assignment compares to the installation phase of other EDP assignments on which you have participated during the last 5 years. Specifically, will you please estimate for how many of these other EDP assignments the installation phase of this assignment is exactly the same or almost exactly the same (very few minor differences)?

(a) very few of them, 0% → 25%
(b) some of them, 26% → 50%
(c) most of them, 51% → 74%
(d) nearly all of them, 75% → 100%

6. (d) Continue for the present to think about the **installation phase**. Again, I would like you to consider how the installation phase of this assignment compares with the installation phase of other EDP assignments on which you have participated during the last 5 years. Specifically, will you please estimate for how many of these other EDP assignments the installation phase of this assignment is completely different or almost completely different (very few minor similarities)?

(a) very few of them, 0% → 25%
(b) some of them, 26% → 50%
(c) most of them, 51% → 74%
(d) nearly all of them, 75% → 100%
7. (a) Assume you had to perform this assignment 5 years ago (1966).* Please circle the alternative below which most nearly describes the extent to which technical conditions (state of the art) of EDP in 1966 would have made the work program different.

(a) exactly the same program
(b) substantially the same program--a few minor modifications
(c) similar--many minor or a few major modifications
(d) many major modifications
(e) completely different program

7. (b) Assume you had to perform this assignment 5 years ago (1966).* Please circle the point on the scale below which most nearly describes the extent to which technical conditions (state of the art) of EDP in 1966 would have made the work program different.

100

100

0

completely different
exactly the same program

*If you have been in public practice for less than 5 years, please indicate for how long you have been in public practice and answer the question accordingly. _____ years in public practice.
8. (a) Assume you have to perform this assignment 5 years from now (1976). Please circle the alternative below which most nearly describes the extent to which you believe the technical conditions (state of the art) of EDP in 1976 will make the work program different.

(a) exactly the same program
(b) substantially the same—a few minor modifications
(c) similar—many minor or a few major modifications
(d) many major modifications
(e) completely different program

8. (b) Assume you have to perform this assignment 5 years from now (1976). Please circle the point on the scale below which most nearly describes the extent to which you believe the technical conditions (state of the art) of EDP in 1976 will make the work program different.

0 100
exactly the same program
completely different program
9. (a) In the past 5 years how many major technical developments have occurred in the EDP field that have resulted in an improvement in the types of information systems you are able to offer your clients (developments could have resulted in improvements in quality and/or a lowering of costs)?

(a) none at all
(b) a few major developments
(c) many major developments
(d) very many major developments
(e) exceedingly many major developments

9. (b) In the past 5 years how many major technical developments have occurred in the EDP field that have resulted in an improvement in the types of information systems you are able to offer your clients (developments could have resulted in improvements in quality and/or a lowering of costs)?

(a) zero
(b) 1 or 2
(c) 3 or 4
(d) 5 or 6
(e) 7 or 8
(f) 9 or 10
(g) more than 10
10. (a) Please circle the alternative below which most nearly describes the degree of certainty you feel that, once the **design phase** is completed, installation of the system will not disclose material inadequacies in the system design.

(a) certain
(b) very confident
(c) confident
(d) non-confident
(e) uncertain

10. (b) Please circle the point on the scale below which most nearly describes the degree of certainty you feel that, once the **design phase** is completed, installation of the system will not disclose material inadequacies in the system design.

\[ 0 \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad 100 \]

| uncertain | certain |
10. (c) Please circle the alternative below which most nearly describes the degree of certainty you feel that, once the installation phase is completed, further information will not disclose material inadequacies in the system design.

(a) certain
(b) very confident
(c) confident
(d) non-confident
(e) uncertain

10. (d) Please circle the point on the scale below which most nearly describes the degree of certainty you feel that, once the installation phase is completed, further information will not disclose material inadequacies in the system design.

0                      100
uncertain               certain
12. On the present assignment I would like you to recall the following three sets of details:

(a) from whom (if anyone) have you received work to complete,
(b) to whom (if anyone) have you delegated work to complete,
(c) with whom (if anyone) have you reached an understanding on sharing the work to be completed.

(a) Received work from:

Partners:

1. ___________________
2. ___________________
3. ___________________

Managers:

1. ___________________
2. ___________________
3. ___________________

Seniors:

1. ___________________
2. ___________________
3. ___________________
4. ___________________
Staff Assistants:
1. __________________
2. __________________
3. __________________
4. __________________
5. __________________
6. __________________

(b) Delegated work to:

Partners:
1. __________________
2. __________________
3. __________________

Managers:
1. __________________
2. __________________
3. __________________

Seniors:
1. __________________
2. __________________
3. __________________
4. __________________
Staff Assistants:

1. 
2. 
3. 
4. 
5. 
6. 

(c) Share work with:

Partners:

1. 
2. 
3. 

Managers:

1. 
2. 
3. 

Seniors:

1. 
2. 
3. 
4. 
Staff Assistants:

1. 

2. 

3. 

4. 

5. 

6. 

13. (a) I would like you to think of the three people on this project with whom you work (or worked) most closely. (Would you please specify if these were firm or client personnel?)

1. ____________________
2. ____________________
3. ____________________

13. (b) The following are some work relationships I would like you to consider:

\[ y \rightarrow ? \] implies the work flow was predominantly from you to the other person.

\[ y \leftarrow ? \] implies the work flow was predominantly from the other person to you.

\[ y \leftrightarrow ? \] implies the work flow from you to the other person and from him to you was approximately equal.

For each person you have listed in 13(a) above, I would like you to pick which of the following work relationships held between you and him.

You and 1.: \[(i)\] \( y \rightarrow 1 \) \( (ii) \) \( y \leftarrow 1 \) \( (iii) \) \( y \leftrightarrow 1 \) Answer

You and 2.: \[(i)\] \( y \rightarrow 2 \) \( (ii) \) \( y \leftarrow 2 \) \( (iii) \) \( y \leftrightarrow 2 \) Answer

You and 3.: \[(i)\] \( y \rightarrow 3 \) \( (ii) \) \( y \leftarrow 3 \) \( (iii) \) \( y \leftrightarrow 3 \) Answer
14. Could you please indicate below how many firm employees are
(or were) subordinate to you on this assignment?

_____ employees.
15. Could you please indicate below who these employees subordinate to you were?

**Partners:**
1. 
2. 
3. 

**Managers:**
1. 
2. 
3. 

**Seniors:**
1. 
2. 
3. 
4. 

**Staff Assistants:**
1. 
2. 
3. 
4. 
5. 
6. 
7. 
8. 
16. For each employee mentioned above, I would like you to indicate which of the following alternatives best describes to what extent you supervised his work on the assignment.

(a) all detailed working papers reviewed  
(b) most detailed working papers reviewed  
(c) selected detailed working papers reviewed  
(d) general review, no detailed working papers reviewed  
(e) no review necessary  
(f) other, please specify

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17. How frequently have you supervised the progress of this assignment through directly supervising employees subordinate to you on the project? Could you please specify, by circling the appropriate alternative below, the frequency of supervision of each employee?

(a) daily
(b) weekly
(c) about once each two weeks
(d) monthly
(e) other, please specify--once, twice, four times, etc.

Employee:

1. ________________________ (a) (b) (c) (d) (e)
2. ________________________ (a) (b) (c) (d) (e)
3. ________________________ (a) (b) (c) (d) (e)
4. ________________________ (a) (b) (c) (d) (e)
5. ________________________ (a) (b) (c) (d) (e)
6. ________________________ (a) (b) (c) (d) (e)
7. ________________________ (a) (b) (c) (d) (e)
8. ________________________ (a) (b) (c) (d) (e)
9. ________________________ (a) (b) (c) (d) (e)
10. ________________________ (a) (b) (c) (d) (e)
18. For each of the employees mentioned above, could you please indicate which alternative below best describes the format of the supervision?

(a) oral discussion with employee
(b) written report from employee reviewed
(c) written report from employee reviewed and oral discussion with employee
(d) review of working papers only
(e) review of working papers followed by oral discussion
(f) other, please specify

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19. The following categories represent a classification of the types of problems you may come across in the assignment.

1. **Technical problems:** For example, equipment evaluation, input and output problems, system design problems.

2. **Client associated problems:** For example, lack of cooperation from client employees.

3. **Staff problems:**
   
   (a) **Personal problems:** For example, sickness, morale problems.
   
   (b) **Technical problems:** Coordination, estimation of manpower requirements.

For each problem classification I would like you to choose the alternative below which most nearly describes the extent to which you had (or have) significant problems in each of these classifications on this assignment.

**Technical problems:**

(a) no significant problems

(b) a few significant problems

(c) many significant problems

**Client associated problems:**

(a) no significant problems

(b) a few significant problems

(c) many significant problems
Staff problems:

Personal problems:

(a) no significant problems

(b) a few significant problems

(c) many significant problems

Technical problems:

(a) no significant problems

(b) a few significant problems

(c) many significant problems
20. For each problem classification I would like you to choose which alternative below most nearly describes how similar (in the number of significant problems) this assignment is to other EDP assignments of approximately the same size (chargeable hours).

**Technical problems:**
(a) fewer than usual
(b) about the same as usual
(c) more than usual

**Client associated problems:**
(a) fewer than usual
(b) about the same as usual
(c) more than usual

**Staff problems:**

**Personal problems:**
(a) fewer than usual
(b) about the same as usual
(c) more than usual

**Technical problems:**
(a) fewer than usual
(b) about the same as usual
(c) more than usual
21. Continue for the present to consider the problem categories enumerated above and the significant problems you have encountered on this assignment. I would like you to recall the names of the two people, either _________ employees or the client's employees, with whom you tended to discuss the problems most often.

**Technical problems:**
1. _______________ (position: _______________
2. _______________ (position: _______________

**Client associated problems:**
1. _______________ (position: _______________
2. _______________ (position: _______________

**Staff problems:**
(a) **Personal problems:**
1. __________ (position: _______________
2. __________ (position: _______________

(b) **Technical problems:**
1. __________ (position: _______________
2. __________ (position: _______________
22. Consider for the moment that you are in public practice for yourself, and that you have been engaged by the client to perform this assignment. Assume that all other things remain the same (including the fee, availability of internal resources, etc.). How different would the design of the work program be under the above conditions?

(a) exactly the same design
(b) similar—a few differences in design
(c) a substantial number of differences in design
(d) a great many differences in design
(e) a completely different design
23. I realize there are many sources of influence on the design of any work program. However, I would like for the moment to consider only the following sources: professional code of ethics; formal organizational (firm) rules; personal (professional) judgment; and the AICPA standards relating to administrative services. Could you please rank these sources according to their importance in influencing the design of any work program, with the most influential source ranked first, the second most influential source ranked second, and so on?

1. _____________________________ (most influential)

2. _____________________________

3. _____________________________

4. _____________________________ (least influential)
24. (a) Are the assignment working papers or project problem areas reviewed by any member of the firm not a member of the project team?
   (a) yes
   (b) no

   (b) Who is this person (or who are these persons)?

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   (c) How often is this review performed?
   (a) only once at the end of the assignment
   (b) at the end of the assignment and one other time
   (c) at the end of the assignment and two other times
   (d) at the end of the assignment and three other times
   (e) other, please specify

   (d) Would you please select the alternative below which most nearly indicates how specific this review is?
   (a) general oral/written review
   (b) general review with selected working paper support
   (c) detailed working papers reviewed most of the time
   (d) detailed working papers reviewed all of the time
25. The following form is an evaluation form commonly used in your firm. I would like some information on how you view the form.

(a) First, I would like you to check (in the "above average column) the five (5) rating categories that would provide you the greatest benefit if marked "above average."

(b) Second, I would like you to check (in the "requires improvement" column) the five (5) rating categories that would cause you the least harm if marked "requires improvement."
1. Ability to detect systems deficiencies in review work.
2. Identifying business problems of client (vs. purely technical approach).
3. Ability to analyze facts and develop logical conclusions.
4. Developing practical, workable solutions to problems.
5. Creativity/ability to adapt to client needs (vs. stereotyped approach).
6. Providing warning points in system (controls, policy exceptions, etc.).
7. Providing necessary documentation and support for conclusions.
8. Neatness and legibility.
9. Technical proficiency and currentness in field of specialization.
10. Informal discussion (succinctness and directness).
11. Formal presentations (ease of expression and ability to project).
12. Effective use of visual aids in presentations.
13. Logical organization and readability.
14. Reader respect for professional quality of writing.
15. Conciseness with due regard for clarity of expression.
16. Accuracy and completeness.
17. Taking advantage of self-development and training opportunities.
18. Ability to train staff and/or client personnel.
19. Resourcefulness in the development of work program.
20. Ability to plan work detail within project scope.
21. Meeting of scheduled target dates.

22. Recognizing and promptly advising superiors—job technical problems, client relations problems, related potential fee problems.

23. Effective utilization of staff and/or client personnel.

24. Desirable familiarity with job detail to properly supervise.

25. Winning confidence and respect of clients.

26. Ability to follow instructions.

27. Knowing when to compromise in system without sacrifice of principles.


29. Ability to work as part of team (vs. alone).

30. Perception of need for additional service of firm to client.

31. Aptitude for associating with people.

32. Appearance and poise.

33. Judgment, tact, and common sense.

34. Willingness and ability to accept responsibility.

35. Initiative and self-motivation.

36. Cooperation (appreciation of mutuality of interests—personal and firm).

37. Ability to perform under pressure.

38. Decisiveness.


40. Attitude.

41. Maturity in relation to age and experience.

42. Integrity (includes frankness when dealing with others).
26. Are there any criteria not mentioned on the evaluation form that you have noticed are important for progress in the firm? If so, would you please state briefly what these criteria are?
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