

1-1-1976

Management advisory services by CPAs : a study of required knowledge

Edward L. Summers

Kenneth E. Knight

Follow this and additional works at: https://egrove.olemiss.edu/aicpa_guides

 Part of the [Accounting Commons](#), and the [Taxation Commons](#)

Recommended Citation

Summers, Edward L. and Knight, Kenneth E., "Management advisory services by CPAs : a study of required knowledge" (1976).
Guides, Handbooks and Manuals. 218.
https://egrove.olemiss.edu/aicpa_guides/218

This Book is brought to you for free and open access by the American Institute of Certified Public Accountants (AICPA) Historical Collection at eGrove. It has been accepted for inclusion in Guides, Handbooks and Manuals by an authorized administrator of eGrove. For more information, please contact egrove@olemiss.edu.

*A study of
required knowledge*

Management Advisory Services by CPAs

Management Advisory Services by CPAs

BY EDWARD L. SUMMERS
AND KENNETH E. KNIGHT

*A study of
required knowledge*

Management Advisory Services by CPAs

Management

*A study of
required knowledge*

Advisory Services by CPAs

by Edward L. Summers and
Kenneth E. Knight
University of Texas at Austin

with a Foreword by
H. George Trentin, *Chairman*
MAS Body of Knowledge and
Examination Task Force

AMERICAN INSTITUTE OF CERTIFIED PUBLIC ACCOUNTANTS

Foreword

In October 1973, an MAS body of knowledge and examination (MASBOKE) task force was designated by William J. Mueller, then chairman of the management advisory services (MAS) executive committee to determine (1) the characteristics of the body of knowledge used by MAS practitioners in CPA firms and (2) the problems that would be encountered in testing for this knowledge. This action, stemming from a directive of the AICPA board of directors, was largely the result of discussions within and outside the CPA profession concerning proposed California legislation that would have required the qualification and registration of management consultants. It is clear that constructive AICPA reaction to proposals of this type depends on a better understanding of the MAS bodies of knowledge and the feasibility of testing for proficiency in them.

The research report

Chapter 1 of the report provides a summary of the findings of a research study conducted for the task force and a review of the more detailed report which follows.

The report is responsive to the original charge relating to bodies of knowledge and examination. The bodies of knowledge are identified and described in considerable detail. The study also concludes that proficiency in such bodies of knowledge can be examined. Examination concepts are presented that have been developed to the point where the mechanics of examination preparation could be commenced by a follow-on task force or department of the AICPA.

The task force, however, was constituted as a research body and the report specifically avoids the question of whether there should be separate MAS examinations and/or a recognition of specialization within the profession. The report presents alternatives in two important aspects of the examination concepts—

- *Level of Proficiency.* Level and breadth of knowledge to be tested for. Two levels are illustrated.

- *Knowledge Profile of Candidates.* Establishing the functional and technical knowledge areas in which a candidate might be examined and the types and degrees of general or specific knowledge he then must possess. Four models are presented.

The report, therefore, meets the task force's established criteria. It deals with the facts concerning MAS bodies of knowledge and interpretations of them, and avoids recommendations involving policy decisions that should be left to the MAS executive committee, the AICPA board of directors, and council.

Some of the potential problems faced by the task force were the following:

1. *There seems to be lack of unanimity concerning an appropriate scope of MAS practice, which reflects differences of opinion in the CPA profession.* Some favored a broad scope permitting practice in all or most areas found in other segments of the management consultancy profession. Others favored restrictions in certain areas. This issue was avoided by providing bodies of knowledge for all significant areas of MAS practice in which more than a minimal number of firms or individuals were engaged.

2. *Proposals have been made by various AICPA groups for recognition of non-CPAs engaged in MAS practice for CPA firms.* These took various forms such as (1) associate or other types of membership in the Institute or an affiliated organization, (2) accreditation programs based on examinations or other qualification procedures, and (3) other programs to identify MAS practitioners who are not CPAs more closely with the CPA profession. Proposals were also made by an AICPA committee recommending formal recognition of specialization by CPAs. These proposals generated a great deal of controversy and partisan feeling in the profession, and dealing with them was not necessary to accomplish the mission of the research project.

The task force recommended that an independent research organization be engaged in order to (1) acquire expertise in the body of knowledge and examination areas and (2) insure objectivity of the results. The task force prepared a prospectus setting forth the reasons and suggested plan of action. Upon approval by the MAS executive committee and the AICPA board of directors, a request for proposal was prepared and sent to a number of universities and research organizations.

Two finalists were selected from the proposals received, and personal interviews were held. The University of Texas at Austin was selected with the approval of the MAS executive committee and the board of directors. Throughout the course of the research, the task force

met frequently with the researchers to discuss ideas and review drafts of the report. In spite of the need to deal with some difficult and controversial areas, partisan views were soon submerged in a common effort to help the researchers see and understand the MAS practice as it exists in fact.

Periodic progress reports were made by the task force to the MAS executive committee and the AICPA board of directors for their comments and suggestions.

The research was conducted in four phases, each concluding with the submission of a report:

I Fact Finding

II Body of Knowledge Concepts

III Examination Concepts

IV Final Conclusions and Report

Concepts were not frozen at the end of each phase but were continually refined and developed. The final report represents a synthesis and summarization of the various phase reports.

Study methodology

Interviews

Interviews with recognized MAS experts were the researchers' primary source of information for this report. Throughout the study, expert advice and critical commentary were sought from those MAS professionals recognized as leaders in their respective areas of knowledge and service. With the help of these specialized MAS practitioners, the bodies of knowledge were structured and were then reviewed by other qualified practitioners and by specialized academicians at the University of Texas in order to validate findings. This process of checking and cross-checking was continued throughout the study to provide feedback for improving the classifications and detail of the bodies of knowledge. The researchers conducted interviews with, and solicited papers from, testing and evaluation experts to familiarize themselves with important examination, testing and evaluation concepts. These experts reviewed the MAS bodies of knowledge and helped specify feasible examination design alternatives.

In addition, extensive published material already available from the AICPA, Institute of Management Consultants, Association of Consulting Management Engineers, and other groups was relied upon. This material describes MAS and consulting work and reflects the efforts of other experts to define consulting knowledge and procedures and prepare examinations.

Surveys: AICPA and MASBOKE

As an extension of the interviews and published material, four surveys were used to obtain inputs from a very broad cross section of the AICPA membership. These fell into two groups: AICPA-sponsored surveys and MASBOKE-sponsored surveys. The first group includes the Roper Organization survey of MAS practice and the AICPA large-firm survey. The Roper survey provided a sample of all CPAs excluding the largest fifty firms. This survey, conducted in May 1974, mailed 2,504 instruments to CPAs and produced 1,152 responses. The responses helped the researchers to understand the extent of MAS in the average CPA practice, as related to firm size, location, practitioner training and experience, and other factors. The results of the Roper survey are summarized in Appendix B. The AICPA large-firm survey produced significant descriptive material concerning the policies and MAS practice structure of the forty-eight CPA firms believed to be the largest in the United States.

The MASBOKE CPA firm survey, undertaken by the researchers in July 1974, produced fifty-eight responses out of ninety-nine selected firms, and gave information about the MAS services of CPA firms, the education of new and experienced MAS practitioners, and the sources of knowledge applied in MAS practice. The researchers' MAS individual practitioner survey, conducted in August 1974, obtained 396 responses out of a 1,400 name sample. It provided detailed information about the career paths, activities, and interests of individual practitioners. Appendix B reproduces the two MASBOKE questionnaires developed and used by the researchers.

All four surveys contributed to an overall understanding of MAS; however, this report's findings do not rely on rigorous statistical analysis of their content.

An initial overview and broad understanding of MAS practice was extremely useful to the task force in identifying bodies of knowledge used in delivering MAS services. Chapter 2 presents, as an informal narrative discussion, the researchers' understanding of MAS as it is practiced in CPA firms. Chapter 3 describes the bodies of knowledge used by MAS professionals in providing services, and chapter 4 presents the examination concepts appropriate for testing understanding of this knowledge.

Value of the report

In addition to providing a sound basis for responding to proposals for state regulation of the MAS practice, this report will have other valuable uses:

1. AICPA and state society committees, from time to time, have occasion to study the scope of MAS practice and the types of specialties

represented. Recently, such an AICPA committee was established as an outgrowth of the "Scope and Structure Committee Report" to study specialization in the CPA profession. The report will provide essential background information.

2. Other professional organizations like the Institutes of Management Consultants, both here and abroad, the National Association of Accountants, the Institute of Internal Auditors, various bar associations, and others have moved, or are moving, in the direction of specialization accreditations. This study should help in their deliberations.

3. Businessmen are not fully informed as yet as to all of the management advisory consultancy services available from the CPA profession and this report will be a useful guide.

4. The report will help the academic community in the development of curricula more suited to the needs of this area of the profession.

Organization and operation of task force

Task force members were selected to provide input from representative segments of the CPA profession and to represent firms of many sizes. Some are non-CPAs who are principals of their accounting firms; some are members of professional organizations other than the AICPA, such as the Institute of Management Consultants, the National Association of Accountants, and various engineering societies. Through their affiliations with state CPA societies, the task force members provided good geographical coverage of the country. Finally, they represented such different aspects of the CPA profession as MAS specialization, diversified CPA practice, research, general practice management, training, and individual practice. Specifically, they are

*Kenneth S. Caldwell
Ernst & Ernst
Cleveland, Ohio

Sidney F. Jarrow, CPA
Doty, Jarrow & Co.
Chicago, Illinois

Bernard Kravitz, CPA
Peat, Marwick, Mitchell & Co.
Philadelphia, Pennsylvania

John D. Lesure, CPA
Laventhol & Horwath
Orlando, Florida

Myron A. Libien, CPA
Alam & Libien
New York, New York

*Max Sporer, CPA
Touche Ross & Co.
New York, New York

*Arthur B. Toan, Jr., CPA
Price Waterhouse & Co.
New York, New York

*H. George Trentin, CPA
Arthur Andersen & Co.
New York, New York

*members of project policy committee

Glenn H. Van Doren
Arthur Young & Co.
Reston, Virginia

Delbert V. Werderman, CPA
John F. Forbes & Company
Los Angeles, California

Kennard W. Webster, CPA
Haskins & Sells
Los Angeles, California

John J. Whyte, CPA
Stavisky, Shapiro & Whyte
Boston, Massachusetts

Working very closely with the task force and providing invaluable assistance were Institute staff members John R. Mitchell, CPA, director, MAS division, and Monroe S. Kuttner, manager, MAS division.

We should also acknowledge the contributions of Melvin W. Black, Main Lafrentz & Co., New York, and Robert L. Gray, CPA, executive director, New York State Society of CPAs, original members of the task force who withdrew with regret during the course of the project because of the pressure of their other duties.

The research team

The research report is the product of a team of dedicated, talented, and creative persons from the University of Texas at Austin. The research director, Dr. Edward L. Summers, CPA, is a professor of accounting and is chairman of the accounting department; Dr. Kenneth E. Knight, the associate director, is a professor of management.

The project was under the guidance of a policy committee consisting of the following four members from the University of Texas and the four members of the task force indicated earlier:

Dr. George Kozmetsky, CPA, dean, Graduate School of Business

Dr. John J. McKetta, Jr., E. P. Schock Professor of Chemical Engineering

Dr. Thomas H. Williams, CPA, Professor of Accounting

Dr. Glenn A. Welsch, CPA, John Arch White Professor of Accounting

A staff of researchers and consultants was recruited from the appropriate faculties of the university in order to provide the special skills needed. Because of the varied nature of MAS practice, it was important to bring to bear interdisciplinary resources relating to fields such as marketing, personnel, management, computer science, psychology, management sciences, and others.

Members of the University of Texas team worked hard at gaining insights into all aspects of MAS practice and related bodies of knowledge that heretofore had not been fully understood and documented. They did a remarkable job of understanding, classifying, and describing the bodies of knowledge. They also showed great patience with members of the task force in trying to reconcile differing points of view and redrafting material to achieve refinements suggested at many meetings.

In spite of the excellent work by the University of Texas team, success would not have been possible without the exceptional cooperation and effort of many members of the profession who participated and cooperated in all phases of the study.

H. G. TRENTIN, CPA
*Chairman, Management
Advisory Services Body
of Knowledge and Examination
Task Force*

August 1976

Acknowledgments

George Trentin has recognized in his foreword the contribution to our work of the MASBOKE task force. As researchers, we are indebted for information, guidance, and criticism not only to these individuals but also to a much wider circle of faculty associates and skilled MAS professionals. At the University of Texas, we received generous support from Professors Barry E. Cushing, CPA; Edward B. Deakin, CPA; Michael Granof, CPA; George Kozmetsky, CPA (dean of the Graduate School of Business); John J. McKetta, Jr. (E. P. Schock Professor of Chemical Engineering); Glenn A. Welsch, CPA (John Arch White Professor of Accounting); Thomas H. Williams, CPA; and David A. Wilson, CA (Canada).

During our research we were assisted by hundreds of MAS practitioners and other persons in the CPA profession. Some helped more than others, of course, but in every case our requests for information were honored. These persons are at all levels of responsibility in firms of all sizes from coast to coast. The AICPA staff gave us superb cooperation and understanding. It seems to us that we must either name all our benefactors, or none of them—and in the interest of brevity, we chose the latter; a generally inclusive statement of appreciation must suffice here.

We were fortunate to have excellent staff support from the University of Texas. The bulk of this was provided by Stephen Hart and Gail Robin, whose scrupulous attention to detail was essential to completion of our task.

Finally, we appreciate the understanding, diplomacy, and skill of John R. Mitchell and Monroe S. Kuttner (MAS division, AICPA) who facilitated our contacts with MAS professionals and helped us understand their input to the research.

The reader should be aware that as time passes, the bodies of knowledge identified in this report will be gradually superseded. Although we take responsibility for the validity of our research conclusions at this date, the reader must take responsibility for identifying how these conclusions should be changed as time passes.

E. L. SUMMERS

K. E. KNIGHT

February 5, 1976

Contents

1	Introduction and summary	1
	What is MAS practice?	1
	Major bodies of MAS knowledge	2
	Component bodies of knowledge	3
	General knowledge including the consulting art	4
	Knowledge of organizational functions and technical disciplines	5
	Knowledge of industry and the public sector	7
	Examination concepts	7
2	General overview and description of MAS consulting practice	13
	Overall character of MAS practice	13
	The MAS consulting process	18
	The MAS professional	21
	MAS staff development policies	24
	MAS practice and firm size	27
	MAS specialization	28
	Classification by type of knowledge	29
	The consulting art	32
	Sources of MAS knowledge	33
3	General characterizations of MAS bodies of knowledge	35
	Factors common to all bodies of knowledge	35
	General knowledge—including the consulting art	38

Knowledge of organizational functions and technical disciplines	42	
Knowledge of industry and the public sector		51
4 Examination concepts	59	
MAS practitioner knowledge profiles	60	
Examination coverage and passing performance		64
Validity and reliability of examinations	67	
Examination design considerations	68	
Alternative examination designs	72	
Administrative requirements and controls		77
Appendixes	81	
Appendix A. Knowledge concepts inventories		83
Appendix B. MAS survey instruments		115
Bibliography	137	
Index	163	

Introduction and summary

What is MAS practice?

The study of management advisory services (MAS) in CPA firms is of comparatively recent origin. James Redfield in 1961 provided an early definition of MAS practice, just prior to its period of greatest growth:

Management advisory services by certified public accountants may be defined as those services which are designed primarily to furnish advice or assistance to management through a professional relationship with respect to planning, organizing, or controlling any phase of business activity.¹

MAS has grown to include services to the public and not-for-profit sectors in addition to business. MAS is practiced full time by thousands of CPAs and other professionals who serve as partners, principals, and staff in CPA firms, as well as by many more CPAs who also perform tax and audit services for clients.

*MAS within
the CPA
firm*

The basic fact of MAS as a professional relationship is very much a part of CPA firm practice and is reflected in the following more extensive description excerpted from an AICPA publication:

Management advisory services by the independent accounting firms can be described as the function of providing professional advisory (consulting) services, the primary purpose of which is to improve the client's use of its capabilities and resources to achieve the objectives of the organization. This can relate to areas such as—

- The management functions of analysis, planning, organizing, and controlling,
- The introduction of new ideas, concepts, and methods to management,

¹James E. Redfield, *A Study of Management Services by CPAs* (Austin, Tex.: Bureau of Business Research, the University of Texas at Austin, 1961), p. 24.

- The improvement of policies, procedures, systems, methods, and organizational relationships,
- The application and use of managerial accounting, control systems, data processing, and mathematical techniques and methods, and
- The conduct of special studies, preparation of recommendations, development of plans and programs, and provision of advice and technical assistance in their implementation.

In providing this advisory service, the independent accounting firm applies an analytical approach and process which typically involve—

- Ascertaining the pertinent facts and circumstances,
- Seeking and identifying objectives,
- Defining the problem or opportunity for improvement,
- Evaluating and determining possible solutions, and
- Presenting findings and recommendations,

and, following the client's decision to proceed, the independent accounting firm may also be involved in—

- Planning and scheduling actions to achieve the desired results, and
- Advising and providing technical assistance in implementing.²

Although MAS professionals do not make management decisions for clients, their actual services are extremely diverse and employ many areas of knowledge. Surely it was in at least partial recognition of this variety of services that in 1975 the council of the AICPA endorsed the rendering of a broad range of professional services in an advisory capacity by CPA firms in response to public needs.

MAS activities and the knowledge that makes them possible were the subjects of the MASBOKE study. The study's findings are surveyed briefly in this chapter.

Major bodies of MAS knowledge

The study identified three major bodies of knowledge important to MAS professionals:

- General knowledge, including the consulting art³
- Knowledge of organizational functions and technical disciplines
- Knowledge of industry and the public sector

These bodies of knowledge are not of equal importance, nor do they or all the areas they embrace have the same importance to, or use by, all

²American Institute of Certified Public Accountants, *Statements on Management Advisory Services* (New York: AICPA, 1974), pp. 10-11.

³The consulting art concerns the *delivery* of consulting services.

MAS professionals. Their complexity, principal means of acquisition, and specific application by MAS practitioners differ substantially. Indeed, the bodies of knowledge, in terms of content and structure, are completely independent of such factors as CPA firm size, engagement size or complexity, and the means of service delivery or extent of formal documentation, as practiced by the individual CPA firm.

Component bodies of knowledge

Although the knowledge is not presented in any process-related order in this report, these three major bodies of knowledge support the consultative processes that occur in MAS engagements. The three major bodies of knowledge comprise *component* bodies of knowledge as shown below.

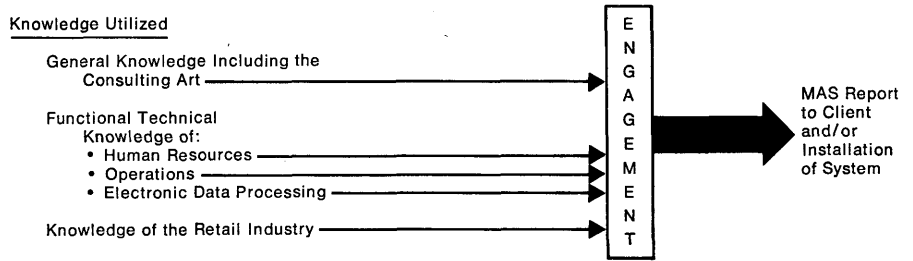
Major and Component Bodies of Knowledge

<u>Major Body of Knowledge</u>	<u>Component Bodies of Knowledge</u>
General Knowledge Including the Consulting Art	How the CPA Profession Operates How Business Operates and Is Managed Unique Characteristics of Public Sector Entities Communication MAS Practice and Engagement Characteristics
Knowledge of Organizational Functions and Technical Disciplines	Executive Planning, Implementation, and Control Finance and Accounting Electronic Data Processing Operations Human Resources Marketing Management Science
Knowledge of Industry and the Public Sector	Industry Governments and Not-for-Profit Organizations

Concepts from all three major bodies of knowledge may be required to perform any single MAS engagement. We illustrate this point in figure 1 (page 4), which represents the knowledge necessary for a hypothetical engagement to develop inventory management policies and procedures for a retail department store. The three major bodies of knowledge—summarized below—are covered more fully in chapter 3

by means of a summary description of major applications and concepts and in detail in the Knowledge Concepts Inventories (Appendix A). The knowledge concepts inventory is in the form of outlines accompanied by supplementary citations that illustrate the level and extent of conceptual understanding associated with each concept in a particular body of knowledge.

FIGURE 1—Use of Knowledge in an Illustrative Engagement



General knowledge including the consulting art

General knowledge concepts provide basic support for application in MAS engagements of the functional and technical and industry bodies of knowledge. Most general knowledge, except for knowledge of how business operates and is managed, appears to be easiest to acquire through practical experience following the completion of a university education.

How the CPA profession operates

Within a CPA firm, MAS services are influenced by the nature of the CPA profession. How the CPA profession operates (including major characteristics), its legal responsibilities, traditional services, and ethical standards provide the professional frame of reference in which the MAS practitioner operates.

How business operates and is managed

A basic conceptual understanding of how business operates and is managed would include such topics as the operation of businesses, role of common business functional divisions, the theory and practice of management, and supportive subjects including business law, behavioral science, systems theory, quantitative analysis, computer science and applications, and economics.

Unique characteristics of public sector entities

Many MAS engagements are undertaken for governmental and not-for-profit organizations. The knowledge of unique characteristics of public sector entities that is included in general knowledge consists of basic concepts related to programs, agencies, and institutions operating outside the private sector. The many similarities with

private sector organizations are important; however, economic environment, planning, budgeting and control processes, and sources of revenue are examples of public sector differences that all MAS professionals should understand.

An understanding of communications concepts used in written reports, proposals, letters, working papers, as well as oral presentations to clients, superiors, associates, or subordinates is universally stressed as important to the MAS professional.

Communication

The MAS professional must be able to identify the bodies of knowledge appropriate to each MAS engagement, even if he is himself not proficient in all of them. The use of a systematic analytical approach to engagement planning, conduct, and reporting leads to efficient, productive service delivery.

MAS practice and engagement characteristics

Knowledge of organizational functions and technical disciplines

Structure of functional and technical knowledge

Organizational functions and technical disciplines, the second major body of knowledge, is essential to the practical process of formulating and implementing recommendations in MAS engagements. Seven functional and technical component bodies of knowledge constitute this second major area and are presented in this report in the context of the private sector; however, they are also applicable to engagements for governmental and not-for-profit organizations. These component bodies of knowledge are extensive and probably cannot be mastered thoroughly by any one MAS professional, although each may be easily found in use in MAS practice as a whole. The concepts within these component bodies of knowledge fall into four major groupings; thus, each of the seven bodies of knowledge may be seen to have internally parallel conceptual structures as follows:

- The purpose and structure of organization functions.
- Major planning and control systems.
- Routine operations and processing systems.
- Specific applications, if necessary to complete the body of knowledge description.

The concept groupings are used in the Knowledge Concepts Inventories in Appendix A. (The structure of the entire MAS body of knowledge presented in this report is shown on page 82 of Appendix A.) Capsule descriptions of the component bodies of knowledge follow.

<i>Executive planning, implementation, and control</i>	Top management operations and processes including goals, objectives, strategies, organization structure, long-range planning, management reports, short-term planning, and control procedures are all included in the component body of knowledge.
<i>Finance and accounting</i>	Finance and accounting covers the concepts of financial planning, external reporting, and operations control; creating, generating, and using performance measurements; and the major financial subsystems such as cash management, billing and collecting, payroll, and accounts payable.
<i>Electronic data processing</i>	Electronic data-processing concepts cover the use of computer hardware, software packages, and systems skills to support processing requirements, such as those related to payrolls, billing and credit, and other similar operating information subsystems, as well as broad managerial and financial information requirements.
<i>Operations</i>	As used herein operations means the concepts used in structuring the major productive and creative processes of an organization. The knowledge is typically applied to analyze, measure, and control processing situations such as manufacturing, office administration, and research and development activities.
<i>Human resources</i>	Human resources knowledge about the role of people in an organization draws upon concepts from individual, small-group, and organization behavior; testing and measurement; personnel administration, compensation, and recruitment; and relevant laws and regulations.
<i>Marketing</i>	The marketing component body of knowledge is derived from the functions of selecting and moving goods and services to the consumer. Marketing knowledge includes analysis of the environment to identify customers, develop products, and create, plan, and analyze marketing programs; implementation of marketing programs; and management of marketing programs including the sales force, product promotion, advertising, and distribution.
<i>Management science</i>	Management science knowledge consists of a problem-solving framework based on scientific methods. This knowledge area applies mathematical, statistical, and probabilistic techniques to management problems. It integrates diverse elements of a specific situation with corresponding elements of a quantitative model to indicate one or more approaches to a practical solution for the specific problem.

Knowledge of industry and the public sector

Industry knowledge, the third major body of knowledge, identifies the concepts in MAS practice contained in the unique technology, problems, terminology, history, and economic and legal background required to serve clients in different industrial classifications, governmental programs, and not-for-profit institutions. Industry knowledge is useful in applying general, functional, and technical knowledge to deliver services in a particular client situation.

The component bodies of knowledge are:

- Industry knowledge
- Government knowledge
- Not-for-profit organization knowledge

Despite the perceived importance of industry knowledge in MAS practice, the thousands of separate bodies of knowledge and the rapidity with which they change make it impossible to describe each one individually. Discussion in this report is limited to the major concepts involved in structuring a body of specialized industry knowledge. Perhaps the most significant industry knowledge concepts may be characterized as (1) knowledge of the major differences between private sector, government, and not-for-profit organizations, (2) knowledge of the general productive or economic sectors of which a client is a member, and (3) the essential knowledge about a specific client. Specific kinds of knowledge are unique to each individual client. Both the broad and the specific areas of industry knowledge are utilized by the MAS professional in the consulting process, and transference of such knowledge occurs commonly within major and intermediate industrial classifications.

Examination concepts

It is possible to prepare examinations that test for understanding of these MAS body-of-knowledge concepts as part of an accreditation procedure for MAS professionals. The character of such examinations would be determined by AICPA decisions to establish the following:

- MAS practitioner knowledge profiles on which to base the design of the examination. These profiles would specify elements of bodies of knowledge and depth and breadth of understanding.
- The extent of examination coverage of bodies of knowledge and a consistent definition of candidate performance level required to pass the examination.

- Relative use of objective and subjective items on the examination.
- Acceptable levels of examination validity and reliability—that is, ability of the examination to discriminate consistently between those who have and those who have not mastered a given knowledge profile.
- Design of the examination to conform to the selected practitioner knowledge profiles, scoring reference, and other examination variables such as number, coverage, and length of examination sections.
- Administrative requirements and controls related to the examination.

AICPA examination options

This report organizes and presents alternative examination designs for policy decision-makers. For example, there are many identifiable knowledge profiles among MAS practitioners; realistically, only a limited number of these profiles can be used as the basis for examination designs. The researchers propose four separate knowledge profiles, each leading to different examination designs. These profiles recognize two degrees of *breadth* of understanding: briefly, “considerable” understanding and “extensive” understanding, which is broader than the former and indicates mastery of more concepts within a body of knowledge.

MAS practitioner knowledge profiles

Each of the four proposed MAS practitioner knowledge profiles includes “extensive” understanding in both general knowledge and knowledge of industry and the public sector as these are described in chapter 3. The profiles differ, however, in respect to the number of organizational functions and technical disciplines included and whether “extensive” or “considerable” understanding is expected in them. In respect to the functional and technical knowledge category only, the four proposed profiles are—

Profile A—Considerable knowledge in candidate’s choice of material from two or more of the functional and technical component bodies of knowledge.

Profile B—Extensive knowledge in any one functional and technical component body of knowledge; plus *considerable* knowledge in candidate’s choice of material drawn from the six other functional and technical component bodies of knowledge.

Profile C—*Extensive* knowledge in one functional and technical component body of knowledge; plus *considerable* knowledge in any one other functional and technical body of knowledge.

Profile D—*Extensive* knowledge in one functional and technical component body of knowledge.

Examination designs

Each knowledge profile proposed may be accommodated through a two-part examination design. The first part would cover general, industry, and public sector knowledge; the second part, functional and technical knowledge. The examination would be scored and interpreted to determine whether each candidate has mastered a particular knowledge profile that has been prescribed by the AICPA.

The examination should include a high proportion of objective questions to facilitate preparation, administration, scoring, and consistency. Subjective questions should be used as necessary to examine for higher levels of understanding as specified in the underlying knowledge profile.

Use of objective and subjective questions

In designing the examination, a distinction should be made between (1) proficiency (level of sophistication ranging from elementary to highly advanced) and (2) breadth of knowledge or understanding (number of concepts understood at a given proficiency level). A proficiency level corresponding to a level of understanding comparable to that achieved in a five-year university program with a major in that body of knowledge area, followed by three to five years of knowledge application in MAS practice, might be selected by the AICPA as appropriate for the examination.

The extent of knowledge understanding by an MAS professional increases as experience is accumulated. But it is most doubtful if, at the three-to-five-year level of experience, it extends completely across even one of the MAS bodies of knowledge. Within the examination for even one body of knowledge, a candidate should have options among equally important groups of questions, each covering a different subset of related body-of-knowledge concepts, to allow full expression of what the candidate does understand and avoid penalty for lack of exhaustive understanding.

Testing fairly for breadth of knowledge

In terms of examination designs, the “extensive” and “considerable” degrees of knowledge breadth can be included by varying only the amount of choice among examination questions offered to the candidate. The candidate might, as an illustration, have to answer any

five out of seven question groups with a passing score to demonstrate “extensive” understanding, and any three out of seven to demonstrate “considerable” understanding.

Flexibility of examination design

Any of the four proposed knowledge profiles, or a combination of them, may be accepted as a basis for examination design. Four examination designs are proposed in this report which conform to these knowledge profiles. Each design itself affords flexibility for accommodating the many different knowledge combinations associated with its corresponding profile. For example, Profile A may lead to the illustrative examination design found in figure 2 below.

FIGURE 2—Illustrative Examination Design

<u>Major Examination Part</u>	<u>Knowledge Covered</u>	<u>Extent of Understanding Expected Within Bodies of Knowledge</u>	<u>Comments</u>
Part I (six hours allowed to complete selected questions)	General, industry, and public sector knowledge	Extensive	Candidate must answer ten out of twelve questions; credit given for score of seventy-five or above
Part II (eight hours allowed to complete selected questions)	Purpose, organization, and structure of organization functions: major planning and control systems included in the seven functional and technical component bodies of knowledge	Considerable	Candidate will select and answer any ten questions of a set of thirty-five consisting of five based on each component body of knowledge
	Routine operations, processing systems, and specific applications in the seven functional and technical component bodies of knowledge	Considerable	Candidate will select and answer any six questions of a set of forty-nine consisting of seven based on each component body of knowledge

The effort involved in developing, administering, and scoring any examination covering MAS bodies of knowledge would be determined by AICPA choices of profiles and other options to enable the examination to relate to as many as possible of the diverse MAS practitioner knowledge profiles. The scope of this study did not include preparing examination cost estimates.

General overview and description of MAS consulting practice

MAS practice exhibits a diversity of activities and services. Research for this report focuses on MAS bodies of knowledge and relevant examination concepts; however, the report also presents a description of MAS practice that is at once a perspective on MAS knowledge, and a part of that knowledge.

Overall character of MAS practice

Why CPA firms offer MAS services

In general, the CPA firm will develop MAS capabilities for serving clients in order to meet what it considers to be the range of services required to fulfill clients' needs for a full-service CPA firm. The services available in a CPA firm include tax, auditing, preparation of financial statements, and management advice having varying degrees of structure, specialization, and specificity. The majority of CPA firms probably offer management services only when approached to do so by a client or other entity with a specific problem. However, some CPA firms offer management services as part of their purposive growth plan, which includes appearing attractive as a business service organization to non-audit clients.

The results of the AICPA-Roper survey of 1,152 small CPA firms and individual practitioners showed that 94 percent of the firms with two or more professionals reported offering MAS services. Of the sole practitioners, 83 percent responded that they offered MAS services. The same survey responses indicate that an average of 10 to 11 percent of

*Firms that
perform MAS
services*

total professional time was spent on MAS. This was true for all types of firms regardless of size, location, and whether there were full-time MAS professionals on the staff.

Sources of MAS engagements

Engagements with audit clients

Audit clients of a CPA firm generate the majority of man-hours used in MAS and the related billings. As a normal part of an audit engagement, audit staff and partners look for opportunities to improve a client's management, technology, and profitability, and they call them to the client's attention. Often, clients themselves will identify problems and ask for the CPA firm's assistance with them.

If the client is agreeable, the CPA firm may conduct a preliminary survey. They may make a presentation to the client along the lines of, "We have at your request conducted a preliminary survey. Here is our understanding of your problem, how the work would be divided between our staff and yours, how long it will take, and our best estimate of the cost." The ensuing discussions may lead to an MAS engagement. The engagement terms normally are specified in an "engagement letter" from the CPA firm to the client.

Engagements with other clients

It is not unusual for a prospective client to approach a CPA firm with which there is no audit relationship and request that it perform certain work for them. Often, organizations request proposals from several CPA firms. The motivation for seeking MAS services from a CPA firm appears to be the reputation, prestige, and credibility of the CPA profession developed over the years. In the public sector, many consulting opportunities are available that do not arise from a pre-existing audit relationship. While a CPA firm may be approached and asked to perform services, it must often develop or discover these opportunities for itself. This may be done in several ways, but three common approaches are these:

- *Maintain close contact with key officials in those areas where desirable engagements are most likely to occur.* This provides early information about the development of consulting opportunities in which the CPA firm may be interested in preparing a proposal.
- *Develop a strong reputation for general competence and reliability.* A reputation that is widely recognized virtually amounts to assurance that the CPA firm will be asked from time to time to prepare a proposal on a particular assignment.
- *Monitor formal sources of information about consulting opportunities and submit proposals as appropriate.*

Some MAS practice units specialize in a specific industry or application. A specialized firm will systematically and aggressively seek engagements within its special competence.

The expected growth rate estimates for MAS chargeable hours vary considerably, with the greatest variation found among estimates prepared by smaller CPA firms. An estimated average growth rate currently may be about 10 percent annually, but the researchers encountered some practices expecting no growth or even slight shrinkage (especially relative to the size of the practice prior to the 1971 recession in the consulting profession) as well as expectations of doubling in size from year to year. Thus, it may be said that a consulting practice is more sensitive to economic fluctuations than either audit or tax practice.

MAS practice growth rates

Variety of MAS services rendered

Most firms voluntarily limit the scope or variety of services rendered so that they are consistent with the firm's resource limitations, interpretations of professional ethics, or philosophy of practice. Such limitations on scope of services are stated as policies of the individual firm and are not consistent from one firm to another. The most commonly encountered services are those related to the systems operating in business functional areas such as finance, accounting, and data processing. The researchers found the scope of services rendered by individual CPA firms to vary between a few specialized services and the full range of services performed by large non-CPA general consulting firms. Only a few of the very largest MAS practice units attempt to offer such a full range of MAS services; however, services offered by these larger firms are also offered in part by some of the smaller ones.

The variety of MAS services a CPA firm chooses to render can be interpreted as the result of conscious decisions about the nature of services required by actual and prospective CPA firm clients. These decisions will consider such factors as firm independence, the competence profile the firm wishes to present, and the specific interests of the CPA firm personnel.

Determining a range of MAS services

The CPA firm determines its own range of services by not accepting engagements that involve services inconsistent with its policies. One reason to refuse an engagement is the firm's judgment that its resources are not adequate to complete the engagement to the client's satisfaction. In other words, a CPA firm may determine, by selective acceptance of engagements, its own scope and level of MAS services consistent with its skills and knowledge inventories.

The CPA profession as a whole is flexible and responsive to the perceived needs of clients for MAS services. To illustrate the breadth

and variety of services offered, figure 3 below, shows a list of significant MAS services developed from the replies of the fifty-eight respondents to the MASBOKE firm survey.

FIGURE 3—Variety of MAS Services Performed

Engagement types designated as significant by 40 percent or more of respondent firms

accounts payable	lease or buy analysis
accounts receivable	long-range financial planning
acquisitions, mergers, & divestments	long-range planning
annual financial planning & budgeting	management audit
applications software development	management controls & reports
billing & credit	order entry
cash management	organization structure & policies
clerical systems & forms	payroll & labor distribution
clerical work methods and simplification	performance reporting
computer operations evaluations	policy and procedure manuals
cost accounting & allocation	product profitability
cost standards	property
customer order processing	report design and installation
data communications	responsibility reporting
economic & feasibility studies	return on investment studies
equipment evaluation	revenue accounting
financial reporting	sales analysis
financing, selecting sources of capital	sales forecasting, demand planning
form design and installation	software evaluation
fund accounting	systems and procedures design, analysis and documentation (EDP and manual)
general accounting	systems and procedures installation (EDP and manual)
goals & objectives studies	systems test and conversion preparation
information flow studies	
information systems	
inventory control	

Internal organization of MAS practice

There are typically four levels of responsibility in MAS practice units having full-time MAS professionals. Compensation at each responsibility level is comparable to that encountered at similar levels in other professions and in top management in industry.

Staff consultants

The first and least-experienced level is the *staff consultant*, consultant analyst, or other designation for an individual who is relatively inexperienced in a consulting environment. The staff consultant's

formal education is complete and, in most CPA firms, the consultant should already possess a marketable skill package developed through experience. A person usually will serve as a staff consultant for from one to four years.

If the staff consultant demonstrates competence and the ability to extend the basic abilities while learning new specializations, additional responsibility will be conferred through promotion to the second responsibility level, usually designated *senior consultant*. This level has several gradations. A “light” senior may supervise other consultants on the job, draft interim and final reports, and bear the brunt of initial data reduction. A “heavy” senior will be in charge of a few engagements in addition to the duties above.

*Senior
consultants*

The third responsibility level is the *manager*, responsible for planning, supervising, and completing engagements. The manager’s duties may expand from the actual application of technical skill to the supervision and development of staff members who have technical skill, or to the delivery of consulting services. The manager’s technical knowledge is impressive and may cover many areas in some depth. It is most useful in determining engagement resource requirements, disseminating knowledge within his practice unit, maintaining frequent client contacts and follow-up, and spotting possible new engagements.

Managers

The fourth and highest level is the *partner* or partner equivalent,⁴ a person who demonstrates not only an extension of that competence required at the manager level, but also the ability to consistently develop and improve the firm’s MAS practice. A partner is responsible for overall engagement definition and planning, for assuring that all alternatives are considered during an engagement, and for determining the necessary kinds of data that have to be collected and analyzed. The partner’s experience, perspective, and proprietary interest in the firm imply greater competence than that possessed by non-partners. In the smaller firm, the partner/principal also has many of the responsibilities attributed to the manager: staff development, engagement administration, practice management, and practice development.

*Partners or
principals*

Practice development requires that the partner be visible to potential clients. The partner may give speeches, engage in community service, participate in social activities, write articles in trade journals, join and

⁴Usually designated as “principal,” such a person has partner-equivalent compensation and responsibilities.

attend meetings of trade organizations, and generally seek special recognition by others of the partner's and the firm's consulting abilities. These activities all began years ago, when the consultant was a new staff person, and are most beneficial later, at the manager and partner responsibility levels. There are many levels of partner responsibility. Although MAS partners typically have extensive administrative, educational, and developmental responsibilities in a CPA firm, *only rarely* do MAS partners become the senior partner in charge of an office of the firm.

Ethical requirements of the MAS consultant

The fundamental ethical requirements are that the consultant (1) undertake only engagements where competence exists to perform the work and (2) observe the recognized ethical responsibilities of the CPA profession. These latter requirements have been stated authoritatively in state CPA society and AICPA publications and require no formal reiteration here. All such requirements should be scrupulously observed by the CPA and non-CPA members of consulting staffs.

Independence and objectivity

MAS professionals believe that a major ethical requirement of the CPA profession is maintenance of audit independence (when the work is for a present or prospective audit client) and an objective attitude toward the client. All firms interviewed have administrative arrangements to assure compliance with this requirement.

Other ethical requirements cover objectivity and integrity, the division of fees, contingent fees, simultaneous occupations, promotional activities, referrals, and forecasting (in the context of appearing to render an opinion that a forecast of earnings is "certified" by a CPA in respect to accuracy).

The MAS consulting process

Engagement progression and management

Almost all MAS engagements follow a regular progression, which applies to large or small engagements as well as to ones done with varying degrees of formality. Figure 4 (page 20), shows the steps or stages in this MAS engagement progression. Most MAS engagements were found to lend themselves to the following activities:

- Initial contact (through audit staff or a partner, typically).
- Preliminary survey.
- Proposal (carefully written and checked, with supporting oral presentation).
- Engagement letter.

- Detailed plan, including consulting staff project organization interface with client personnel, quality control checkpoints, periodic progress reports, and conferences with client.
- Field work, with periodic comparison to plan.
- Quality control and feedback.
- Conferences with client and feedback.
- Draft recommendations discussed with client and feedback.
- Final report and presentation.
- Follow-up to assure implementation.
- Follow-up to enhance client's satisfaction.

The foregoing summary engagement progression and the specialized staff activities shown in figure 4 scarcely serve to represent the creative nature of an MAS engagement. At each stage many different kinds of knowledge and personal skill are required of the MAS professional.

Service delivery

An important MAS service delivery skill is to determine the appropriate means of working closely with management and presenting findings and recommendations. In particular, the degree of formality and documentation appropriate to a particular engagement must be selected by the MAS practitioner. Regardless of the degree of formality and documentation, all management advisory services draw on the same functional, technical, industry, and general bodies of knowledge described in this report.

Engagements should progress as shown in figure 4, be consistent with the previously quoted definitions of MAS, and meet current MAS standards on competence and due care.⁵ Larger engagements tend to be meticulously planned, scheduled, and documented. Smaller engagements may often be less formal and require little documentation.

Other services, described as "informal MAS counsel," may "... involve primary reliance on the practitioner's general business knowledge and knowledge of overall client affairs, rather than on specific fact-finding and analysis, or special technical competence."⁶ Such services do generally follow the engagement progression previously described, but may not require all the detailed elements found in more structured engagements.⁷

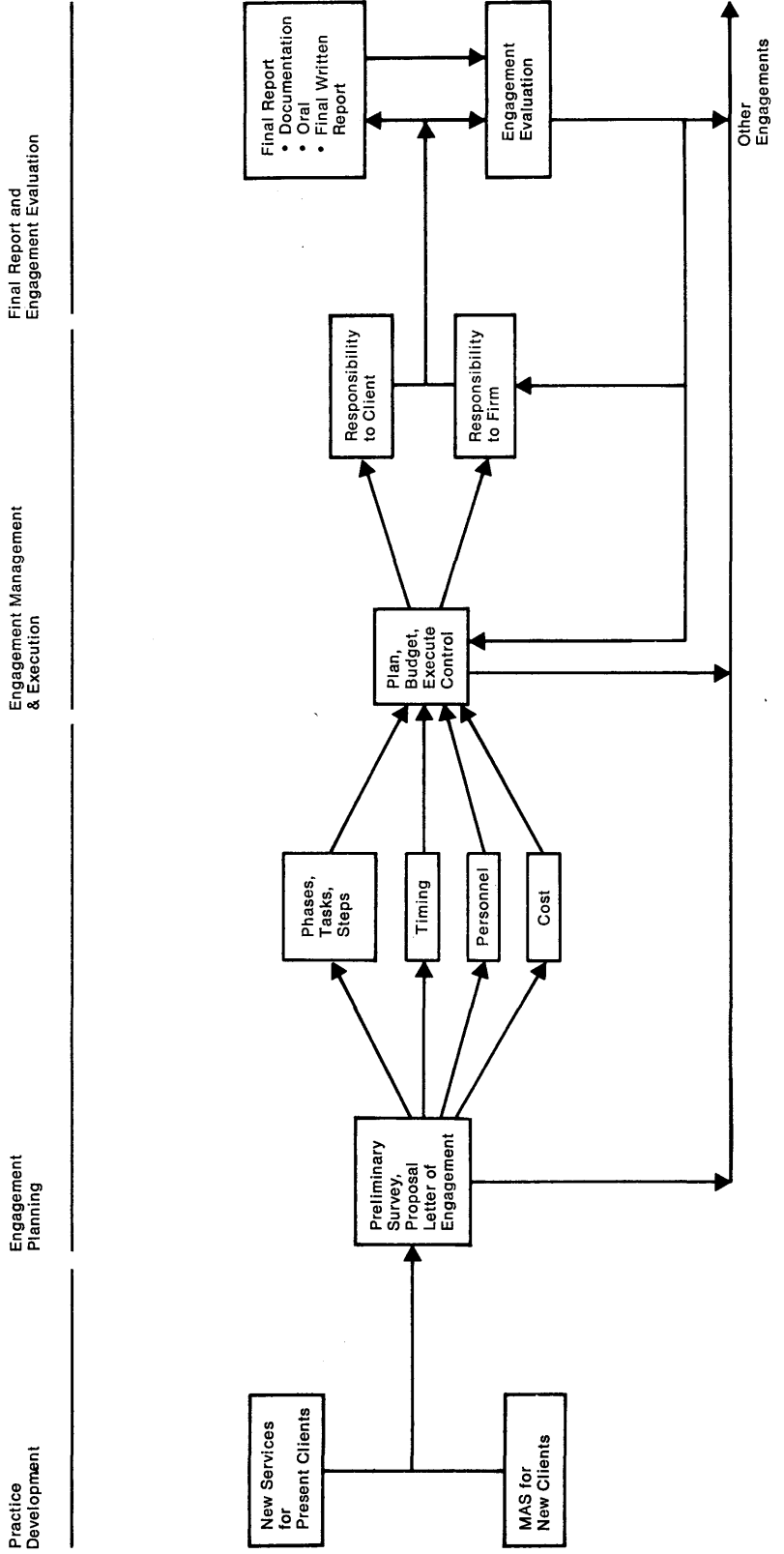
*Engagement
formality
and
documentation*

⁵See *Statements on Management Advisory Services* (New York: AICPA, 1974), pp. 4-5.

⁶*The Scope of MAS Practice*, a report to the AICPA Committee on Scope and Structure by the MAS executive committee (New York: AICPA, 1973), p. 6-1.

⁷See *Statements on Management Advisory Services*, pp. 1-2, paragraph 3.

FIGURE 4—MAS Engagement Progression



Audit considerations and MAS practice

An element of the consulting process that is unique in CPA firms is the need to coordinate many MAS engagements with the pre-existing financial audit relationship with the client. The auditor-client relationship is a continuing one that often extends over many years. In most firms performance of audits and preservation of the auditor-client relationship takes precedence over MAS and tax work for the same client—that is, to perform an audit engagement requires auditor independence, and no event or condition is allowed to intrude that has any appearance of, or potential for, jeopardizing auditor independence with respect to existing clients. When an MAS engagement is in process for an audit client, it is subject to special review to make certain that it does not affect auditor independence.

Alternatively, some firms regard MAS engagements with non-audit clients (when arranged in accordance with ethical standards) as opportunities to demonstrate the quality of work the firm is capable of performing in hopes that a continuing auditor-client relationship will eventually emerge from the consulting work. There are ample opportunities to do this in most engagements because the MAS professionals work closely with the client's highest management officers—president and vice-president—men who recommend the auditor to the board of directors and/or stockholders for selection.

The MAS professional

Personal attributes of the MAS practitioner

The desirable personal attributes of the MAS professional include thoroughness, independence, technical competence, and ability to structure decisions under time pressure. Yet the MAS professional is aware of the needs of others and is very effective in establishing rapport with clients and in motivating client personnel and his professional associates to work together. The MAS professional is stimulated and excited by the learning process that accompanies consulting engagements and is fascinated by systems and by creativity; thus, the researchers encountered a number of amateur and semiprofessional musicians, automobile tinkerers, and racing sailors among the persons interviewed. The MAS professional can examine a large amount of unstructured information and identify the underlying problem(s), formulate a model and validate it, discard nonrelevant information, win others' support for his recommendations, and motivate them to carry forward to a solution and implementation.

*Ability to
inspire
confidence*

Evidently, executives respond to this kind of person. A successful MAS professional can inspire confidence in executives, and the executive feels it is in his own best interest to be fully cooperative. The MAS professional is able to influence others without generating antagonism.

Career paths of MAS consultants

The interviews and MASBOKE individual practitioner survey confirmed that an impressive variety of career paths lead to success in MAS work. The majority of practitioners who render MAS services are full-time CPAs who practice MAS part-time in addition to their audit and/or tax activities. Typically, many of these individuals hold BBA degrees with accounting majors, have never worked in industry but have auditing and/or tax experience in public accounting, and have a higher-than-average knowledge of accounting systems and general management.

Many other MAS professionals are engaged exclusively in the MAS field. The full-time MAS practitioner often is not a CPA, holds a master's degree in some business field, has managerial experience, and has little or no experience as an auditor. He is recognized to some extent as a specialist.

There are great variations from these profiles, especially in the case of full-time MAS practitioners with bachelor's or master's degrees in finance, management, marketing, engineering, economics, computer science, physical sciences, mathematics, liberal arts, philosophy, social programs, and even education. There are some Ph.D.s in MAS practice. A few practice units take substantial numbers of new staff from the audit operations of their firm (all use audit staff on a part-time basis when the need arises). Others hire new staff directly upon their graduation from colleges. In both cases, the new staff do not have the prior business experience of the majority of full-time MAS practitioners.

According to the AICPA large-firm survey, there are about five thousand full-time MAS practitioners. The AICPA-Roper survey indicates that most of the approximately ten thousand small practice units known to the AICPA, each averaging between two and five professionals, do render management advisory services. In the smaller practice units the management services are usually rendered by CPAs who also perform other professional services. There would appear to be between ten thousand and twenty-five thousand professionals engaged in part-time MAS work. This estimate does not count audit and tax partners in larger CPA firms who give part-time advice which sometimes resembles MAS consulting.

Education and experience

MAS practice has grown rapidly and has attracted many individuals of varied educational and experience backgrounds. Consider the different sources of MAS staff in CPA firms ranked in figure 5 (below) as reported by the respondents of the MASBOKE firm survey.

FIGURE 5—Sources of New MAS Staff

	<u>Actual Last Two Years</u>	<u>Estimated for Next Two Years</u>
<i>All firms</i>	<ol style="list-style-type: none"> 1. Audit staff 2. Industry 3. Other MAS units 	<ol style="list-style-type: none"> 1. Audit staff 2. Other MAS units 3. Industry
<i>Firms with less than six full-time MAS practitioners</i>	<ol style="list-style-type: none"> 1. Audit staff 2. Industry 3. New MBAs 	<ol style="list-style-type: none"> 1. Audit staff 2. New BBAs 3. Other MAS units
<i>Firms with six to ninety-nine full-time MAS practitioners</i>	<ol style="list-style-type: none"> 1. Other MAS units 2. Audit staff 3. Industry 	<ol style="list-style-type: none"> 1. Other MAS units 2. Audit staff 3. New MBAs
<i>Firms with more than ninety-nine full-time MAS practitioners</i>	<ol style="list-style-type: none"> 1. Industry 2. New MBAs 3. Audit staff 	<ol style="list-style-type: none"> 1. New MBAs 2. Industry 3. Audit staff
	1 = most frequent 2 = second most frequent etc.	

The MASBOKE survey accumulated data from respondent firms on the prevalence of degree fields and highest degree earned for firms with full-time MAS professionals. The largest class of degrees held was the master's degrees, followed closely by the bachelor's degrees and distantly by the doctorates. Figure 6 (page 24) shows the ranking of degree fields for all CPA firms; the master's degree is more common among larger firms' MAS professional staffs.

In summary, many of the full-time MAS professionals (1) have master's degrees in areas other than accounting, (2) have business experience outside public accounting, and (3) are not CPAs. The other large category of full-time MAS professionals are those who (1) have only the bachelor's degree and were accounting majors, (2) went directly to work in public accounting, and (3) are CPAs.

Within the CPA firm, the new consultant's path is expected to carry him rapidly upward in responsibility and effectiveness. He must display the ability to generate confidence in his work by completing engagements on time, within budget, and to the client's satisfaction, and he should take proprietary interest in the administration of the practice. He must rapidly develop (or already have) marketable technical, industry, or functional skills.

FIGURE 6—Education Background of MAS Professionals

<u>Degree Field</u>	All Firms Responding*		
	B	M	D
Accounting	1	1	4
Other Business	2	2	2
Engineering, other than industrial	3	4	7
Industrial Engineering	4	5	6
"Other" (not listed)	5	7	1
Physical Sciences	6	9	8
Management Science	7	3	3
Computer Science	8	6	—
Behavioral Science	9	8	5

*B = bachelor's

M = master's

D = doctorate

1 = most frequent

2 = second most frequent

etc.

MAS staff development policies

In general, CPA firms implement policies that are intended to promote acquisition and retention of a highly qualified permanent professional staff capable of providing all the services rendered by the CPA firm, including MAS services. These policies differ in degree among the various service categories and even among different sizes of CPA firms, but they do not differ in objectives.

Experience

The new MAS professional undergoes intensive on-the-job training coupled with direct supervisory review and counseling. Upon joining the MAS staff, the new professional is exposed to a broad range of experiences under all or a representative sample of the firm's senior consultants. The new professional is expected to both broaden and

deepen the entry-level technical skills and to learn the “style” of the firm in performing MAS engagements. The new professional’s progress is frequently discussed and evaluated by his superiors. When they develop a consensus, it is communicated to the staff person. These confidential sessions can be directly and strongly explicit about the staff person’s progress or lack of it. If the criticism offered is accepted and acted upon, these sessions are key factors in guiding the staff person’s development.

Training

Intensive training programs help introduce the MAS staff to the variety of skills offered by the firm. In smaller firms the programs offered by the AICPA and state society make up the bulk of training programs to which MAS staff are exposed. The largest firms depend primarily on internally developed training programs prepared by senior MAS staff and designed to upgrade consulting skills at every level of experience and skill within the firm. Intermediate-size firms rely to a slight degree on internally prepared training materials, evidently preferring to emphasize trade association and professional society programs, joint training programs such as those of the American Group (made up of regional CPA firms), and AICPA programs. MAS staff training varies from firm to firm and with an individual’s specializations and experience; training may run from a minimum of forty hours to a maximum of three hundred hours per year for each staff member. At the minimum level, there is probably little technical skill enhancement. Some enhancement of general consulting skills probably occurs. At the higher level, there is extensive upgrading of technical and consulting skill.

The most interesting developments in staff training are now occurring in the larger firms. For reasons related to differing sources of new staff (most firms primarily hire experienced new staff), the staff training programs of larger firms vary from virtually no in-house training, with the individual staff member assuming total responsibility for continuing development, to extremely elaborate and expensive centrally organized and administered programs extending over three to five years and required of all staff. In some firms these programs are offered through central educational facilities and through professionally prepared tape, film, and slide media intended for presentation at the firm’s individual offices.

Advancement

Rapid salary adjustment and promotion are the incentives to staff who demonstrate rapid learning and ability to generate and retain consulting business for the MAS practice. It is most common for promotions to be spaced two to four years apart from one to the next

level of responsibility—leading to a proprietary interest (partnership or equivalent) in the firm when the individual is thirty-five to forty years of age. In smaller firms advancement may be even more rapid. The effect of early recognition is to stimulate those so recognized to continue and to improve their efforts.

Staff turnover

Not everyone is recognized, of course, and those who are not tend to fall into two classes. The first and smaller class includes those whose efforts eventually satisfy both themselves and their supervisors that they have a future with the firm. The larger class includes those whose best efforts fail to bring them satisfactory recognition and who find this an undesirable long-term situation. These persons sooner or later seek alternative employment; they leave their practice unit for another job. This turnover is a consequence of the firm's need to develop and retain a high quality staff. Some firms may believe that they encourage turnover; however, turnover appears to be an indirect side effect of the nature of MAS work, the CPA firm's need for a highly developed staff, and the expectations of the individual staff members.

No one disputes that there is a high staff turnover rate, particularly in larger firms; however, there is some disagreement not only about whether it is encouraged, but whether it is economically beneficial to the profession. That such turnover is economically beneficial cannot be determined without much more information than was sought for this report. It is true that there are very many more relatively junior professionals in MAS than can possibly rise to proprietary responsibilities, which gives MAS divisions (along with audit and tax divisions) large, relatively low-salaried staffs for the data-gathering and reduction work in engagements. Staff members who do remain with the firm must demonstrate analytical and judgmental abilities, and eventually become the men who must persuade hesitant clients to accept and implement complex or difficult recommendations.

Smaller firms do not have as large a proportion of junior staff as do larger units and thus do not have comparably high turnover rates. However, it should be noted that smaller firms have one staff development policy (as a group) that larger firms do not—they expect their MAS staff to be, or to become, CPAs. This is understandable considering the large proportion of part-time MAS staff in smaller firms, which means that these individuals also are likely to have responsibilities that require their certification if they expect to remain with their employer. MAS practitioners in larger firms work full time in MAS and do not require the CPA certificate to perform their work. However, large firms are pleased if members of their MAS staff do become CPAs and staff members are encouraged to do so.

MAS practice and firm size

Firm size has been previously alluded to as a differentiating factor among the MAS practices in existence. There are differences related to practice unit size, but these *do not* relate to economic viability, professional vigor, or participation of partners and staff in the absorption and dissemination of knowledge.

Effective use of staff

Firm size does appear to be related to a limited number of other MAS practice characteristics. The larger CPA firms have certain economies of scale that appear to give them a competitive advantage in the area of specialized, large, structured engagements. Such engagements effectively utilize the substantial specialized resources of a larger CPA firm and tend to occur most often when the client is a larger organization. Yet, smaller CPA firms appear to have an equally decisive advantage in giving advice to their clients, which tend to be smaller in size and to have different problems. Repeated engagements with these clients produce different MAS practice characteristics in the smaller firm than are found in other CPA firms.

Although more specialized skill levels can be developed in large practice units, the problems of attaining quality and practice consistency are commensurately greater, and many larger MAS practices cannot, with their higher overhead, undertake economically the types of services that are handled profitably by small firms. The large firms, in fact, prefer the larger jobs to assure employment stability. On balance it would appear that while the practices differ, they do not significantly overlap one another.

In respect to organization, larger MAS practices are typically decentralized by local offices or regions. The central office provides staff services and information. The offices may share personnel with each other on a need basis but generally are not compelled to do so. Decentralization makes it possible for the larger firm to develop more intimate client relations.

*Office
decentraliza-
tion*

As businesses grow and require more complex audit, tax, and MAS services, they expect their accounting firms to grow with them. There are such numerous examples of this that it may even be more the rule than the exception—if a CPA firm does not augment its services as its clients require them, it probably will eventually lose clients. But, we do not interpret this as evidence of a threat to small CPA firms. Small

*Augmenting
services*

businesses and other entities in need of MAS services are constantly forming. These are the natural MAS practice development areas for smaller CPA firms, the majority of which are evidently effective in developing additional business even when these practice units do not increase in overall size.

MAS specialization

Practice development

Clients expect specific competence to solve their problems. They readily understand the existence of such specific competence when they can be told that the professional “has a record of successfully solving your kind of problem.” Thus in practice development, specialization is used to define skills in terms of the problems to which they will likely be applied rather than in terms of the abstract knowledge concepts themselves. Specialization can be demonstrated by citing past successful engagements in the same problem area or in businesses such as the client’s. Because engagements are individually unique, each engagement may require definitions of specialized skills adequate to satisfy the client. Specialization is important in practice development in firms of all sizes.

Technical specialization

The MAS professional thinks of a skill as a facility in using knowledge to solve client problems. In the latter sense, all MAS professionals are recognized as having one or more skills with varying levels of proficiency in one or more specializations. Consulting specializations may be classified according to type of knowledge required or type of entity served. Regardless of classification, a specialist will be able to use the knowledge related to that particular skill in many kinds of engagements where it is required.

Staff development

An MAS staff member usually is expected to have or to quickly develop a specialization upon entering MAS work. Frequently, full-time MAS staff have developed a specialization through previous consulting work, auditing work, or managerial experience in business or government. Upon commencing MAS work, the staff person is expected to extend this skill and, at the same time, develop other related skills in increasing depth. An important objective in the individual’s development is becoming a “generalist”—a person who can deliver highly developed skills in a variety of situations or areas of MAS practice. A “generalist” should not be misunderstood to be an individual who has no particular specialized skills. As important as specialized skills are, the ability to exercise judgment, communicate,

and generally practice the consulting arts is equally important and may itself be specialized from one type of client or engagement to another. One's long-run success in a consulting organization is dependent on transferring specialized ability from one type of client or engagement (where the consultant is best with it) to another (where it is currently needed). One form of "consultant's consultant"—a term heard occasionally—would be a person whose consulting skills are so highly developed and effective that he is able to assist other consultants with good technical skills (but less consulting experience) to perform effectively.

Classification by type of knowledge

Functional knowledge and technical expertise

Each business function involves its own set of responsibilities, data flows, planning and control mechanisms, and decisions. A person who is knowledgeable in one of these functions can work in an area of managerial responsibility such as finance, marketing, manufacturing, production, research, and so on. Such a person can analyze, diagnose, and otherwise apply functional knowledge in many sizes and types of organizations. Functional knowledge is also appropriate to solving problems in the same function in different industries, and the functional specialist understands the significance of this knowledge to the company as a whole.

Technical specialization may be viewed as possession of enough knowledge of a particular discipline (such as accounting) to be able to apply it in appropriate situations in various industries, business functions, and organizations of all sizes in the public and private sectors.

Industry and the public sector

The MAS practitioner is particularly oriented toward the client's own perception of his needs, which in turn depends heavily on the client's environmental setting. Knowledge of this setting is sometimes broadly described as "industry knowledge" and, in MAS practice, is most diverse and difficult, from a knowledge classification point of view, to deal with. Specialization in an industry implies knowledge of the problem's frame of reference, structure, and probable solutions, derived from previous successful encounters with the same or similar problems. The practice unit strives to participate in such a variety of engagements as to develop industry specialization in whatever types of engagements its development plans include. For the individual professionals, industry competence appeared in the interviews to be related to—

- Managerial experience in the industry and, therefore, familiarity with its unique decisions and characteristics.
- Deliberate self-familiarization with the industry structure, technology, history, terminology, and unique problems.
- Transfer of existing functional or skill specialization across industry lines and expansion of these skills within the new industry.

Industry specialization

Industry competence need not exist relative to *every* problem that may occur in an industry—only to the problems included in one’s past experience, or addressed in current engagements. Industry specialization should not be dismissed as an overlay that exists primarily to expedite practice development. Such development may be among the major reasons for the *recognition* of industry specialization, but does not alone account for its existence. Industry specialization exists because there are real, economically significant differences between consulting experiences in the banking industry, for example, and in the health care industry. The practice development overlay takes advantage of these differences by informing clients, as part of the process of arranging the engagement, of the consultant’s industry-related knowledge of them. The client’s perception of the MAS professional’s industry competence will increase his confidence in the MAS professional’s ability to work with him acceptably during the engagement. Even more importantly, internal recognition of industry competence does improve the CPA firm’s actual efficiency and competence by allowing it to bring to bear experience in specialized recurring environments where, in its practice, it can be the most useful.

Yet, the recognition of particular industries as areas of special competence requiring unique knowledge and understanding appears to depend to some extent on one’s classification system as well as on the necessary practice development areas and individual and firm experiences. Industry competence, in other words, can be recognized as relating to a need arising out of client problems, practice development, and engagement management. We feel that the extraordinary diversity and volatility of industry specializations preclude development of a simple classificatory system with a small number of industry categories.

Engagement performance

A consultant’s skill can be described through a simple classification system. Thus, for example, an MAS professional might be recognized and described by his firm as a systems analyst with experience in finance, accounting, and marketing functions in the service industries

and certain organizations classified in the public sector. This description is the result of the individual's experiences as a consultant, the areas in which the consultant's effectiveness is most apparent, and the needs of the practice unit to display competence in certain areas. But specialists also play a major role in the actual performance of an engagement.

The researchers found that the MAS concept of individual specialization, high competence in an identified area of service delivery or knowledge, plays a major role in staffing and executing many MAS engagements. Further, most MAS professionals to a significant extent satisfy the definition of "generalist" as one with *several* such specializations. The majority of MAS engagements are carried out by this type of generalist or by a combination of generalists and specialists rather than by "pure" specialists in one skill, one function, or one industry.

Staffing an engagement

A firm with recognized specialists available has significant advantages over a firm without such specialists when the engagement *requires* specialists. But even the very largest offices employ only about two hundred MAS professionals and all but a relatively few CPA firms have either no full-time MAS staff or only a very few such persons—perhaps one, or two, or three. These numbers are inadequate, even with staff transfer and the occasional use of outside consultants, to permit staffing more than a small minority of all engagements with specialists. Thus, the burden of most engagements falls on the MAS professional who has developed multiple industry, functional, and technical specializations. Such individuals constitute the great majority of all MAS professionals.

Each engagement also contributes to the strengthening of existing specializations and to the development of new specializations. The latter may be new to some of the staff on the engagement, or even new to the firm. Thus, specialization is constantly changing as the MAS practice continues.

Specialization development

One emerges as a mature MAS professional, qualitatively speaking, when one has developed a number of skill, functional, and industry specializations and is thought of in terms of whichever one of them is required in a particular engagement. Thereafter, one is regarded by other MAS professionals as having acquired a set body of knowledge more or less necessary to function as a consultant. Mature MAS professionals, of course, do not all possess the same exact bodies of knowledge, and no one person can learn all consulting knowledge. A generalist is valuable for his diverse knowledge, yet more skills than can possibly be mastered by one person may be necessary to complete complex assignments.

The consulting art

The consulting art may be loosely characterized as the ability to provide useful knowledge in forms that benefit the client. Very knowledgeable individuals may lack (and never acquire) mastery of the consulting art. Persons with adequate skill may become quite proficient in delivering what knowledge they have and be more effective as consultants than some of their more *technically* competent associates. The researchers believe that much knowledge of the consulting art can be reduced to a form most consultants would recognize, and may be characterized by the ability to—

- Establish a relationship of confidence between the consultant and others, including actual and potential clients at all managerial levels and with other MAS professionals.
- Establish two-way communication with clients and other experts as required by the engagement.
- Plan an engagement, from the formulation of the proposal to delivery of final recommendations, including appropriate documentation.
- Assimilate information rapidly and fit it into a reasonable explanation of the situation.
- Be persuasive and influential in areas important to execution of the engagement.
- Change from one client's problems quickly and without mental slippage, remember details, know one's own limitations as well as those of others, and quickly correct or adjust for them in the engagement.
- Develop additional skills and specializations as or before needed, and recognize and utilize skill in others.
- Accept professional or personal criticism, whether fair or unfair, without feeling threatened and deliver criticism constructively without appearing to threaten.

The behavior pattern suggested by this knowledge is essentially a wholesome and open one. Several MAS professionals have suggested an analogy of knowledge delivery skills in all professions—for example, the “bedside manner” of the physician. In other professions as in MAS, such knowledge is taught through formal educational processes only to a limited extent; it is primarily transmitted through experience, which includes observation of recognized experts in the consulting arts and controlled exposure to situations requiring progressively greater, more independent, and more responsible exercise of these arts by the developing MAS staff person.

A minority view is that the consulting arts are intuitive in certain personality types and cannot be transmitted to others. While some persons do exhibit these skills in greater degree than others, the researchers feel that individual motivation and effort to acquire them are the dominant factors and that personal attributes should be assigned a less significant role. Whether “in-born” or “made,” these skills can usually be improved by conscious effort.

Sources of MAS knowledge

Knowledge is acquired by MAS professionals from a wide variety of sources. Figure 7 (page 34) shows a ranking of MAS knowledge sources for the different knowledge areas.

The data summarized in figure 7 indicate that experiential sources of knowledge (MAS, auditing, and business) are as important as formal sources (university, CPA firm, and professional training)—or more so. However, formal sources lay the important knowledge foundation that enables the experientially derived concepts to be assimilated.

FIGURE 7—Ranking of Sources of MAS Knowledge

Body of Knowledge Area	Sources of MAS Knowledge						
	Business (Nonpublic Accounting) Experience in MAS	Audit or Tax Experience	Training Outside CPA Firm	Self-Study	Training Within CPA Firm	Formal Education	
1. Knowledge of Organizational Functions & Technical Disciplines							
a. Executive Planning, Implementation and Control	1	2	5	3	6	7	4
b. Finance and Accounting	1	5	3	4	7	6	2
c. Electronic Data Processing	1	2	7	3	6	5	4
d. Operations	1	2	5	4	6	7	3
e. Human Resources	1	2	5	3	6	7	4
f. Marketing	1	2	5	4	6	7	3
g. Management Science	2	3	6	4	5	7	1
2. Knowledge of Industry and the Public Sector	1	3	4	2	6	7	5
3. General Knowledge, Including the Consulting Art							
a. How the CPA Profession Operates	1	5	2	4	6	3	7
b. How Business Operates and is Managed	1	2	3	5	6	7	3
c. Communication Skills	1	3	4	5	6	7	2
d. MAS Practices & Engagement Characteristics	1	6	5	3	4	2	7

The number 1 denotes the highest ranked source, 2 denotes the next highest ranked source, and so on.

General characterizations of MAS bodies of knowledge

This chapter identifies knowledge and skill concepts used in MAS practice in the delivery of MAS services to clients. These concepts are reported in summary form, because each body of knowledge could be described in enough detail to require an exhaustive inventory filling several volumes. To avoid the obvious effort and disruptive detail of complete descriptions, only summaries are included in this chapter. More complete descriptions of each concept and supporting illustrative book citations appear in Appendix A, which is the core of this report. Reference to these citations or other comparable publications would provide reasonably complete and important detailed descriptions of each body of knowledge. The extent or length of coverage of any body of knowledge in this chapter or in the appendixes is not necessarily related to that body's significance either in practice or in respect to the examination concepts discussed in chapter 4.

Factors common to all bodies of knowledge

Each component body-of-knowledge description in this report consists of a narrative section in the chapter that is elaborated by means of a knowledge concept inventory in outline form presented in Appendix A. The bodies of knowledge do not necessarily correspond to MAS practice areas; in fact, most if not all MAS engagements would require concepts drawn from several of these bodies of knowledge.

Knowledge concepts inventories

The knowledge concepts inventories attempt to distinguish between

understanding equivalent to that which can be derived from higher education and understanding equivalent to that which can be derived primarily from experience. Both types of understanding are reflected in the referenced citations. Formal education in accredited universities and colleges is important to full-time MAS practitioners, more than half of whom hold master's degrees in business, engineering, and other fields. As a minimum, the overall contribution of formal education to the MAS profession is an understanding of knowledge concepts and structure. The basic conceptual understanding, whether derived from a formal education or equivalent means, enables the MAS professional to—

1. *Acquire a detailed practical perspective of the knowledge.* For example, one may be familiar with the learning curve as a result of formal education. In MAS practice, one learns to recognize situations where the learning curve is useful, to document its application, and to combine the results of such application with other results to formulate engagement recommendations.

2. *Acquire additional conceptual knowledge through self-study, CPA firm or other formal training programs, or managerial, auditing, or tax experience.* Most professions, including MAS, expect certain basic entry knowledge on the part of their practitioners. Using this basic knowledge, practitioners are able to acquire advanced conceptual knowledge and exhibit professional growth.

The overall pattern of knowledge acquisition by MAS professionals in the functional and technical bodies is represented in figure 8 (page 37).

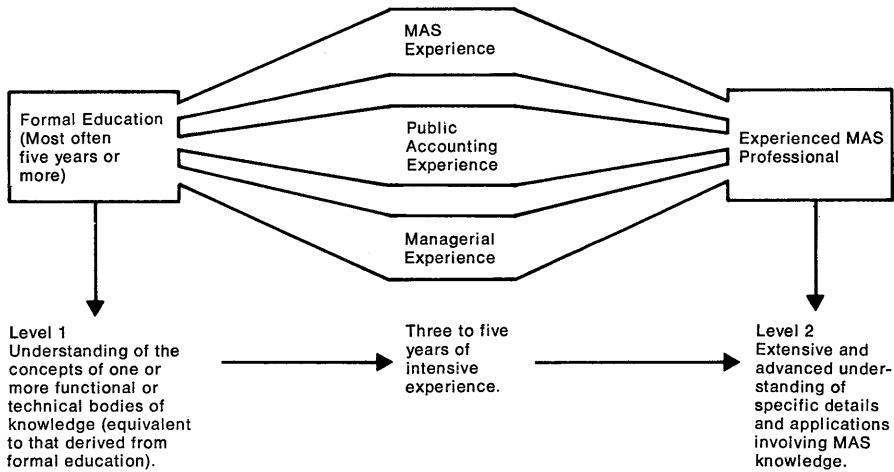
Two distinct levels of understanding

For each concept, the inventories include citations to pages and chapters of currently available publications that illustrate the type of detail and proficiency associated with the concept in the open literature at the two reasonably distinct levels of understanding suggested in figure 8.

Level 1. Understanding of the concept as it might typically be presented in an accredited five-year university program with a major in that body of knowledge area.

Level 2. Level 1, plus understanding of the concept and related detail in the body-of-knowledge literature that is intended for MAS professionals with three to five years of experience who are regularly applying such knowledge in MAS practice.

It should be understood that level 1 understanding may be developed by means other than higher education and level 2 understanding may be developed by means other than experience. The first level is

FIGURE 8—Pattern of MAS Knowledge Acquisition

characterized by a conceptual understanding *equivalent* to that gained from a formal academic curriculum; the second level is characterized by extensive and advanced understanding of specific details and applications *equivalent* to that gained from additional experience and/or education, by ability to recognize applications, and by ability to participate in applications. While it is possible to acquire level 1 understanding without a formal education in the subject area and level 2 understanding without three to five years of experience, these represent the most direct and most frequent means.

Illustrative citations

The use of citations in Appendix A to delimit the detail of body of knowledge concepts is the most practical and convenient procedure to hold both this chapter and Appendix A to manageable lengths. Sufficient additional illustrative and descriptive material, as identified by those citations, is widely available for further examination. However, the sense in which such citations are used to illustrate the detail of the two levels of understanding described above should be understood exactly.

The citations are illustrative only and not meant to represent best or only sources. The citations given for level 1 are predominantly for widely used textbooks, which illustrate the concept subject matter. The citations given for level 2 include a greater number of trade books, handbooks, and current literature intended for practicing pro-

Nature of citations

professionals. These two classes are not mutually exclusive; practitioners often refer to textbooks, and just about any publication can be used in a master's program. Some publications are intended for use both as textbooks and as practical references.

Thus, in using the citations in Appendix A to illustrate level 1 and level 2, one should remember that level 1 illustrates an academic, conceptual understanding of detail. Level 2 illustrates a more practical, application-oriented understanding of concepts and detail, as well as the ability to *use* this more comprehensive understanding effectively in such applications.

*Level 3
understanding not included*

There is a "level 3" type of understanding that is not included in this study. It would best be illustrated by citations to publications that report the results of scientific research. Although many MAS practitioners are familiar with current research in bodies of knowledge related to their areas of MAS practice, this type of citation is not necessary to describe functional and technical knowledge at the two broadly prevalent levels of proficiency selected for the MASBOKE study. There are other levels of higher practical expertise as well, which the researchers did not investigate.

General knowledge—including the consulting art

Component bodies of knowledge

General knowledge component bodies include concepts found to be common to most MAS professionals. These general bodies of knowledge include, but are not limited to, skills in problem analysis and engagement conduct. They support and make possible the application of knowledge of specific industries and public sector organizations and of functional and technical knowledge in individual MAS engagements. General knowledge alone is not an adequate basis for MAS practice. One who possesses only general knowledge, as it is understood and described here, cannot be a consultant as that professional role is understood in MAS practice. The MAS professional must also have an adequate understanding of the requisite functional and technical knowledge as well as knowledge of specific industries as required by his practice.

*Organization
of general
knowledge*

The body of general knowledge is organized as follows—

How the CPA profession operates

How business operates and is managed

Unique characteristics of public sector entities

Communication

MAS practice and engagement characteristics

Communication and MAS practice and engagement characteristics constitute knowledge of major portions of the “consulting art.” These five bodies of knowledge are discussed briefly below.

MAS services are influenced by the nature of the CPA profession and its high standards of competence, independence, and ethical behavior. This body of knowledge is viewed as being limited to knowledge of—

How the CPA profession operates

1. Major characteristics of the accounting profession, including legal responsibilities, traditional services, and ethical standards.
2. The accounting profession’s policy-making processes, including the roles of state CPA societies and regulatory bodies.

Since this study is concerned with knowledge related to MAS, it does not include knowledge required to conduct an audit, complete a tax return, or administer an accounting practice.

Many assignments an MAS professional would undertake are for business organizations. An understanding of how businesses operate and are managed is an essential part of the MAS professional’s total knowledge. The general knowledge of the operation and management of business and of business functions should correspond to that knowledge included in the *core* courses (those courses required of all business school students and intended to convey broad conceptual understanding of basic concepts and relationships) within an MBA program accredited by the American Association of Collegiate Schools of Business (AACSB). Such knowledge of how businesses operate and are managed may also be available from other sources, including AACSB-accredited BBA programs and administrative experience. We consider this fundamental and conceptual knowledge of business to be essential for virtually all MAS professionals regardless of their functional, technical, and industrial specializations.

How business operates and is managed

The major functional divisions of a business organization such as finance, accounting, marketing, personnel, and operations are covered in an MBA core and may be represented as well in certain supportive subjects such as business law, behavioral science, systems theory, quantitative analysis, computer science, economics, and the theory and practice of management.

Unique characteristics of public sector entities

Programs, agencies, and institutions outside the private sector (in government and not-for-profit activities) share many similarities with private sector organizations. The differences, however, are important and critical to an appreciation of public sector MAS work. The economic environment, planning, budgeting, and control processes, sources of revenue, and other concepts are found and described differently in the public sector than in the private sector. The differences merit separate consideration and understanding; however, the general awareness of basic principles included in this section is less extensive than the detailed knowledge of industries and the public sector, which constitutes one of the three major bodies of knowledge identified in this study.

Communication

Communication proficiency (both written and oral) is universally stressed as important to the MAS practitioner. In CPA firms, staff training programs and policy manuals, as well as managers themselves, stress the ability to write effective reports, proposals, and letters; note taking and working paper preparation; communicating orally with clients, superiors, associates, and subordinates; and mastering the essential skills of fact finding through document search, interviews, and survey instruments. Most MAS professionals feel that they would be unable to provide management advisory services, regardless of their technical proficiency, if they were not able clearly to receive and communicate facts, make inquiries, and state conclusions.

MAS practice and engagement characteristics

Knowledge of the CPA profession and business enables the MAS practitioner to be effective in a professional and working environment. Beyond this, concepts used to identify, analyze, and contribute to the solution of problems in organizations constitute essential knowledge of engagement conduct and MAS practice.

Understanding of MAS practice and engagement characteristics enables one to match the major types of MAS engagements with the analytical processes appropriate to each type. The MAS professional also must know how to conduct an MAS engagement so as to conform with accepted MAS standards and guidelines.

Although each MAS engagement is different, one may identify at least three major bases or criteria for distinguishing among engagements as part of the process of selecting the preferred analytical approach for the engagement:

- *Involvement in implementation*—The degree of MAS professional involvement in implementation of recommendations to the client.

- *Third-party effect*—The degree to which the engagement may affect a known or unknown third party outside the client organization.
- *Systems and procedures*—The degree to which the engagement addresses the design, development, and installation of systems and procedures (as opposed to a unique, nonrecurring client decision).

The MAS analytic and systems approaches to engagements are essentially similar in most engagements, involving the following sequential steps:

*Analytic and
systems
approaches*

1. *Identify facts*—Review and document existing client situation including relevant decision variables, variable interrelationships, and procedures in effect.

2. *Identify objectives and constraints*—Determine the client's objective, and the conditions, restraints, conventions, and legal, information, control, and operational requirements that a problem solution or new system must satisfy.

3. *Develop preliminary solutions, recommendations, or systems*—Work out one or more approaches in sufficient detail to allow economic effectiveness analysis and comparison.

4. *Select problem solution, recommendation, or system*—Determine the approach that appears to meet client objectives and develop it in sufficient detail to allow management approval and implementation. This step will include preparation of any required documentation such as flow charts, forms, manuals, programs, or training materials and design of necessary operations or clerical and administrative procedures.

5. *Install selected solution*—Implement the recommendations or systems, including personnel training, monitoring, and evaluating the results achieved (and, if necessary, modifying by redesign or reanalysis).

The essential benefit of this step-by-step approach is that, when used by an MAS professional, it can integrate human, organizational, technological, and environmental factors to produce a situation that is geared to a specific client's advantage. The systems approach provides unity and completeness to an MAS professional's observations of client needs. This approach is, with modification, applied to such diverse MAS projects as design and/or installation of order entry and processing systems, personnel productivity reporting systems, func-

tional information systems, corporate models, employee benefit programs, executive search and compensation, and selection of warehouse sites.

Engagement stages

The MAS professional applies the appropriate analytical approach within the context of arrangements with the client. Formal engagements move through distinct stages, independently of practice size or mode of delivery. These stages are (1) proposal and planning, (2) conduct and management, and (3) final report and evaluation. Engagements themselves occur as part of an MAS practice that must be developed, managed, and documented according to AICPA operating standards, guidelines, and ethics.

Knowledge of organizational functions and technical disciplines

Component bodies of knowledge

The MAS professional's knowledge of organization functions and technical disciplines (also referred to as functional and technical knowledge concepts) provide the basic working concepts for identifying problems, formulating recommendations, and completing implementation in MAS engagements. This knowledge is described under these seven component body of knowledge headings:

Executive planning, implementation, and control

Finance and accounting

Electronic data processing

Operations

Human resources

Marketing

Management science

These component bodies of knowledge are not of equal significance in MAS practice. The first four bodies of knowledge appear to support the preponderance of significant engagements included in figure 3. The latter three bodies of knowledge are of lesser significance in practice.

These functional and technical concepts are described here primarily in the context of application to the private sector. With adaptation, they are applicable to engagements with governmental organizations and other not-for-profit entities.

Each description in this chapter consists of a short narrative explaining major applications and concepts in that knowledge area.

This narrative is supplemented in Appendix A by summary outlines of the knowledge concepts with citations at proficiency levels 1 and 2 to sources describing the concepts in detail.

Organization of appendix—a technical and functional description

The structure of these summary outlines in Appendix A is similar for all the component bodies of knowledge. This structure is intended to correspond generally to the order in which the body of knowledge concepts might be utilized in an MAS engagement.

Part 1 describes the purpose, placement, and structure of organization functions related to a body of knowledge (for example, finance, human resources, marketing, and so forth). *Part 2* describes major planning and control systems included in the body of knowledge. *Part 3* describes routine operations and processing systems included in the body of knowledge. *Part 4*, which was not necessary to complete the descriptions for all the bodies of knowledge, describes specific applications that are necessary to complete the description of that body of knowledge.

It is important to note that no one component body of knowledge is intended to fully support any particular class of MAS engagements; most engagements, if not all, require the use of concepts from more than one of these bodies of functional and technical knowledge, as well as from the other two principal bodies of knowledge described in this document. Different MAS engagements utilize these component bodies of knowledge in different ways; however, some component bodies of knowledge are relatively more significant in practice than others.

No single body of knowledge fully supports any MAS engagement

Executive planning, implementation and control

The executive planning, implementation, and control component body of knowledge is most frequently applied in counseling with top management in respect to client goals and objectives, strategies, organization structures, long-range planning, short-term planning and control procedures, management reports, and related matters. An engagement utilizing this knowledge may encompass all or part of the broad management process of setting objectives, developing plans, policies, and organizational structure for achieving these objectives, and evaluating management's subsequent performance through information system reports or management audit. This knowledge base is also applied in engagements relating to reorganizations, mergers and acquisitions, and function staffing. Applications of executive planning, control, and implementation knowledge may occur in a freestanding engagement or as an integral part of a broader engagement.

Counseling with top management

The knowledge that an MAS professional possesses in this area is typically applied to support and reinforce the top executive's responsibility to provide overall guidance and direction to his organization. The major divisions of this component body of knowledge are these:

- *Executive management and function*—The historical and contemporary perspective on various schools of management thought and the processes and functions of management within an organization.
- *Strategic management planning and control*—Determination of long-range goals, objectives, and policies; evaluation and change of policies when indicated.
- *Management operations and evaluation*—Organizing, staffing, planning, conducting, and controlling operations within the framework of established policies and other constraints.
- *Important applications*—Merger, acquisition, and divestiture planning; small business executive management.

Finance and accounting

CPA firm professional accounting services

The finance and accounting component is related closely to the professional accounting services of CPA firms. The MAS services that are based on it are numerous and are significant in a broad variety of CPA firms and practices. These services include advising on the general state of the financial environment; financial management policies appropriate to an enterprise; organization and operation of the finance and accounting function; the development, maintenance, and operation of major financial and accounting systems such as cost determination, reporting, and control; the annual budgeting cycle; performance control reports, evaluation of variances, and corrective action. In addition, finance and accounting knowledge is useful in advising with respect to specific operating decisions such as selecting sources of capital, determining methods of financing, deciding on whether to make or buy required items, evaluating insurance coverage, and deciding when to replace capital assets.

The MAS professional often consults in other areas such as designing a cost accounting system; application of marginal costing concepts to justify price differentials under the Robinson-Patman Act; design and installation of a state education agency accounting and control system meeting federal regulatory requirements; design of a cash budgeting and management system to forecast and control cash flow; installation of a comprehensive budgeting system, including profit plans, sales forecasts, and operating budgets; development of systems and forms for payroll accounting or development of an

integrated sales analysis, production, inventory management, and purchasing system.

The basic underlying structural themes in finance and accounting are (1) the systematic processes of recording, classifying, and reporting quantitative measurements, (2) the application of basic economic analysis to these measurements to plan or appraise organization activity, and (3) the conduct of a number of important financial activities (such as cash management, payroll, credit, and collection). In finance, these themes are reflected by the use of financial information to attract capital investment. In accounting, they are reflected in the management need to plan and control business activities through systematically collected and classified relevant information reported to responsible executives.

Finance and accounting knowledge described in this report lends itself to organization within three major categories or concept groupings that are elaborated upon in the Knowledge Concepts Inventory. These major categories are—

- *Financial organization responsibilities and reporting*—The finance function, financial reporting systems, corporate growth, and capital requirements analysis.
- *Management planning, reports, and controls*—Operation of management systems of planning, reporting, and control that provide accountability and performance measurement for all managerial levels and functions.
- *Major financial subsystems*—The application of information processing and reporting expertise to the handling of transactions and preliminary processing of management information and the separation of the important systems and subsystems relating to the general ledger, cash, accounts receivable, billing, collections, and so forth.

Electronic data processing

Electronic data-processing knowledge applications involve the use of EDP operational, hardware, programming, systems design, and related skills. Such applications may be concerned with present and future hardware/organizational requirements; most appropriate application of EDP capabilities; evaluation of existing hardware and software performance; or development of software. Important MAS engagement applications of EDP knowledge include:

*Operational,
hardware,
programming,
systems design,
and other
EDP skills*

- Review of the applicability of EDP usages in a specific client activity.
- Evaluation of present use and operational efficiency of EDP activities, and recommendations regarding improvements.

- Evaluation of projected EDP requirements, taking into account expected increases in volume and/or major changes in operations.
- Evaluation of total accounting and financial reporting systems; development and installation of new information systems; improvement of existing information systems for better access and lower systems operation cost.
- Design and installation of a computer system to solve an operational problem or to provide management information.

The electronic data-processing body of knowledge includes all technical knowledge relating to defining a client's need for EDP capability, selecting appropriate computer systems and components, and designing and installing a computer system, which includes selecting proper file structure and access method, providing for data validation and file updating, and developing procedure manuals and system documentation. The purpose of this knowledge is to assist the client in the total development of EDP systems that fully satisfy his data-processing needs. This body of knowledge may be organized within the following major subdivisions:

- *Systems and data-processing management*—Organization and operation of the EDP service, relations with other business functions, assigning responsibility and measuring performance.
- *EDP system planning and control*—The development of a plan for computer systems that meet business objectives.
- *EDP operations and facilities administration*—The implementation and effectiveness of operational controls and procedures related to providing EDP services.

Operations

Conduct of major creative or productive activity of an organization

The theme that integrates operations concepts is the conduct and efficiency of the major creative or productive activity of an organization—whether that activity is the manufacture of products, production of typed reports, research, medical care, processed information, or approved franchise applications. Related engagements may deal with questions and problems of production policy and planning, controlled introduction of new technology into operations, the actual management of production processes, production control, warehousing and facilities design or evaluation, plant layout and production flow recommendations, materials management and inventory policies formulation, implementation, and evaluation. There are analogous applications in service-oriented areas such as health care, transfer

payments programs, welfare agencies, data tabulation, and secretarial services centers.

Engagements in which clerical service functions are reviewed for potential cost savings, a fire, police, or hospital organization is appraised for efficiency, or a system of office work measurement or production-line control is designed, all draw upon essentially the same or related operations knowledge concepts.

Industrial engineering knowledge and techniques are important ingredients in all of the operations areas. In manufacturing situations, these skills would usually be applied through an industrial engineering department. In service industries and office operations, they would usually be provided out of a systems unit that might be attached to the financial or administrative departments.

The operations body of knowledge is divided into the following major categories:

- *Operations organization*—How these functions are organized, staffed, and provided with information.
- *Operations planning and control*—Knowledge of how to plan and control the essential resources of facilities, materials, and manpower.
- *Operations processing functions*—Knowledge of techniques and procedures for executing operations plans and programs.
- *Important applications*—Areas of industrial engineering and office operations.

Human resources

Human resources knowledge is concerned with developing and retaining adequate human resources at all responsibility levels in the organization. The steps involve (whether in the same engagement or a series of engagements) recruitment, development, utilization, maintenance, evaluation, and compensation of a work force.

Typical illustrative applications of human resources knowledge include advising about qualifications of individual personnel who are being considered for employment, retention, or promotion, surveying the client's compensation structure to recommend improvements, conducting job improvement and enrichment studies, and developing and conducting staff training programs in a business, hospital, or government office.

Additional situations in which human resources knowledge would be useful are manpower planning, determination of client readiness for an employee benefit program and desirable features for the best

program, and executive and managerial recruitment. As an example, the latter situation might involve these steps:

1. Establish job description and specifications.
2. Search for candidates among client's present personnel, résumés on file, business contact referrals, and in the client industry.
3. Identify, investigate, and evaluate eligible candidates.
4. Eliminate unqualified candidates.
5. Recommend qualified candidates.
6. Assist in structuring employment terms.

Concepts of individual behavior, small-group behavior, and organization behavior are part of the human resources body of knowledge. So also are interviewing, testing, and measuring of skills, knowledge of government laws and regulations affecting wages and hours, working conditions, and employment practices, and knowledge of the conduct of a personnel administration function. In many of the situations utilizing human resources knowledge, a principal identifiable skill concept is a specialized and adapted data-gathering and screening process. Thus, for example, in certain top-level executive search engagements one might expect to refer to such external sources as the *Standard NYSE Stock Report*, *Over-the-Counter & Regional Exchange Stock Reports*, *Moody's Industrial Manual*, and *Dun & Bradstreet's Corporate Executive*.

The major concept groupings for human resources knowledge are these:

- *Personnel management*—Major responsibilities relating to personnel management in an organization; functions and situations requiring personnel policy; relations and data exchanges with other functions in the organization.
- *Human resources planning and control*—Planning, recruiting, developing, maintaining, utilizing and compensating human resources necessary to achieve organization objectives.
- *Employee relations*—Techniques and practices that are important in implementing human resources policies—especially in day-to-day operations.

Many of the human resources component concepts depend on current law or regulations; these are subject to rapid, radical change on relatively short notice. For example, new pension regulations by the federal government will alter the concepts underlying MAS practice in employee benefits. One should keep this in mind when reviewing the current applicability of the human resources citations in Appendix A.

Marketing

The marketing component body of knowledge covers the aggregation of functions involved in the selection and movement of goods and services from producer to consumer—marketplace needs are identified and then, after appropriate analysis and planning, procedures are implemented to meet these needs. Successful marketing requires that marketing knowledge be applied to practical problem solving. Marketing knowledge is typically applied through one or more of these four responsibilities of the marketing function:

Selection and movement of goods from producer to consumer

- Analysis of the environment (customers, potential customers, competitors, suppliers, advertising media).
- Arriving at and implementing a decision (usually relating to pricing, products, promotion, or channels of distribution).
- Evaluating decision appropriateness (performance evaluation by informational feedback such as sales).
- Continually monitoring and controlling firm activities relating to marketing (inventory levels and movement, resource allocation).

There are three major topical headings under which the marketing component body of knowledge may be grouped:

- *Marketing administration*—The nature of marketing organizational structures, line and staff functions in marketing, marketing policies and objectives, and framework for assigning responsibility and measuring performance.
- *Marketing research, planning, and control*—Development of marketing services related to organizational objectives over a future time span, development of products and services, economic analysis of marketing alternatives, planning schedules to implement new marketing programs.
- *Marketing operations*—Evaluating and sustaining effectiveness of marketing operations, including management of the sales force, product promotion, distribution and handling, and understanding government relations applying to marketing.

Management science

The management science component body of knowledge is typified by mathematical and statistical models expressed in symbolic format, applied to both repetitive and unique management analysis and control problems. The applications of these models are marked by a scientific approach to problem solving that attempts to integrate diverse elements of the problem by taking a systems point of view.

Symbolically formatted quantitative models for management problems

These diverse elements include the human, mechanical, and information resources and components of an organization, the (often conflicting) objectives of the organization, the organization's environment (including risk and uncertainty), possible alternatives, and various nonquantifiable subjective considerations. Therefore, management science applications are often found in situations with many variables, complex interrelations, uncertainty, and difficulty in measurement.

These models are essential to the MAS services rendered when applying management science knowledge but are not to be mistaken for the services themselves. Those services that most typically use management science knowledge fall broadly into three categories:

- Analysis of an existing operation to increase understanding and efficiency by revealing quantitative relationships.
- Creation “from scratch” of a system to perform specified functions.
- Establishment of benchmarks for control of operations.

Typical illustrative services might include selection of optimum sites for a network of finished goods warehouses, analysis of demographic trends and health history in an area to evaluate the need for a proposed community center, design of a system for refinery scheduling, development and installation of a wholesale grocer inventory management system using sales forecasting and probability theory for the decision-making process, and development of a system for scheduling checkout clerks in a supermarket using queuing theory and variable assumptions about service levels.

The majority of engagements in which management science is an applied body of knowledge pass, from a technical viewpoint, through these major stages:

1. Define the problem, circumstances, and objectives.
2. Develop a detailed problem description and characterize solution alternatives.
3. Define a quantitative measure of solution effectiveness.
4. Select a solution methodology (type of model).
5. Validate the methodology by deriving and testing a solution.
6. Derive an acceptable (often optimal) solution and implement it (including preparing documentation).

Among the disciplines contributing to management science are

economics, cybernetics, engineering, fluid dynamics, mathematics, statistics, and the physical and social sciences. The management science Knowledge Concepts Inventory does not detail the knowledge in these disciplines; instead, it concentrates on recognized major model types or techniques that have emerged and become recognized in management science.

The major concept classification scheme differs slightly from that used in the other six component functional and technical bodies of knowledge. The headings are—

- *Management science problem-solving frame of reference*—Nature of management science knowledge and processes, problem structuring, strategy identification, and control of solution implementation process.
- *Management science models*—The major quantitative skills, models, and techniques that are most useful in a variety of management science applications.
- *Management science application areas*—A partial list of application areas that have proven fruitful for management science in management, finance and accounting, operations, and marketing.

Knowledge of industry and the public sector

This section identifies the knowledge used in MAS practice that is related to the specialized technology, problems, terminology, and economic and legal background required to serve clients in various industries, diverse governmental programs, and the many kinds of not-for-profit institutions. Such knowledge is referred to in this section as “industry knowledge.”

*Significance
of industry
knowledge*

Industry knowledge is helpful in applying general, functional, and technical knowledge to the situation of a particular client. Familiarity with a client’s industry setting is a component of the overall competence of the MAS professional.

All bodies of knowledge related to specific industries have some concepts in common or transferable in their applicability to more than one industry. A working understanding of industry, government, and not-for-profit group characteristics includes recognition of these common concepts and also of the differences that distinguish the activities of specific clients. The MAS professional may be expected to (1) understand the common concepts and the differences between the private, government, and not-for-profit sectors of the economy and (2) be able to learn quickly the essential knowledge unique to a specific client.

*Similarities
and differences*

Several concept categories can be identified, which, if “filled in” for a particular client, constitute substantial useful industry knowledge related to that client. In question form these categories are—

1. What is the client’s competitive and regulatory environment?
2. What are the sources of the client’s revenue?
3. What is the client’s normal criterion of organizational effectiveness?
4. What is the client’s normal planning and budgeting process?
5. What is the organizational structure typical of entities similar to the client?

Client activity classification

A simple classification of activities carried out by potential client organizations is helpful in understanding the diversity of activities confronted by an MAS practitioner. All client activities are carried out under various degrees of public supervision ranging from very little regulation to direct government control. The classification given in figure 9 (page 53) illustrates the broad range of specific activity knowledge used in MAS practice.

Within the figure columns and rows, each of the boxes is a unique grouping, with common concepts valid for all its component elements. For example, less regulated businesses share certain characteristics, and these may differ from the characteristics common to not-for-profit institutions or government programs.

*Classifying
client
information*

When a specific client is considered, the characteristics applying to that client may be separated into two groups:

- *General industry bodies of knowledge*—Concepts that are applicable to other entities and therefore may be identified through that specific client’s *membership* in the major, intermediate, and specific activity categories (see figure 9) and through the degree of profit regulation and government control to which the client is subject.
- *Specific client body of knowledge*—Concepts not applicable to *any other entity*, that is, unique to that specific client and corresponding to the seven categories for private sector organizations (see pp. 54–55) or to the eight categories for public sector organizations (see pp. 56–57).

FIGURE 9—Diversity of Potential Client Activities

Degree of Profit Regulation and Government Control	Major Activity Category*	Intermediate Activity Category*	Specific Activity Category*
Less Regulated Business	<ul style="list-style-type: none"> • Agriculture • Forestry • Fishing • Mining • Manufacturing • Wholesale Trade 	<ul style="list-style-type: none"> • Food • Tobacco • Textile Mills • Lumber • Paper • Chemicals 	<ul style="list-style-type: none"> • Alkalies • Acetylene • Copper chloride • Nickel sulfate • Sulfuric acid • Nylon fibers • Antibiotics
	More Regulated Business	<ul style="list-style-type: none"> • Finance • Insurance • Transportation • Communication • Electric Services 	<ul style="list-style-type: none"> • Federal Reserve Banks • Commercial & Stock & Savings Banks • Savings & Loan Association • Personnel Credit
Not-for-Profit Organizations	<ul style="list-style-type: none"> • Education • Hospitals • Membership organizations • Churches 	<ul style="list-style-type: none"> • Elementary & secondary • College & University • Library information Centers • Correspondence Schools 	<ul style="list-style-type: none"> • Centers for documentation • Circulating libraries • Lending libraries • Book rental
	Governments	<ul style="list-style-type: none"> • Federal • State • County • Districts 	<ul style="list-style-type: none"> • Executive & General Government • Justice, public order & safety • Public finance & taxation • Human resource programs • Economic programs

* a partial list selected from the *Standard Industrial Classification Manual—1972*, Office of Management and Budget, Executive Office of the President (Washington, D.C.: U.S. Government Printing Office, 1972).

From the MAS practitioner's point of view, major differences distinguish the private sector (industry) from government and not-for-profit (public sector) organization. Figure 10 (below) focuses on some of these major differences.

FIGURE 10—Differences Affecting Industry and Public Sector Bodies of Knowledge

<u>Difference</u>	<u>Private Sector (Industry)</u>	<u>Public Sector: Government and Not-for-Profit Organizations</u>
1. Economic environment	Competitive; organization status may change rapidly over a short time interval in respect to size, management, etc.; a minimum of external regulation, except in the case of public utilities.	Monopolistic, regulated, and/or defined by law or government regulation; organization status does not change rapidly in short time intervals.
2. Variety of activities	Over four hundred SIC codes, with variety and diversity of products, services, organization size, and structure.	Equally great variety and diversity in all respects.
3. Sources of revenue	Revenue derived from recipients of goods/services provided by the organization.	Usually <i>not</i> from recipients of goods and services; i.e., legislative or constituted outside authority; or donated for specific purposes, or a return on long-term investments.
4. Criteria of organization effectiveness	Accounting profits and effective utilization of assets (a result of measures of output of organization).	Compliance with applicable law, regulation or charter (relates to source and use of budgeted inputs, sometimes related to specific purpose or objectives); also with standards of economy and effectiveness of operation.
5. Planning, budgeting, and control process	The sequence of planning, budgeting, and control is: (a) Overall goals and objectives set. (b) Sales forecast. (c) Budget prepared by managers; approved by directors. Actual outputs are compared with budgeted outputs and standard inputs for operational control.	Proposed expenditures and outputs presented to the responsible outside body. When a budget is authorized, it is expressed in terms of inputs. The actual inputs and compliance with law, regulation, or charter are compared with the budget for operational control.
6. Functional differentiation within organization	Recognized functions such as accounting, finance and marketing are all important and differentiated from each other.	Usually dominated by professionals with a significant knowledge base; functional differentiation is important but not so diverse as in private sector.

Industry knowledge—private sector

Private sector industry knowledge refers to specialized concepts required to serve the retail, communication, manufacturing, financial.

insurance, utility, and other categories of clients that operate for profit in a more or less regulated free enterprise environment. Much of this knowledge is common, or with simple adaptation can be made common, to many specific industries. Some industry concepts are relatively enduring; others may change rapidly as the structure or definition of industry categories or as the basic technologies, government regulations, and unique supply and demand situations evolve. Even though industry specializations were found to be important to the delivery of effective management advisory services, it does not appear necessary, from the perspective of this research project, to identify the unique industry knowledge associated with consulting within each specific client category.

Categories including much of the precise industry knowledge with respect to a particular private sector MAS client are as follows:

1. *Profit process*—An understanding of the major processes by which the client's industry seeks to earn profits.

2. *Market structure*—Degree of concentration and competition in the the markets in which the client participates as buyer or seller, including capital, raw materials, labor, finished goods or services, by-products, and so forth.

3. *External variables*—Major economic, political, and legal trends and problems affecting the industry's markets.

4. *Technologies and practices*—Broad outlines of technologies and management practices used by the industry and the significance of expected or anticipated changes in these technologies and practices in terms of cost and capital requirements by the client industry.

5. *Entity structure*—Organizational and capital structure common to most firms in the same industry as the client.

6. *Normal performance*—Average or "normal" financial performance parameters for a firm in the industry and of the same size as the client.

7. *Noneconomic constraints*—Legal regulations, financial reporting provisions, environmental restrictions, or other operative noneconomic constraints on client industry activities.

Industry knowledge—public sector

The absence of the profit motive, a high degree of external goal-setting and regulation, and differences in some concepts of applicable functional and technical knowledge all provide a basis for defining a broad category of public sector knowledge. Public sector (or governments and not-for-profit institutions) knowledge refers to the

knowledge required to provide MAS services to the various categories of governmental, not-for-profit and eleemosynary institutions, including—

- Federal, state, and local governments, including special purpose authorities and districts that may provide either single specific services or sponsor multiple program areas.
- Government enterprises.
- Institutions of higher learning.
- Independent school districts.
- Religious, eleemosynary, and other membership organizations.

Categories that include much of the precise knowledge with respect to a particular public sector MAS client are the following:

1. *Major purpose*—The basic function, service, or process that is the reason for the client organization's existence.

2. *Budgeting process*—The relations between the client organization and the related budgetary and/or regulatory authority, the recipients of services or products, and other external sources of power or influence affecting similar organizations.

3. *External variables*—Major economic, political, and legal trends or events that affect the origin and methodology of policy and strategic/tactical decision making in the client organization.

4. *Technologies and practices*—How the client organization's service or product is actually provided, how it reaches and affects recipients, and how the organization defines and carries out its mission.

5. *Entity structure*—Management structure and practices of public or not-for-profit sector organizations operating under the same or similar conditions as the client organization, especially with respect to information systems, operations controls and reports, and external reporting requirements.

6. *Normal performance*—The “normal” or average performance parameters for organizations similar to the client organization.

7. *Noneconomic constraints*—Laws, policies, and regulations defining the scope and form of client organization operations as well as the specific professional knowledge that dominates the client organization (if, as it usually does, such a body of professional knowledge exists) and the important applicable traditions, beliefs, normal practices, and prevailing thought trends affecting the client organization.

8. *Specialized functional and technical knowledge*—Deviations from the concepts in the seven functional and technical bodies of knowledge necessary due to the nature of programs and institutions and their environment. These deviations may be inferred from the differences noted on page 54 and will occur in all component body-of-knowledge areas, but perhaps most often in executive planning, implementation, and control, finance and accounting, and marketing.

Similarities and differences in industry and public sector organizations

The knowledge used in industry practice may be similar to that used in public sector practice. For example, a job evaluation engagement for a manufacturing organization bears close resemblance to a “position classification” study for a public agency. Budgeting in a public agency may involve orientation, approach, and constraints unlike those found in a profit-seeking organization. The marketing function (as such) does not exist in most nonprofit institutions (although a charitable organization may expend great efforts in explaining the need for its programs in relation to fund raising). There is no private sector parallel to the government agency need to deal with its own activities from the perspective of political interest. This latter requirement may explain why MAS public sector knowledge must include awareness of the public interest and the lack of confidentiality with respect to public sector organization processes and operations.

Public sector specialized functional or technical knowledge can be specified by concepts in a manner parallel to that used in Appendix A of this report. To be fully descriptive, this specification would have to be done on a major program, area-by-area basis.

Variations in functional and technical knowledge

To give some feeling for such specification, consider the public sector budgetary process. Most governments follow “line item” budgetary processes in which the budget is planned and adopted on the basis of line items (inputs) by fund and organizational unit. Improving the financial planning and management process may require the introduction of an “output oriented” or program budgeting system. In place of some of the concepts given for finance and accounting, one may designate the need for specific knowledge in such areas as these:

- Governmental budgeting and finance.
- Long-range planning and the formulation of governmental goals and objectives.
- Planning and programming, or determining the programs required to achieve goals and objectives.

- Evaluation of alternatives.
- Program cost accounting and allocation.
- Mechanics of budgetary planning, review, and adoption.
- Interaction with other common data systems (for example, payroll, purchasing, and so forth).
- Measures of performance (for example, efficiency and economy).

*Industry
knowledge*

The importance that many MAS practitioners attribute to detailed knowledge of particular industries is acknowledged. This knowledge is rapidly changing because of the large number of industries involved, the rapid emergence of new industries, and the rapidity with which engagement-related detailed knowledge may be acquired. Such knowledge is transferable between industries and engagements and is closely related to the functional and technical component bodies of knowledge. Primary emphasis should not be placed on rapidly changing detailed engagement-related knowledge of specific industries. The more constant differences and similarities between industry and the public sector and the organization and structure of specific industry knowledge should be the areas of primary emphasis.

Examination concepts

The research concerns the feasibility of developing an examination covering the MAS bodies of knowledge which would permit the AICPA, should it so desire, to use the scored responses to measure achievement of a knowledge profile designated by the AICPA for MAS accreditation.

An examination is an inquiry or investigation intended to measure the knowledge, reactions, or qualifications of an individual. As such, examinations may utilize a broad range of questions, interrogative devices, and other evidence-producing sources, and the evidence thus gathered may be utilized in numerous ways by the examiner.

A particular examination may be characterized in terms of the following concepts:

1. *Knowledge profile*—Breadth-of-knowledge base and the level of understanding (cognitive function level) with respect to each profile component.

2. *Coverage and passing performance*—How completely the examination should cover the bodies of knowledge for which testing is being conducted, and the extent to which passing performance, initially determined relative to a fixed and absolute standard of understanding, is to be affected by quality of responses by all persons taking the examination.

3. *Objective and subjective questions*—Relative proportions and proper uses of objective and subjective questions in an examination.

4. *Examination validity and reliability*—Whether the examination consistently discriminates between those who have mastered the knowledge profile and those who have not.

5. *Examination design*—Overall plan of examination to conform it to knowledge profile, scoring reference, and other AICPA-set variables or constraints; including number, coverage, and length of examination sections.

6. *Administrative requirements and controls*—Preparation and selection of examination questions, instructions to candidates, scheduling and locations, candidate eligibility, administering the examination, and scoring the responses.

Through the flexibility afforded by appropriate decisions on these concepts, the AICPA would exercise control over the usefulness of the scored examination responses.

MAS practitioner knowledge profiles

Knowledge profiles are basis of examination designs

In general terms, a knowledge profile defines specific levels of understanding in respect to the component parts of the one or more bodies of knowledge of which the profile is comprised.

In order to develop an accreditation examination, the knowledge profile which should be possessed by persons to receive accreditation must be specified. MASBOKE research indicates that there are many distinctive knowledge profiles that can be identified among MAS professionals, even after as little as three to five years of MAS or other experience. If examinations are to be used by the AICPA, it seems necessary to identify and describe broad classes of knowledge profiles so that the resulting examinations are able to relate to as many of them as possible and to all of the major ones.

Levels of cognitive functioning

Cognition is the process or condition of *knowing*. Various levels of cognition have been proposed authoritatively. One sequential ranking of cognitive functioning levels, from lowest to highest, is the following:

1. *Knowledge*—Specifics, terminology, facts; how to deal with conventions, trends and sequences, classifications and categories, criteria and methodology, universals and abstractions, principles and generalizations, theories and structures.
2. *Comprehension*—Translation, interpretation, extrapolation.
3. *Application*—Use of abstractions (ideas, rules) to transform understanding of one situation into understanding of another situation, or to predict the probable effect of a variable change on a situation at equilibrium.
4. *Analysis*—Structuring a communication so that its elements, hierarchy of ideas, relationships, and organizational principles are made explicit.
5. *Synthesis*—Putting together elements and parts to create a whole (for example, a unique communication, a plan, or a set of abstract relations).

6. *Evaluation*—Judgments about the value of materials and methods for given purposes; use of a standard of appraisal. Such judgments may be in terms of internal or external standards.⁸

Each of these cognitive functions is found at both levels of understanding⁹ of the MAS bodies of knowledge described in chapter 3. However, the lower cognitive functions are predominant in the kind of understanding designated as level 1; the higher cognitive functions in the understanding designated level 2. Thus, an examination that measures level 1 understanding would consist mostly of questions testing for knowledge and comprehension. An examination that measures level 2 understanding would also include questions testing for application, analysis, and, to some extent, synthesis and evaluation.

These two levels of understanding offer reasonable knowledge-profile proficiency level alternatives to the AICPA. Selection of level 1 would limit consideration to knowledge profiles equivalent to those that could be obtained primarily from formal education. Level 1 would exclude from knowledge profiles certain significant body-of-knowledge components not typically included in a formal education but commonly encountered in MAS practice; specifically—

- From general knowledge—
Communication and MAS practice and engagement characteristics
- All knowledge of industry and the public sector
- From knowledge of organization functions and technical disciplines—
Executive planning, implementation, and control

Selection of level 2 would include profiles typically found among MAS practitioners with three to five years of experience or its equivalent. Level 2 includes all knowledge concepts from the MAS bodies of knowledge and implies proficiency normally gained through experience. The AICPA would decide which level to use in the examination process.

Measuring body-of-knowledge mastery

In MAS practice, the bodies of knowledge as described in chapter 3 are very extensive—so extensive, in fact, that rarely will one individual master all routine operations, processing systems, and specific

⁸Benjamin S. Blume, ed., *Taxonomy of Educational Objectives, Handbook I: Cognitive Domain* (New York: David McKay Co., 1956).

⁹Level 1—Understanding of the concepts as they might typically be presented in an accredited five-year university program with a major in the body of knowledge.

Level 2—Level 1, plus understanding of the concepts and related detail in the body-of-knowledge literature that is intended for MAS professionals with three to five years of experience who are regularly applying such knowledge in MAS practice.

applications related to even one of them. An individual's MAS knowledge typically consists of concepts drawn from several of these bodies of knowledge. There is much variation from one competent MAS professional to another with respect to amount or extent of knowledge in any one area. This appears to be because an individual develops greater understanding of concepts already acquired and extends understanding to new concepts primarily through experience, which is unique in its effect on each individual practitioner.

The two levels of understanding defined above do not afford a basis for distinguishing how much of a body of knowledge is included in the MAS professional's understanding of that body of knowledge. After one level of understanding is selected for incorporation into the examination itself, there remains a problem of expressing in the knowledge profile *how many* concepts from a body of knowledge should be understood by the candidate (and should be included in the examination) at that selected level.

*“Considerable”
and “extensive”
mastery designations*

Two designations are used to indicate how much of a body of knowledge is understood. These are—

- *Considerable*—Understanding of a smaller number of concepts within a body of knowledge, concentrated in the purpose, organization, and structure of organizational functions and major planning and control systems related to the body of knowledge.
- *Extensive*—Understanding of a greater number of concepts including those in “considerable” understanding, and *also* those concepts within a body of knowledge concerning operations, processing systems, and applications related to the body of knowledge.

The location of the line of demarcation between these designations is a policy decision for the AICPA. These designations will be employed in the remainder of the report in discussing knowledge profiles and possible examination content.

Alternative knowledge profiles

This report identifies a range of prototype knowledge profiles in which the extent and proficiency of knowledge are the primary distinguishing criteria. These profiles are presented in figure 11 (page 63). The profiles do not exhaust all possibilities but are intended to accommodate much of this diversity of knowledge. Each profile is found among competent MAS practitioners. The profiles vary in the breadth of understanding in the functional and technical bodies of

knowledge and are listed below in order of least to greatest degree of specialization in functional and technical knowledge. All profiles presume “extensive” familiarity with (1) general knowledge and (2) industry and public sector knowledge as defined in this report.

FIGURE 11—MAS Practitioner Knowledge Profile Descriptions

<u>MAS Practitioner Knowledge Profile</u>	<u>General Knowledge and Industry and Public Sector Knowledge</u>	<u>Functional and Technical Component Bodies of Knowledge</u>
A	Extensive	<i>Considerable</i> in candidate's choice of material from <i>two or more</i> functional and technical component bodies of knowledge.
B	Extensive	<i>Extensive</i> in any <i>one</i> functional and technical component body of knowledge and <i>considerable</i> in candidate's choice of material from <i>one or more</i> of the six other functional and technical bodies of knowledge.
C	Extensive	<i>Extensive</i> in any <i>one</i> functional and technical component body of knowledge; <i>considerable</i> in any <i>one</i> other functional and technical body of knowledge.
D	Extensive	<i>Extensive</i> in any <i>one</i> functional and technical component body of knowledge.

Any, several, or all of these profiles may be accepted by policy-makers as a basis for examination design. The AICPA should decide among these profiles on the basis of whether mastery of one or several component functional and technical bodies of knowledge would be necessary for MAS accreditation, and whether “extensive” or “considerable” knowledge is necessary therein.

Profile descriptions

Profile A applies to practitioners with “considerable” knowledge selected from at least two functional and technical bodies of knowledge. This profile is common among practitioners who also provide other professional accounting services to their clients.

Profile B applies to practitioners with “extensive” knowledge from one functional and technical component body of knowledge and “considerable” knowledge selected from one or more of the remaining six. This profile is common among senior experienced full-time MAS practitioners as well as those who also provide other professional accounting services to their clients.

Profile C applies to practitioners with knowledge from at least two functional and technical component bodies of knowledge with “extensive” knowledge in at least one of them. It differs from profile B in that the designation “considerable” applies to knowledge found in only one functional and technical body of knowledge, *not* to composite knowledge selected from one or more of the remaining six. This profile is common among senior experienced full-time MAS practitioners as well as among those who also provide other professional accounting services to their clients.

Profile D applies to practitioners with “extensive” knowledge in one functional and technical body of knowledge. This profile occurs among senior experienced full-time MAS practitioners and perhaps others.

Each knowledge profile may exclude some practitioners. For example, profiles A, B, and C exclude practitioners familiar with only one component body of functional and technical knowledge. All four profiles exclude practitioners without “extensive” general, industry, and public sector knowledge as described in chapter 3. There is also some overlap. Thus, anyone with profile D knowledge or profile C knowledge also might meet the requirements of any other profile.

Examination coverage and passing performance

Balanced examination coverage

An examination’s coverage may be primarily limited to only those sections of a body of knowledge that are least likely to be possessed by all candidates. Such an examination’s scoring exhibits the highest discriminatory power among various levels of understanding by the candidates. Alternatively, examination coverage may extend to as many concepts included in the related body of knowledge as possible. Scoring of a broad-coverage examination provides an inventory of the candidates’ understanding. The researchers recommend that the MAS bodies of knowledge examination be structured to reflect a balanced coverage across all concepts in the related bodies of knowledge.

Consistent passing performance

When interpreting examination scores, the examiners may elect to pass a certain percentage of candidates (for example, the top x percent) or to pass all candidates whose scores reflect acceptable understanding of the related bodies of knowledge. The researchers' recommendation is that the AICPA establish an acceptable level of mastery and understanding and a related passing score (or scores by examination parts) to be applied to all candidates each time the examination is given.¹⁰

Objective and subjective questions

Examination questions may be broadly categorized as either *objective* or *subjective*. The distinguishing feature between them is the degree of personal judgment required in scoring the examination results. Purely subjective questions, such as essay questions, require expert judgment in scoring.

Objective examination questions include true-false, multiple-choice, matching, ranking, and completion. Of these, multiple-choice questions (which provide a list of alternative responses to a stem consisting of a question or incomplete statement) are preferred by most test developers.¹¹ They are easily scored and they allow testing for cognitive processes at all the levels described on pages 60–61, including the higher ones. Objective questions may be most easily written for the lower levels of cognitive processing, such as knowledge of specifics, terminology, and conventions. It is more difficult (but not impossible) to write objective questions that test the higher levels of cognitive processing. There is latitude in objective question development and no limitation (other than the question writer's skill) to the testing of factual concepts.

Objective questions

Other types of objective questions are distinctly inferior. Matching questions are variants of multiple-choice questions. Ranking questions require serial ordering of several items on some hierarchical basis and are amenable to testing for knowledge of sequences and trends. They are extremely difficult to score. True-false questions are compact but allow little discretion in item formulation, among other disadvantages. Completion questions are less objective and more

¹⁰These issues and others related to norm and criterion referenced scoring are discussed in more detail in Robert L. Ebel, *Essentials of Educational Measurement* (Englewood Cliffs, N.J.: Prentice-Hall, 1972), pp. 83-86.

¹¹An example of such a question (from the May 1975 Uniform CPA Examination) is

Which of the following *best* identifies the reason for using probabilities in capital-budgeting decisions?

- a. Uncertainty.
- b. Cost of capital.
- c. Time-value of money.
- d. Projects with unequal lives.

time-consuming to score than other “objective” modes and have little to recommend them.

Subjective questions

Subjective examination questions require the candidate to compose answers to specific questions. They are most appropriate in testing for the higher levels of cognitive processing—especially analysis, synthesis, and evaluation. These higher levels of cognitive processing are associated with the understanding represented by level 2 knowledge. Compared with objective examinations, few questions can be presented. Experts are required to score the responses. Since even experts may differ, scoring reliability is lower. An effective subjective examination should contain numerous short-answer questions as opposed to a few long-answer questions; the questions should precisely define the nature of the desired response; and the time required for responding should be carefully considered.

Subjective questions may be administered orally or in writing. An especially suitable type of question is the controlled simulation, which requires the candidate to review a carefully selected set of problem situations, analyze conflicting data, establish priorities, produce plans and communications, apply basic knowledge, and judge the value of alternatives and data. Such questions can come close in their higher-level cognitive process requirements to the real world situation in which the candidate does (or expects to) operate.

Writing and scoring questions

The potential benefits of both objective and subjective questions are lost if the questions are imprecisely written or scored. Poorly written objective questions tend to confuse candidates and prevent them from displaying their full mastery of a knowledge profile. Poorly written subjective questions appear unrealistic and cannot be scored, even by experts.

Those directly responsible for examination preparation and scoring should determine to what extent subjective items are necessary on the examination; however, they should remember the scoring and consistency disadvantages, which do not occur when objective items are used (even at the same levels of cognitive functioning).

The researchers conclude that the selection of objective and subjective questions to test for various levels of cognitive processing and for various abilities, such as oral and written communication, should be left to the examination writers, whose professional skills can be relied upon to produce a highly acceptable examination.

Validity and reliability of examinations

The *validity* of a given examination depends on whether it is successful in differentiating among candidates in terms of the examination objectives. Validity presupposes that there is an underlying range of breadth and depth of understanding within the profile and that individual performance can be correctly measured in terms of the range. Effective differentiation is difficult to measure on an *ex post facto* basis (for example, by follow-up of a sample of candidates over a period of months or years) and even more difficult to anticipate.

MAS practitioners should contribute questions

The pool of questions from which the examination is assembled should be contributed by MAS practitioners. The completed pre-examination draft should be critically reviewed in detail by MAS practitioners who did not contribute to the pool of questions. In addition, the validity concept cannot be applied solely to the examination part of the accreditation process. Thus, the AICPA should seek to demonstrate that those individuals who satisfy the various accrediting criteria (including the examination) exhibit professional characteristics, including independence, knowledge, and service effectiveness, to a significantly greater degree than those who are not accredited.

Consistency of examination results

Reliability refers to consistency of measurement. A reliable examination will produce consistent results, for example, if administered to the same individual at two different times, if scored by different scorers, or if scored by one scorer at different times.

An examination that measures inconsistently (low reliability) cannot be valid for any purpose. Conversely, a highly reliable instrument may have low validity for its intended purpose. The concept of validity is meaningful only in respect to the measurement for which it is intended. An examination with demonstrated validity in respect to one purpose may have a different validity if used for a different purpose.

By AICPA policy, examination validity and reliability should be targeted at relatively high levels, as is the case in most professional accrediting programs. The ongoing examination process should include controls to appraise validity and reliability and to maintain them at acceptable levels.

Examination design considerations

This report has already discussed examination concepts related to knowledge profiles, coverage and passing performance, objective and subjective questions, and examination validity and reliability. These concepts afford a basis for presenting acceptable examination designs.

For illustrative purposes, each examination design will be presented in a written format extending over twelve to fourteen hours and consisting of questions (or groups of questions) designed to require an average of twenty to thirty minutes each to answer, with each question covering a different set of related body-of-knowledge concepts. These questions could consist of either objective test items or a single subjective question. The examination designs presented in this report would require a candidate to answer a total of thirty-two to thirty-six such questions.

Allowance for full display of candidate's knowledge

The policy issue in examination design is how much choice among examination questions should be allowed the candidate in order that the candidate's knowledge can be displayed in the answers and recognized in the scoring.

To illustrate this issue in abstract terms, let a hypothetical body of knowledge have three equally important concepts: *F*, *G*, and *H*. Let the practitioner knowledge profile be knowledge of any two concepts. Thus, the three possible specific knowledge profiles among practitioners based on this hypothetical body of knowledge are (*F,G*), (*F,H*), and (*G,H*). The policy-makers have these examination choices:

1. To write questions for each of the three concepts (*F,G,H*) and require each candidate to answer the questions for any *two* concepts.
2. To write questions for only *one* profile (such as *F,G*) and require all candidates to answer all these questions.

The first choice is the fairest in that it will recognize any possible candidate knowledge profile. The second choice is not flexible in recognizing diverse candidate knowledge. Examination design based on the first choice may reflect diverse knowledge profiles such as exist in MAS by allowing candidate choice within an examination based on a single body of knowledge.

Candidate choice of body of knowledge

The candidate might also be allowed to choose the body of knowledge in which he will be examined. To illustrate how this choice would work, let there be two bodies of knowledge—"Red" and "Blue"—with equally important major component concepts as follows:

Red Body
of Knowledge

Concepts: F, G, H

Blue Body
of Knowledge

K, L, M

The practitioner knowledge profile draws upon two concepts from the same body of knowledge. The fairest examination design would be one that allows the candidate to answer questions on any two concepts from any one body of knowledge:

Red
F, G or F, H or G, H

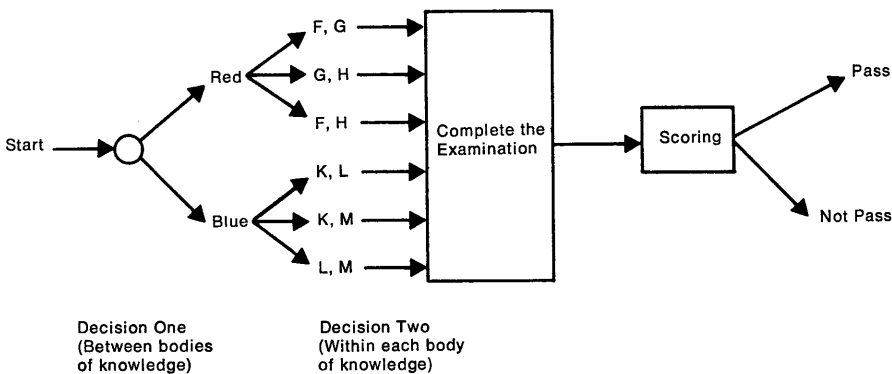
Blue
K, L or K, M or L, M

The candidate now has two decisions with respect to the examination:

Decision One: To select the body of knowledge (Red or Blue).

Decision Two: To select two of the three concepts within the Decision One body of knowledge.

In decision tree representation—



The MAS bodies of knowledge as presented in chapter 3 differ in the degree of candidate choice necessary to reflect, within a body of knowledge, diversity of knowledge profiles. Since general knowledge and knowledge of industry and the public sector were found to be extensively understood by most MAS practitioners, a lesser degree of candidate choice among such items should be necessary in an examination covering them.

Uniform structure of functional and technical bodies of knowledge

The concepts in each of the seven component bodies of knowledge relating to organization functions and technical disciplines are

presented in terms as near as possible to a similar four-section organization:

1. The purpose, organization, and structure of functions related to the body of knowledge (for example, finance, personnel, marketing).
2. The major planning and control systems included in the body of knowledge.
3. The routine operations and processing systems included in the body of knowledge.
4. Specific applications necessary to complete the description of that body of knowledge (not necessary for all bodies of knowledge).

Sections 1 and 2 appear to be understood about equally by practitioners with either “extensive” or “considerable” familiarity. Little if any degree of candidate choice appears necessary for these parts. However, understanding is greater in sections 3 and 4 among practitioners appearing to possess “extensive” familiarity than among practitioners appearing to possess “considerable” familiarity.

These differences in degree of candidate choice can be reflected in one examination divided into two major parts, as follows:

Part I—General knowledge and knowledge of industry and the public sector.

Part II—Knowledge of organization functions and technical disciplines.

Each examination design in Part II would have two segments:

Theory—The purpose, organization, and structure of functions related to these bodies of knowledge and the major planning and control systems included in these component bodies of knowledge (numbers 1 and 2 above).

Practice—The routine operations, processing systems, and specific applications included in these component bodies of knowledge (numbers 3 and 4 above).

Testing for “extensive” or “considerable” understanding

One of the examination designs in the following section gives the candidate a choice whether to demonstrate mastery of the “extensive” or the “considerable” knowledge profile in selected functional and technical component bodies of knowledge. One way to allow the

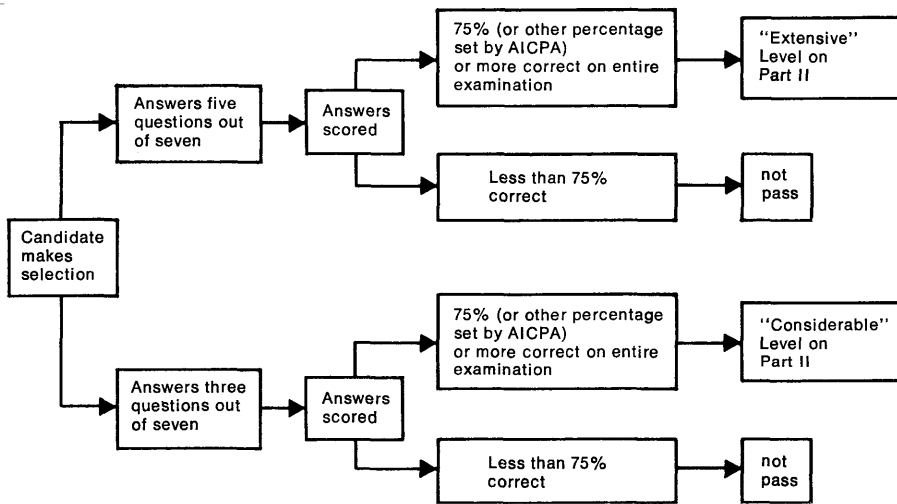
choice between “extensive” and “considerable” would be to develop, for example, twelve equally important examination question groups, as distributed (illustratively) in figure 12, below.

FIGURE 12—Optional Questions

Concept Area of Component Functional & Technical Body of Knowledge	Number of Questions	Instructions to Candidate Taking “Extensive” Examination	Instructions to Candidate Taking “Considerable” Examination
Theory	5	Answer all questions	Answer all questions
Practice	7	Answer any five questions	Answer any three questions

The examination and scoring process could proceed as indicated in the figure 13 flow chart (below) applying to the Part II (practice) segment of any examination. Note that both “extensive” and “considerable” levels permit a degree of candidate choice and *both require the same minimum score for credit*. Thus, a candidate cannot attempt, say, five question groups in the practice section, fail to achieve “extensive” credit, yet receive “considerable” credit. Candidates attempting “extensive” credit would, of course, be allowed additional time in which to complete the larger number of question groups.

FIGURE 13—Scoring Optional Questions



Alternative examination designs

The following examination designs, listed in order of least to greatest degree of functional and technical knowledge specialization, are intended to correspond to the practitioner knowledge profiles of this chapter and to reflect a range of candidate choice among questions. Depth of concept understanding within bodies of knowledge is an external variable in these designs (established by the AICPA at either level 1 or level 2). In every design, the candidate would have to score 75 percent (or other percentage set by the AICPA) to pass; Parts I and II would be scored separately.

Examination Design A

Corresponds to Knowledge Profile A: “Extensive” in general knowledge and knowledge of industry and the public sector; “considerable” in candidate’s choice of material from two or more functional and technical component bodies of knowledge.

Part I: General Knowledge and Knowledge of Industry and the Public Sector

Duration: Six hours

The candidate would be required to answer—

- Twelve questions based on general knowledge.
- Six questions based on knowledge of industry and the public sector.

Part II: Knowledge of Organizational Functions and Technical Disciplines

Duration: Seven hours

The candidate would be required to answer—

Theory

Ten out of thirty-five questions consisting of five questions from each of the seven component bodies of knowledge. The ten questions answered could be selected from as few as two up to all seven component bodies of knowledge.

Examination Design A (*continued*)*Practice*

Six out of forty-nine questions. These questions would be divided among two or more component bodies of knowledge. No more than three questions could be drawn from any one such body of knowledge. The forty-nine questions would consist of seven questions from each of the seven component bodies of knowledge.

Examination Design B

Corresponds to Knowledge Profile B: “Extensive” in general knowledge and knowledge of industry and the public sector; “extensive” in any one functional and technical body of knowledge; and “considerable” in candidate’s choice of material from the six others.

Part I: General Knowledge and Knowledge of Industry and the Public Sector

Duration: Six hours

The candidate would be required to answer—

- Twelve questions based on general knowledge.
- Six questions based on knowledge of industry and the public sector.

Part II: Knowledge of Organizational Functions and Technical Disciplines

Duration: Eight hours

The candidate would be required to answer—

Theory

All five questions from any one component body of knowledge and any five of the remaining thirty questions for a total of ten questions. The thirty-five questions would consist of five questions from each of the component bodies of knowledge.

Practice

Five out of the seven questions from the selected component body of knowledge and any three of the remaining forty-two questions. The forty-nine questions would consist of seven questions from each of the component bodies of knowledge.

Examination Design C

Corresponds to Knowledge Profile C: “Extensive” in general knowledge and knowledge of industry and the public sector; “extensive” in any one functional and technical body of knowledge and “considerable” in any one other.

Part I: General Knowledge and Knowledge of Industry and the Public Sector

Duration: Six hours

The candidate would be required to answer—

- Twelve questions based on general knowledge.
- Six questions based on knowledge of industry and the public sector.

Part II: Knowledge of Organizational Functions and Technical Disciplines

Duration: Eight hours

The candidate would be required to answer—

Theory

All five questions from each of two component bodies of knowledge for a total of ten questions. The thirty-five questions provided would consist of five from each of the component bodies of knowledge.

Practice

Five out of the seven questions from one of the selected component bodies of knowledge and three out of the seven questions from the other selected component body of knowledge. The forty-nine questions provided would consist of seven from each of the component bodies of knowledge.

Examination Design D

Corresponds to Knowledge Profile D: “Extensive” in general knowledge, knowledge of industry and the public sector, and in any one functional and technical component body of knowledge.

Examination Design D (*continued*)**Part I: General Knowledge and Knowledge of Industry and the Public Sector**

Duration: Six hours

The candidate would be required to answer—

- Twelve questions based on general knowledge.
- Six questions based on knowledge of industry and the public sector.

Part II: Knowledge of Organizational Functions and Technical Disciplines

Duration: Six hours

The candidate would be required to answer—

Theory

All seven questions from any one component body of knowledge. The forty-nine questions provided would consist of seven from each of the component bodies of knowledge.

Practice

Seven out of nine questions from the same component body of knowledge. The sixty-three questions provided would consist of nine from each component body of knowledge.

Summary of the proposed examination designs

In summary, all designs require the candidate to answer twelve questions based on general knowledge and six questions based on knowledge of industry and the public sector. In respect to functional and technical knowledge,

Design A—requires candidate to answer any ten out of thirty-five theory questions and any six out of forty-nine practice questions.

Design B—requires candidate to answer all five theory questions for any one body of knowledge and any five other theory questions, plus any five out of seven practice questions for the selected body of knowledge and any three other practice questions.

Design C—requires candidates to answer all five theory questions in each of two selected bodies of knowledge, and any five out of seven practice questions for one body of knowledge and any three out of seven practice questions for the other body of knowledge.

Design D—requires candidate to answer all seven theory questions and seven out of nine practice questions from any one body of knowledge. The number of questions is greater to assure full coverage at the “extensive” level of the one body of knowledge tested. In a sense, then, this design is more rigorous than designs B and C in its application of the “extensive” concept of understanding.

Advantages These examination designs offer the following advantages over other designs:

1. They are simple to understand, administer, and score.
2. It is not necessary to develop multiple examinations corresponding to different profiles; at most, one examination per body of knowledge is required.
3. Candidate choice of examination materials is preserved within the component functional and technical body of knowledge examinations.
4. Only one passing grade in each examination section is needed even if the same examination is used at the “extensive” and “considerable” levels.

Disadvantages As disadvantages, the following factors must be considered:

1. There is a large degree of candidate choice among questions. This degree of choice is not unprecedented in professional examinations, but it is unusual. Proper instruction to the candidate would enable quick selection of the best questions to attempt to answer.
2. A very large number of questions for Part II (from eighty-four to one hundred twelve) must be written, requiring substantial resource input to the examination preparation effort. The large number of questions is a consequence of the very extensive bodies of knowledge, not all of which are necessary for any one candidate’s competence, which must be covered by the examination.

The AICPA policy decision to select one, several, or all of these examination designs must be taken in light of the complexity and scope of examination controls and, especially, the preparation effort.

Administrative requirements and controls

The examination designs do pose difficult (but manageable) administrative requirements. This report will indicate generally what these requirements would be in three areas:

1. Preparing examination in terms of total effort and complexity.
2. Choices to be made by candidate in taking the examination.
3. Scoring and interpreting examination results.

Each control requirement area will be discussed individually as it applies to all four proposed examination designs.

Examination preparation

The essential steps in examination preparation are summarized in figure 14 (page 79), in which an asterisk denotes steps that may differ significantly with respect to effort and complexity among the four examination designs.

The proposed examination designs (denoted A, B, C, and D) are ranked in terms of preparation effort and complexity (first in the list is of least effort and complexity; last is of greatest) for these four steps:

1. Select Specific Topics to Be Covered
 - Designs A, B, and C all have the same number of questions—thirty-five in theory and forty-nine in practice.
 - Design D requires forty-nine theory questions and sixty-three practice questions and has a greater topic selection requirement.
2. Accumulate a Pool of Examination Questions
 - Designs A, B, and C have the same number of questions required by each design; thus, these three should require the same size pool of questions.
 - Because design D requires more questions than design A, B, or C, a larger pool of questions is also required.
3. Prepare Literature Describing Examination and Application Forms
 - Design D is the simplest design to describe.
 - There are few differences between designs A, B, and C in respect to this step.

4. Select Items to Appear on the Examination

- Designs A, B, and C have the same structure and number of questions; thus, the physical selection requirement should be the same.
- Design D requires more questions and presents a greater question selection requirement.

Designs A and B present a unique preparation and selection problem arising out of the choices allowed candidates in those designs between questions in different knowledge areas.

Candidate choices among equivalent questions

All the designs have in common that some degree of candidate choice among questions is permitted. The function of this choice, as explained earlier, is to allow the examination to recognize the many specific, acceptable, MAS practitioner knowledge profiles found among the examination candidates. In order for this candidate choice to serve its intended purpose, the alternative questions must be equivalent in degree of difficulty, time required for solution, and point value. Since the alternative questions may be selected by the candidate from different bodies of knowledge, this condition of equivalency may not be easy to achieve. It poses a major administrative and control requirement that may be unique among professional examinations (which are usually limited to testing only one body of knowledge).

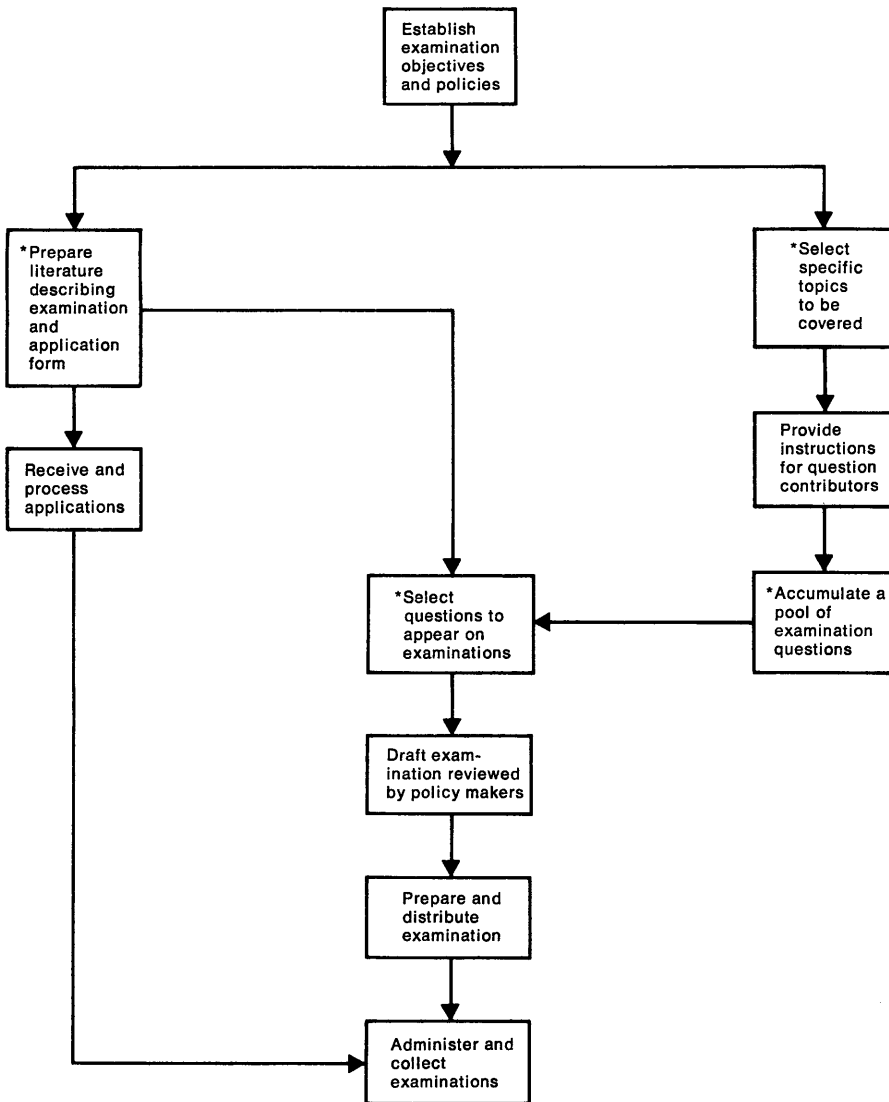
The examination designs that allow choice among questions from *different* bodies of knowledge present more problems in controlling the relative difficulty and the solution time required than do those allowing only choice among questions *within* a body of knowledge. Thus, designs A and B present the greatest difficulty because they allow a candidate to choose questions in Part II from different bodies of knowledge. Designs C and D allow only choices *within* a body of knowledge, which are much easier to control.

There are measures the AICPA can adopt to improve the likelihood of achieving equivalency among questions; however, total assurance that such equivalency exists is not possible.

Expert review of questions

If design A or B is selected, Part II of the draft examination must be reviewed by a panel of individuals who, collectively, have high degrees of proficiency in all of the seven functional and technical bodies of knowledge. The purpose of the review would be to determine that all questions based on different bodies of knowledge require levels of understanding comparable to level 2 as stated on page 36 (that is, that

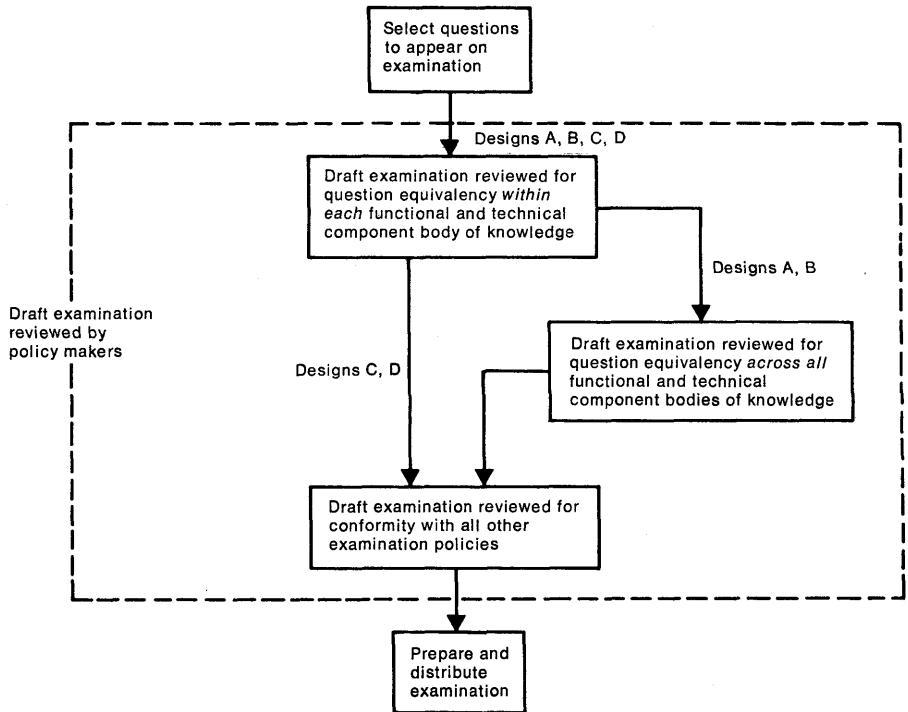
FIGURE 14—Examination Administration Process



The asterisked steps are:
 1. Select specific topics to be covered.
 2. Accumulate a pool of examination questions.
 3. Prepare literature describing examination and application forms.
 4. Select questions to appear on examination.

the marketing questions are not at a level of understanding different from the operations questions).

If design C or D is selected, review by such a panel of experts should be helpful, but not as necessary. For all four designs, a review is necessary to determine that questions within each body of knowledge are equivalent. Figure 15 (page 80) expresses the review process for each examination design.

FIGURE 15—Examination Review Process

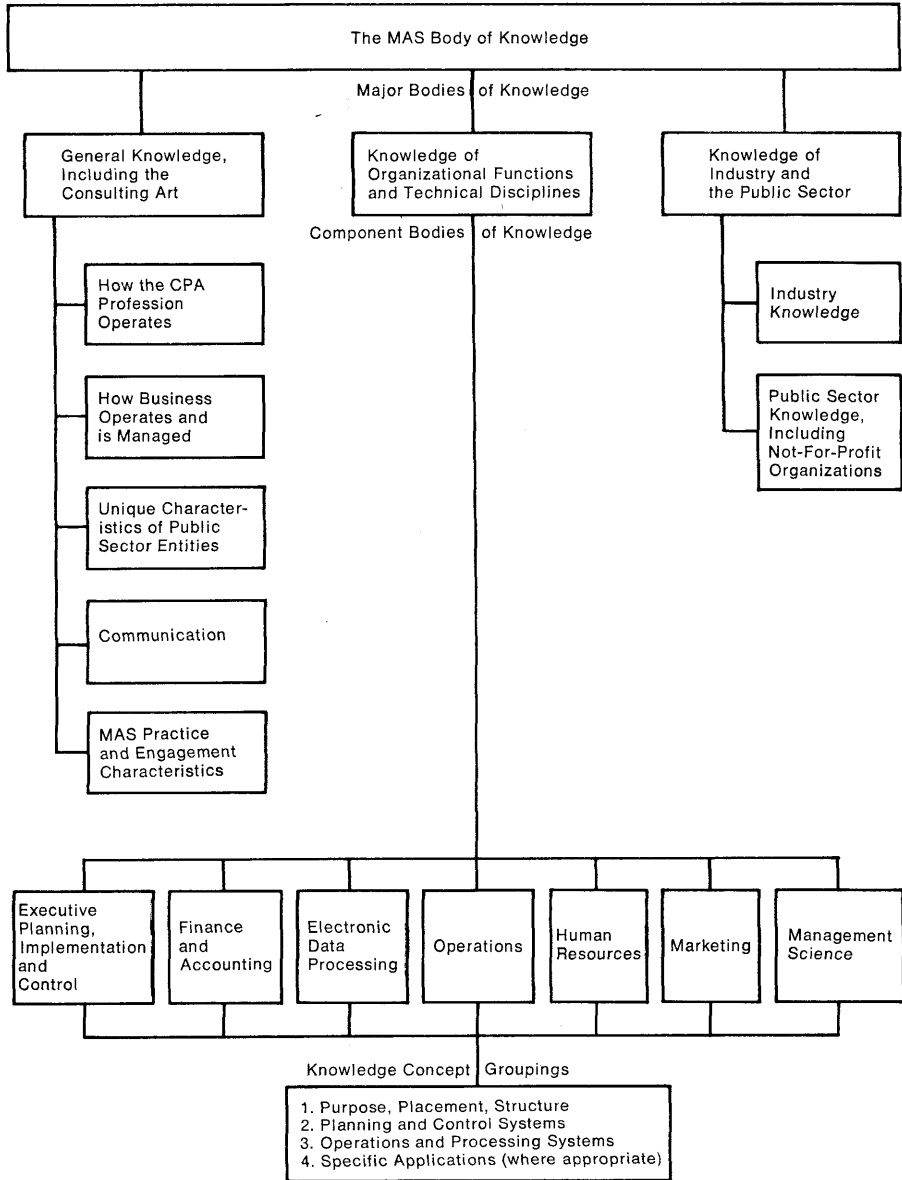
Scoring and interpreting results

Scoring of objective examination responses can be done by hand or by computer and, in either case, requires little special skill. Scoring of subjective questions responses requires advanced knowledge proficiency and is not as consistent as objective questions responses. It is assumed that each examination design would have the same objective-subjective question "mix." To the extent that the candidate is allowed options between and within bodies-of-knowledge examination parts, and to the extent that subjective questions are included, the overall scoring and interpretation operation becomes more complex. If all other things are equal, scoring and interpretation are less complex when candidate choice is reduced and subjective questions are reduced or eliminated.

Only the degree of candidate choice *between* (not within) functional and technical component bodies of knowledge is incorporated into this ranking of examination designs according to expected difficulty of scoring and interpretation of examination results. Designs C and D are expected to be least difficult. Design B is more difficult than designs C or D, and design A is expected to be considerably more difficult than designs B, C, or D.

Appendixes

Figure A



Knowledge concepts inventories

General knowledge

(Short explanations and references are representative and not exhaustive)

Summary Descriptions	Level 1 References	Level 2 References
<p>1. <i>How the CPA Profession Operates</i>—The CPA profession is a major part of the frame of reference in which MAS practitioners operate. CPA firms deliver a range of services of which MAS is a part. This range of services is influenced by the history of the CPA profession, its major activities, and pertinent regulatory bodies. This area does not include technical knowledge of auditing or tax procedures or how to operate an accounting practice.</p>		
<p>a. <i>Major Characteristics of the CPA Profession</i>—The CPA profession's attributes, functions, services responsibilities, policies, and ethics.</p>		
<p>(1) <i>Functions and services</i>—Auditing, tax, accounting, MAS services and their history.</p>	<p>"A Description of the Professional Practice of Certified Public Accountants." Statements in Quotes, <i>The Journal of Accountancy</i>, Dec. 1966, p. 61.</p>	<p><i>The Rise of the Accounting Profession</i>, Carey (AICPA, 1970). Vol. 1, Chs. 1,2,11; Vol. 2, Chs. 7,8,9,16,18.</p>
<p>(2) <i>Legal liability</i>—Special legal obligations and duties of the CPA as auditor.</p>	<p><i>Auditing: Principles & Procedures</i>, Holmes & Overmyer (Irwin, 1971), Ch. 3.</p>	<p><i>SEC Accounting Practice and Procedure</i>, 3d ed., Rappaport (Ronald, 1972). Chs. 26,27,28.</p>
<p>(3) <i>CPA profession ethics</i>—Due care, independence, competence, and other matters of ethical concern.</p>	<p><i>AICPA Professional Standards: Ethics, Bylaws</i> (as of Sept. 1, 1974) (AICPA, 1974), Entire text.</p>	<p>Same citation as level 1.</p>
<p>b. <i>CPA Profession Policy Making Processes</i>—The MAS professional should understand how issues are considered and resolved in the CPA profession.</p>		
<p>(1) <i>State societies and AICPA</i>—Policy formation, ethics enforcement, information services.</p>	<p>No citation at level 1.</p>	<p><i>The Accounting Profession</i>, Buckley & Buckley (Melville, 1974).</p>

Summary Descriptions	Level 1 References	Level 2 References
(2) <i>Public (government) agencies</i> —State accounting boards, SEC, FTC, and others and how they affect accounting practices.	No citation at level 1.	<i>The Accounting Profession</i> , Buckley & Buckley (Melville: 1974).
c. <i>MAS Role and Standards in CPA Practice</i> —AICPA statements in respect to operating an MAS practice and the standards by which the practice should be conducted. These standards apply to the MAS practitioner himself, to specific engagements, and to the MAS practice as a whole—all within the CPA profession context.		
(1) <i>Role of management services in the CPA firm</i> —Relation of MAS to other CPA firm services, ability and need to render management services, all as determinants of role and scope of MAS appropriate to a particular firm.	<i>Management Services by Accounting Firms</i> , Arnstein (Ronald, 1967), Ch. 1.	<i>The Accounting Profession: Where Is It Headed?</i> Carey (AICPA, 1962), Ch. 6.
(2) <i>MAS practice standards</i> —Personal characteristics, competence, due care, client benefit, understanding with client, planning supervision and control, sufficient relevant data, communication of engagement results to client.	No citation at level 1.	<i>Statements on Management Advisory Services</i> , MAS Executive Committee (AICPA, 1974). Ch. 1.
2. <i>How Business Operates and Is Managed</i> —The operation and management of organizations and organization functions such as marketing, personnel, finance, accounting, and operations; related areas such as economics, business law, and environmental factors. These concepts are included to the extent they would be found in the core of a better MBA program accredited by the American Association of Collegiate Schools of Business (AACSB) (this same knowledge may also be available from other sources, including AACSB-accredited BBA programs).		This section—How Business Operates and Is Managed—is defined as consisting of concepts included in an MBA core. Thus, there are no level 2 references.
a. <i>Management (Theory and Practice)</i> —The basic responsibilities and processes of management; the essential principles of management; the basic issues confronted in a managerial context.		
(1) <i>Managerial responsibility descriptions</i> —In the major functional and program areas of business.	<i>Principles of Management: An Analysis of Managerial Functions</i> , 5th ed., Koontz & O'Donnell (McGraw-Hill, 1972). Chs. 1,2,3,4.	
(2) <i>Principles of management</i> —Management by exception, span of control, defining responsibility commensurate with authority, operating according to a plan, etc.	<i>Organization Behavior and the Practice of Management</i> , Hampton (Scott Foresman, 1973). Chs. 3,4,6,7.	
(3) <i>Practical issues</i> —Decentralization, delegation of authority, employee participation and morale, technology change, redefining objectives, etc.	<i>The Arts of Top Management</i> , Mann (McGraw-Hill, 1971). Chs. 2,6,8,9,11,12.	
(4) <i>Production</i> —Use of management and engineering principles in operation and control of manufacturing, processing, and production systems.	<i>Production-Inventory Systems</i> , Buffa & Taubert (Irwin, 1972). Chs. 1-3.	
b. <i>Systems</i> —Use of systems analysis and terminology to describe general organizational functions.		

Summary Descriptions	Level 1 References	Level 2 References
(1) <i>Theory and terminology</i> —Requisite variety, control; systems classification and common elements (e.g., open vs. closed systems; feedback), etc.	<i>Information Systems: Theory and Practice</i> , Burch & Strater (Hamilton, 1974). Chs. 1-4.	
(2) <i>Systems description of organization functions</i> —Emphasis on effects of information transfer and systems interaction and control.	<i>Systems Analysis</i> , Daniels & Yeates (SRA, 1971). Chs. 1,7,8,10-13.	
c. <i>Finance and Accounting</i> —Financing forms for private and public sector organizations, role of the finance concepts and uses of accounting and financial information in business.		
(1) <i>Finance function form and responsibilities</i> —Planning and control, liquid assets management, availability of capital as required to achieve organization objectives.	<i>Financial Management and Policy</i> , 3d ed., Van Horne (Prentice-Hall, 1974). Chs. 4-8,16-19,20-25.	
(2) <i>Financing forms for private and public sector organizations</i> —Equity and long- and short-term debt; taxing authority; special problems of partnerships and proprietorships in raising and maintaining capital.	<i>Financial Management and Policy</i> , 3d ed., Van Horne (Prentice-Hall, 1974). Chs. 9-15.	
(3) <i>Basic accounting principles</i> —The major accounting concepts such as period matching of income and expense; uses and interpretation of accounting statements; role of accounting in management information systems, etc.	<i>Intermediate Accounting</i> , 3d ed., Meigs, Mosich, Johnson & Keller (McGraw-Hill, 1974). Entire text.	
(4) <i>Basic managerial accounting</i> —Concepts of budgeting standard costs, responsibility reporting, variance analysis, cost-volume profit analysis, and cost reporting and control.	<i>Managerial Accounting</i> , 3d ed., Moore & Jaedicke (South-Western, 1972). Chs. 9-15.	
d. <i>Computers</i> —The significance of computers in business and government and the basic guidelines for use of computers by management.		
(1) <i>Elementary computer systems skills</i> —Use of timesharing facilities; ability to flowchart simple calculations, use simple computer software, and write short user-oriented language programs.	<i>Information Systems: Technology, Economics, Applications</i> , Mader & Hagin (SRA, 1974). Chs. 1-14.	
(2) <i>Capabilities and characteristics of a simple computer system</i> —Input and output media, memory (internal and external types), and central processing unit; business data processing, its major applications.	<i>Introduction to the Computer</i> , Fuori (Prentice-Hall, 1973). Parts I, II, III.	
e. <i>Marketing</i> —Selling and distribution functions in business, including marketing planning and research, selling, advertising, and administration.		
(1) <i>Marketing function description</i> —Organization, major responsibilities, planning, and control.	<i>Marketing Management: Analysis, Planning and Control</i> , 2d ed., Kotler (Prentice-Hall, 1972). Chs. 1-6, 9, 20-24.	

Summary Descriptions	Level 1 References	Level 2 References
(2) <i>Major marketing decisions</i> —Selection of distribution channels, market identification, brand image; product-line control, advertising policies, use of credit as a marketing tool.	<i>Marketing Management: Analysis, Planning and Control</i> , 2d ed., Kotler (Prentice-Hall, 1972). Chs. 12–19.	
f. <i>Personnel</i> —Assurance of adequate human resources to carry out organization objectives; evaluating organization policies for compatibility with sound personnel practice.		
(1) <i>Personnel function description</i> —Organization, major responsibilities, planning and control.	<i>Personnel Management</i> , Jucius (Irwin, 1971), Chs. 1,5,8,9,25.	
(2) <i>Major personnel decisions</i> —Hiring, training, job evaluation, salary adjustment, labor relations, basic concepts and objectives for productivity improvement.	<i>Contemporary Problems in Personnel: Readings for the Seventies</i> , Hamner & Schmidt (St. Clair, 1974). Entire text.	
g. <i>Management Science</i> —Elementary quantitative aids for describing and analyzing information.		
(1) <i>Basic calculus and linear algebra</i> —Elementary concepts of integral calculus, vector and matrix notation and operations.	<i>Elementary Matrix Algebra</i> , 3d ed., Hohn (Macmillan, 1973). Entire text.	
	and <i>The Calculus: A Genetic Approach</i> , Toeplitz (Chicago, 1963). Chs. 1-3.	
(2) <i>Elementary statistics and probability</i> —Tests of hypotheses and statistical decision models, etc.	<i>Statistics for Modern Business Decisions</i> , Lapin (Harcourt, Brace, Jovanovich, 1973). Entire text.	
(3) <i>Concepts of quantitative decision models</i> —Linear programming, inventory economic order quantity, waiting lines, and simulation.	<i>Quantitative Analysis for Business Decisions</i> , 4th ed., Bierman, Bonini & Hauseman (Irwin, 1973). Entire text.	
h. <i>Economics</i> —Basic principles for analyzing and understanding the economic dimension of human behavior, the characteristics of markets, and interaction of public and private sectors.		
(1) <i>Macro and micro economics</i> —Profit maximization under varying competitive assumptions; operation of the monetary system; the role of the federal budget in national economic policy.	<i>Economics</i> , 9th ed., Samuelson (McGraw-Hill, 1973). Entire text.	
(2) <i>Managerial economics</i> —Factor productivity and profit maximization; economic models of common decisions such as new product introduction.	<i>Microeconomic Models</i> , Kogiku (Harper & Row, 1971). Chs. 1,2,3,5,7–10.	
i. <i>Business Law</i> —Basic principles of social behavior; regulation by law.		

Summary Descriptions	Level 1 References	Level 2 References
(1) <i>Law relating to businesses</i> —The legal environment of business and other organizations; common situations requiring expert legal counsel.	<i>Principles of Business Law</i> , Corley & Robert (Prentice-Hall, 1975). Chs. 1-6, 25-27, 32-39.	
(2) <i>Law relating to the professional</i> —Legal responsibilities, rights, and liabilities of the consultant; importance of ethics, competence, and independence.	<i>Accountant's Office Manual and Practice Guide</i> , Zweig (Prentice-Hall, 1969). Ch. 15.	
j. <i>Behavioral Sciences</i> —Principles of motivation, influence, authority; psychology of work organizations; effect of information in modifying behavior.		
(1) <i>Individual and small group behavior</i> —Interactions of individuals with their environment and other individuals.	<i>Interpersonal Behavior in Small Groups</i> , Ofshe (Prentice-Hall, 1973). Entire text.	
(2) <i>Organization behavior</i> —Interactions of organization segments, and of organizations with other organizations.	<i>Organization and Management: A Systems Approach</i> , Kast & Rosenzweig (McGraw-Hill, 1974). Chs. 1,2,3,4,6,8.	
3. <i>Unique Characteristics of Public Sector Entities</i> —Organizing, financing, controlling, and operating a not-for-profit institution or government program; public vs. private sector allocation of scarce resources; economic welfare and public choice; collective decision-making in the political process; growth and productivity in the public sector.	<i>Financing Modern Government</i> , Anderson (Houghton Mifflin, 1973). Preface & Chs. 1-9. and <i>Analysis of Public Systems</i> , Drake (MIT Press, 1972). Entire text.	Same citation as level 1.
4. <i>Communication</i> —Communication proficiency is essential to the consulting process, in which MAS professionals transfer knowledge, promote change, and otherwise utilize information's effects on other persons to achieve agreed-on beneficial objectives. This proficiency is required in collecting input, developing recommendations, and later in implementing these recommendations. In addition, communications proficiency is essential in practice management and development.	(No citations at level 1 because these skills and knowledge are not acquired at the 5-year university program level.)	
a. <i>Written Communication</i> —Essential for engagement-related documentation such as proposals, letters of understanding, survey instruments, working papers, reports to clients; for practice-related documentation such as skills descriptions, staff training and evaluation, and client industry file preparation.		<i>An Introduction to Logic & the Scientific Method</i> , Cohen & Nagel (Harcourt, Brace, 1936). Ch. 1. <i>Effective Business Report Writing</i> , 3d ed., Brown (Prentice-Hall, 1973). Chs. 1,3,4,7,8. <i>Documentation Guides for Administration of Management Advisory Services Engagements</i> , Staff Study (AICPA, 1971). Entire text.
b. <i>Oral Communication</i> —Essential for interviewing client personnel, exchanging data with client and professional staff, running meetings, and generally transmitting and receiving accurate images of facts, feelings, questions, and conclusions.		

Summary Descriptions	Level 1 References	Level 2 References
(1) <i>Interviewing</i> —Systematically eliciting specific information from others through a planned or structured interrogation process.		<i>Effective Business Report Writing</i> , 3d ed., Brown (Prentice-Hall, 1973). Pp. 211-219.
(2) <i>Conversation</i> —Mutual unstructured exchange of substantive information where the exchange is necessary to an MAS process.		<i>Communicating in Business</i> , Lindauer (Macmillan, 1974). Chs. 1,5,6.
(3) <i>Oral presentations</i>		
5. <i>MAS Practice and Engagement Characteristics</i> —Categorization of MAS services and practices; MAS analytical approach to an engagement; conduct of MAS engagements; management of an MAS practice.	(No citations at level 1 because these skills and knowledge are not acquired at the 5-year university program level.)	
a. <i>Classifications of MAS Services and Practices</i> —Why clients seek MAS services; types of MAS practices; delivery modes of MAS services.		
(1) <i>Survey and action engagements</i> —Distinctions between engagements that end with a report to a client (survey) and engagements that also include implementation (action).		<i>Management Services Handbook</i> , Walley (Business Books, 1973). Chs. 3,5.
(2) <i>Two-party vs. three-party engagements</i> —Distinctions between engagements affecting only the client vs. those also affecting a known or unknown third party outside the client organization.		<i>Professional Practices in Management Consulting</i> , (ACME, 1966). Chs. 4-8.
(3) <i>Systems or decision nature of engagement</i> —Distinctions between engagements to find ways of accomplishing a given function in an ongoing or routine way (systems) and engagements that address unique, non-recurring situations (decision).		<i>Management Services Handbook</i> , Walley (Business Books, 1973). Chs. 4,5,7.
(4) <i>Practice unit size</i> —Relationship between practice unit size and practitioner characteristics.		<i>Professional Practices in Management Consulting</i> , (ACME, 1966). Chs. 1-3.
(5) <i>MAS service delivery modes</i> —Distinctions between engagements with relatively little written documentation or reporting (informal) and engagements requiring extensive documentation and written reporting (formal). Factors that are considered are risk of incomplete or misinterpreted data or client misunderstanding of recommendations; time period before recommendations are needed; experience in working with the client; applicability of pre-existing company and/or industry knowledge; anticipated professional time input and technical skills requirements.		<i>How to Get the Best Results from Management Consultants</i> , Shay (ACME, 1974). Entire text.
b. <i>MAS Analytic Approach to Engagements</i> —In all types of engagements, structured analytical approaches are necessary, although these approaches vary somewhat with the type of engagement, they are essentially similar. These approaches are		

Summary Descriptions	Level 1 References	Level 2 References
detailed here in summary form for engagements dealing with systems and with decision subject matter.		
(1) <i>Systems approach</i> —Analyze existing procedures; determine legal, information, control, and operational requirements a new system must satisfy; prepare preliminary designs for the new system; prepare operational designs, including flowcharts, procedures, and documentation descriptions; install new system; modify as necessary for satisfactory operations.		<i>Process Consultation: Its Role in Organization Development</i> , Schein (Addison-Wesley, 1969). Entire text.
(2) <i>Decision approach</i> —Analyze existing decision variables and relationships; determine criteria of acceptable recommendations; develop alternative recommendations; carefully evaluate recommendations for acceptability; implement the best alternative recommendation, and modify as necessary to achieve acceptable results.		<i>Accountant's Guide to Profitable Management Advisory Services</i> , Whiteside (Prentice-Hall, 1969). Chs. 7,8,9,28.
c. <i>Conduct of MAS Engagements</i> —Most MAS engagements move through the following phases or stages.		
(1) <i>Engagement proposal and planning</i> —What to put in proposal and letter of understanding; tasks or phases of the engagement; estimated timing for achieving tasks or phases; allocation of professional staff to tasks or phases; estimating engagement costs.		<i>Documentation Guides for Administration of Management Advisory Services Engagements</i> , Staff Study (AICPA, 1971). Ch. 1.
(2) <i>Engagement management</i> —Interactions with client personnel; adherence to the engagement plan; punctuality; progress reports, knowledge of current status of the engagement; working in the client's office; unproductive time; control of out-of-pocket expenses; evaluation of staff on engagement; keeping working papers.		<i>Guidelines for Administration of the Management Advisory Services Practice</i> , Staff Study (AICPA, 1968). Chs. 2,4,5,6.
(3) <i>Final report and engagement evaluation</i> —Final reporting; documentation and support for conclusions; oral and written reports; engagement performance and significance evaluation—to firm and to client.		<i>Documentation Guides for Administration of Management Advisory Services Engagements</i> , Staff Study (AICPA, 1971). Ch. 5.
d. <i>Management of MAS Practice</i> —Adaptation of management principles to the MAS practice in CPA firms.		
(1) <i>Practice development</i> —Enhancing the CPA firm reputation for effective service; developing the practitioner's professional stature.		<i>The Successful Professional Practice</i> , Levoy (Prentice-Hall, 1970). Entire text.
(2) <i>Practice management</i> —Staff hiring and training; compensation and responsibility reviews; quality assurance programs; internal systems and procedures.		<i>Personal Qualification of Management Consultants</i> , (ACME, 1966). Entire text.
		<i>Management Services Handbook</i> , Walley (Business Books, 1973). Ch. 4.

Executive planning, implementation, and control

(Short explanations and references are representative and not exhaustive)

Summary Descriptions	Level 1 References	Level 2 References
1. <i>Executive Management and Function</i> —History of management; major managerial philosophies and schools of thought; responsibilities, processes, and functions of top management within an organization.		
a. <i>History, Philosophy, and Principles of Management</i> —Basic foundations of management as seen by significant students of management of the past century; industrial revolution and resulting organizations; emergence of scientific management; the corporation as a social organization; motivational theories; organizational structures and theory.	<i>The Evolution of Management Thought</i> , Wren (Ronald, 1972). Parts I,II,III.	<i>The Functions of the Executive</i> , Barnard (Harvard, 1968). Entire text. <i>Classics in Management</i> , Merrill (AMA, 1970). Sections dealing with Taylor, Gantt, Fayol, Mayo, McGregor.
b. <i>Contemporary Management Thought</i> —Fundamental approach to management as expressed by major current writers and managers; theory X and theory Y; systems theories of management; management by objectives; organizational behavior.	<i>The Evolution of Management Thought</i> , Wren (Ronald, 1972). Part IV.	<i>Managing for Results</i> , Drucker (Harper & Row, 1964). Entire text. <i>The Will to Manage</i> , Bower (McGraw-Hill, 1966). Entire text.
c. <i>The Major Functions of Management</i> —Planning organizing, staffing, implementing, and controlling.	<i>Management: Theory and Practice</i> , 2d ed., Dale (McGraw-Hill, 1969). Part 3.	Same citation as level 1.
2. <i>Strategic Management Planning and Control</i> —Determination of an organization's managerial requirements including goals and objectives; planning to achieve goals and objectives; markets in which to participate; organization structure and major functions; technology and capabilities; geographical location.		
a. <i>Identification of Goals and Objectives</i> —Structure of national and world commerce; structure of markets; dynamics of change.		
(1) <i>National and world commerce and markets</i> —Major human, energy, and raw materials sources and uses; trends in industrial, military, and consumer goods and service consumption; trade and commerce relationships in economic activity worldwide.	No citation at level 1.	<i>Business Week</i> , Last 18 mos.
(2) <i>Dynamics of change</i> —How individuals and organizations respond to economic and other incentives, risks, and rewards.	No citation at level 1.	<i>Changing Organizational Behavior</i> , Bartlett & Kayser (Prentice-Hall, 1973). Entire text.
(3) <i>Regulation of commerce</i> —Broad outlines of government regulation; national and international incentives and disincentives; cartels; subsidies; international finance.	<i>Public Policies Toward Business</i> , 4th ed., Wilcox (Irwin, 1971). Entire text.	<i>Management of the Multinationals</i> , Sethi & Holton (Free Press, 1974). Parts I,II,IV,V.
(4) <i>Goals and objectives formulation</i> —Writing internally consistent, achievable, and appropriate statements of goals and objectives.	No citation at level 1.	<i>The Achieving Enterprise</i> , Christopher (AMACOM, 1974). Entire text.

Summary Descriptions	Level 1 References	Level 2 References
<p>b. <i>Identification of Policies to Achieve Goals and Objectives</i>—Use of economic and technological forecasting; long-range planning; feasibility analysis; organization structure; and other major areas of policy formulation.</p>	No citation at level 1.	<i>An Executive's Guide to Forecasting</i> , Chambers, Mullick & Smith (Wiley-Interscience, 1974). Entire text.
(1) <i>Economic and technological forecasting</i> —Significance and use of quantitative and qualitative economic and technological forecasting techniques; integration of econometric models with corporate planning models.	(2) <i>Long-range planning and feasibility analysis</i> —Elaboration of goals and objectives into business policy; feasibility analysis of policies to determine acceptability on legal, economic, environmental, and humanitarian grounds.	<i>Top Management Planning</i> , Steiner (Macmillan, 1969). Chs. 1-10.
(3) <i>Capital expenditures</i> —Identification and evaluation of possible broad expenditure categories and capital additions programs; postexpenditure audit.	(4) <i>Financial structure</i> —Alternative debt and equity capital structures; comparative evaluation of their relative effectiveness in meeting anticipated capital requirements.	<i>The Management of Capital Expenditures</i> , Murdick & Demming (McGraw-Hill, 1968). Entire text.
<p>c. <i>Organization Structure and Change</i>—Alternative approaches to assignment of responsibility; delegation of authority and accountability; evaluation of organization alternatives such as centralized, decentralized, horizontal, or vertical integration; national or multinational; determine structure most likely to promote organization goals; special aspects of organizational change.</p>	No citation at level 1.	<i>Strategy of Corporate Financing</i> , Hutchison (Hawthorn Books, 1971). Chs. 1,2,6,7,8,9,10,21.
<p>d. <i>Policy Evaluation</i>—Review of policy as distinct from review of operations; criteria of policy effectiveness; policy change processes; direction, coordination and motivation of policy processes by the chief executive.</p>	No citation at level 1.	<i>Organization</i> , Dale (AMA, 1967). Chs. 1-10. <i>Organization Renewal</i> , Lippit (Appleton-Crofts, 1969). Entire text.
<p>3. <i>Management Operations and Evaluation</i>—Organizing, staffing, planning, and conducting overall top management operations in the framework of established policy; review of operations results; exercise of managerial authority to affect operations.</p>	No citation at level 1.	<i>Strategy and Policy Formation: An Integrative Approach</i> , Paine & Naumes (Saunders, 1974). Entire text.
<p>a. <i>Operations Planning</i>—Establishment of short-term plans; identifying current alternatives.</p>	(1) <i>Short-term planning</i> —Developing short-term plans, goals, objectives consistent with policies and environment; utilizing short-run forecasts and corporate resources; respecting managerial desires and corporate flexibility.	<i>Top Management Planning</i> , Steiner (Macmillan, 1969). Ch. 11.
(2) <i>Operations alternatives</i> —Identifying and evaluating current alternatives; tools for decision making; planning in specific functional areas such as	No citation at level 1.	<i>Top Management Planning</i> , Steiner (Macmillan, 1969). Chs. 12-23.

Summary Descriptions	Level 1 References	Level 2 References
marketing, production, research and development, and finance.		
b. <i>Operations Organizing and Staffing</i> —Assignment of authority and responsibility at operating management levels.		
(1) <i>Position descriptions</i> —Assembling or identifying the workable combinations of responsibility and authority for managerial positions necessary to carry out plans; improving descriptions of existing positions; preparing mission statements for use in evaluating positions or controlling reorganization.	No citation at level 1.	<i>Defining the Manager's Job</i> , Bennett (AMA, 1958). Part 2 & Appendix. <i>Top Management Organization in Divisionalized Companies</i> , Stieglitz & Janger (Conference Board, 1965). Appendix A.
(2) <i>Analysis of management talent</i> —Assessment of management potential and executive abilities as a basis for specific managerial assignments.	No citation at level 1.	<i>Performance Appraisal in Management</i> , Williams (Heinemann, 1972). Entire text.
(3) <i>Assignment of responsibility</i> —Matching individuals and positions; evaluation of executive performance.	No citation at level 1.	<i>Assessing Corporate Talent: A Key to Managerial Manpower Planning</i> , Finkle & Jones (Wiley-Interscience, 1970). Entire text.
c. <i>Operations Implementation and Control</i> —Direction, coordination, and motivation of action by the principal executives; managerial control; evaluation of results; managerial actions to alter plans or improve performance.		
(1) <i>Implementation</i> —Direction, coordination, and conduct of operations through managerial supervision, decision-making, and intervention.	No citation at level 1.	<i>Managerial Behavior</i> , Sayles (McGraw-Hill, 1964). Entire text.
(2) <i>Control</i> —Evaluation and control of operations through systems, procedures, information reports, and managerial appraisal.	<i>Planning and Control Systems: A Framework for Analysis</i> , Anthony (Harvard, 1965). Entire text.	<i>A Total Systems Approach to Management Control</i> , Stokes (AMA, 1968). Entire text. <i>Managing By - and With - Objectives</i> , Wikstrom (Conference Board, 1969). Entire text.
4. <i>Important Applications of Executive Planning, Implementation, and Control</i> —The concepts found uniquely associated with these applications as necessary for a complete understanding of this body of knowledge.		
a. <i>Merger, Acquisition and Divestiture</i> —Analyzing needs of a business for merger or divestiture alternatives; procedures for locating candidates; evaluation of candidates in terms of strengths and weaknesses (markets, assets, technology, management); divestiture procedures; strategy, and tactics for conducting mergers, acquisitions, and divestitures.	No citation at level 1.	<i>Corporate Acquisitions and Mergers</i> , Fox & Fox (Matthew Bender, 1974). Chs. 1,23,32,35.

<u>Summary Descriptions</u>	<u>Level 1 References</u>	<u>Level 2 References</u>
b. <i>Small Business Executive Management</i> —The management process as related particularly to the environment, organizational capabilities, and needs of the small company, organization studies and manuals for small businesses.	<i>Small Business Management</i> , 3d ed., Broom & Longenecker (South-Western, 1971). Entire text.	Same citation as level 1.

Finance and accounting

(Short explanations and references are representative and not exhaustive)

<u>Summary Descriptions</u>	<u>Level 1 References</u>	<u>Level 2 References</u>
1. <i>Financial Organization Responsibilities and Reporting</i> —Operation of the finance function; communication of the organization's financial information to other businesses and entities, understanding of financial and economic information received from other organizations, corporate growth and asset acquisition, and management of the organization's capital requirements.		
a. <i>Financial Responsibilities and Management</i> —Overall purpose and structure of the finance function in business; major responsibilities; normal policies for operations; duties and relation between treasurer and controller.	<i>Corporate Treasurer's and Controller's Encyclopedia</i> , rev. ed., Goodman (Prentice-Hall, 1975). Ch. 1.	<i>Top Management Organization in Divisionalized Companies</i> , Stieglitz & Janger (Conference Board, 1965). Chs. 7,8; pp. 142-151.
b. <i>Financial Statement Review</i> —Critique and interpretation of the client financial statements, as well as those of competitors, suppliers, customers, or potential acquirers, for credit, stability, acquisition, or other client purpose.	<i>Managerial Accounting</i> , 3d ed., Moore & Jaedicke (South-Western, 1972). Chs. 1,2,3.	<i>Financial Statements: Form Analysis and Interpretation</i> , 6th ed., Kennedy & McMullen (Irwin, 1973). Chs. 1,2,8,9,10.
c. <i>Cash Flow Control</i> —Control over cash on hand, receipts and deposits, disbursements; location and uses of lock boxes, location of bank accounts; reporting cash position; preparation and use of cash requirements forecast; accounts receivable and accounts payable control, credit policies, and credit and collection management.	<i>Intermediate Accounting</i> , 3d ed., Meigs, Mosich, Johnson & Keller (McGraw-Hill, 1974). Ch. 5.	
d. <i>Asset Protection and Internal Control</i> —Policies for control of major asset acquisition, location, use, and disposal; accounting for assets; review of assets for adequacy and contribution to operations and achievement of organization objectives; record-keeping and control of investments and documents.	<i>Internal Control Against Fraud and Waste</i> , Cadmus & Child (Prentice-Hall, 1953). Entire text.	<i>Corporate Treasurer's and Controller's Encyclopedia</i> , rev. ed., Goodman (Prentice-Hall, 1975). Chs. 10,18.
e. <i>Economic Analysis of Financial Alternatives</i> —Careful scrutiny of proposals for commitment of business capital to long- and short-term uses to determine their overall consistency with strategic plans and the annual budget; analysis of proposals for major structural changes through merger, acquisition, or a different legal business form.	<i>Internal Control Against Fraud and Waste</i> , Cadmus & Child (Prentice-Hall, 1953). Entire text.	<i>Corporate Treasurer's and Controller's Encyclopedia</i> , rev. ed., Goodman (Prentice-Hall, 1975). Chs. 21,30.

Summary Descriptions	Level 1 References	Level 2 References
(1) <i>Financing and capital source selection criteria</i> —Capital structure and configuration; size of capital contributions; selecting and negotiating with banks, investors, creditors, and other institutions; cost of capital computation methods.	<i>Essentials of Managerial Finance</i> , 3d ed., Weston & Brigham (Dryden, 1974). Ch. 25.	<i>Essentials of Managerial Finance</i> , 3d ed., Weston & Brigham (Dryden, 1974). Chs. 7-9, 13-17, 21.
(2) <i>Return on investment studies</i> —Evaluate efficiency of capital use, allocate capital among business segments, establish profit responsibilities.	<i>Cost Accounting—A Managerial Emphasis</i> , 3d ed., Horngren (Prentice-Hall, 1972). Ch. 21. and <i>Managerial Accounting</i> , 3d ed., Moore & Jaedicke (South-Western, 1972). Ch. 5.	Same citation as level 1.
(3) <i>Capital expenditure analysis and property management</i> —Select among competing capital acquisitions, provide for proper use of property and movement of capital to most productive property forms.	<i>Basic Business Finance</i> , 4th ed., Hunt, Williams, & Donaldson (Irwin, 1971). Chs. 8,9,10.	<i>Financial Analysis to Guide Capital Expenditure Decisions</i> , NAA Research Report 43, (National Association of Accountants, 1967). Chs. 1,2,3.
(4) <i>Lease or buy analysis</i> —Studies to determine most cost-effective form of asset control.	<i>Basic Business Finance</i> , 4th ed., Hunt, Williams & Donaldson (Irwin, 1971). Ch. 22.	Same citation as level 1.
(5) <i>Merger and acquisition candidate financial evaluation</i> —Determining candidate qualifications; evaluating qualifications against those established for acceptable candidates.	<i>Essentials of Managerial Finance</i> , 3d ed., Weston & Brigham (Dryden, 1974). Ch. 23.	<i>Conference on Mergers and Acquisitions</i> , Hofstra University, 1968. Easton & Broser (McCutchan, 1970). Part I.
(6) <i>Forms of business entity</i> —Proprietorship, partnership, corporation; if one of the latter two, the structure alternatives and probable operating characteristics of each.	<i>American Business: An Introduction</i> , 3d ed., Mauser & Schwartz (Harcourt Brace Jovanovich, 1974). Chs. 3,6,7,8,28.	Same citation as level 1.
2. <i>Management Planning, Reports and Controls</i> —Development and presentation of management and operating plans; reports on activities for comparison against plans; conformance of activities with plans.		
a. <i>Annual Financial Planning and Budgeting</i> —Developing and installing an operating budget system in an organization.		
(1) <i>Annual planning guidelines</i> —Setting procedures, cutoff dates, and economic assumptions for preparation of annual budget by profit and cost responsibility centers.	<i>Budgeting: Profit Planning and Control</i> , 3d ed., Welsch (Prentice-Hall, 1971). Chs. 1,2,3,4.	Same citation as level 1.
(2) <i>Functional area budgets</i> —Administration, documentation, and objectives of budgeting process; scheduling, review of budget, revision of budget; review and participation at top management levels; use of flexible budgets.	<i>Budgeting: Profit Planning and Control</i> , 3d ed., Welsch (Prentice-Hall, 1971). Chs. 5-11.	<i>Budgeting: Key to Planning and Control</i> , rev. ed., Jones & Trentin (AMA, 1971). Chs. 3,5,6,7.
(3) <i>Capital expenditures planning and budgeting</i> —Coordination of capital budget with functional area budget and business policies.	<i>The Capital Budgeting Decision</i> , 3d ed., Bierman (MacMillan, 1971). Chs. 1-7.	<i>Budgeting: Key to Planning and Control</i> , rev. ed., Jones & Trentin (AMA, 1971). Ch. 8.

Summary Descriptions	Level 1 References	Level 2 References
(4) <i>Budget consolidation and review</i> —Consolidation of product-line and division sales and cost center budgets; use of financial models to evaluate alternative operating strategies; final budget revision and approval cycle.	<i>Budgeting: Profit Planning and Control</i> , 3d ed., Welsch (Prentice-Hall, 1971). Chs. 12-13.	<i>Budgeting: Key to Planning and Control</i> , rev. ed., Jones & Trentin (AMA, 1971). Chs. 13,14.
b. <i>Internal Performance Analysis and Reporting</i> —Adapting information to serve specific managerial needs through reclassifying, summarizing, and arranging it in different ways; comparing actual and budgeted values of recognized performance measures; identifying significant differences and systematically bringing them to the attention of managers of appropriate responsibilities and levels.		
(1) <i>Product profitability</i> —Product lines, regional and demographic markets, long- and short-term perspectives; fixed, semifixed and variable costs, price determination, reporting.	<i>Cost Accounting: A Managerial Emphasis</i> , 3d ed., Horngren (Prentice-Hall, 1972). Chs. 3,11,26.	<i>Profitability Accounting for Planning and Control</i> , 2d ed., Beyer & Trawicki (Ronald, 1972). Chs. 2,7,8,11.
(2) <i>Business segment profitability</i> —Segmentation and control responsibility definitions, budget responsibility, related to long-range plans, control, and documentation.	<i>Cost Accounting: A Managerial Emphasis</i> , 3d ed., Horngren (Prentice-Hall, 1972). Ch. 21.	<i>Divisional Performance: Measurement and Control</i> , 2d ed., Solomons (Dow Jones—Irwin, 1968). Entire text.
(3) <i>Project and supportive function budgeting</i> —Program budgets; project selection; management and control; planning and budgeting supportive services such as maintenance and research.	No citation at level 1.	<i>Financial Analysis to Guide Capital Expenditure Decisions</i> , NAA Research Report 43 (NAA, 1967). Chs. 4,5. and <i>Complete Guide to Project Management</i> , Lock (Cahners, 1969). Entire text.
(4) <i>Responsibility reporting</i> —Design of accounts to support reporting and planning activities to individuals responsible for them; identifying individual responsibility; recording and reporting information including variances (actual vs. budgeted differences).	<i>Cost Accounting: A Managerial Emphasis</i> , 3d ed., Horngren (Prentice-Hall, 1972). Chs. 5,6.	<i>Profitability Accounting for Planning and Control</i> , 2d ed., Beyer & Trawicki (Ronald, 1972). Ch. 4 appendix.
(5) <i>Data for tax returns and tax planning</i> —Nature of taxes; framework of federal taxation of business and industry; selected issues such as interperiod income tax allocation, loss carrybacks and carryforwards, accrual alternatives, taxing capital gains.	No citation at level 1.	<i>Tax Guide for Small Business</i> , (IRS, current year). Entire text.
(6) <i>Internal-external reporting relationships</i> —Historical, financial, and statistical data, need for performance measures that increase profit and other outside measures of performance.	<i>Budgeting: Profit Planning and Control</i> , 3d ed., Welsch (Prentice-Hall, 1971). Chs. 15,16,17.	<i>How to Use Management Ratios</i> , Westwick (Wiley, 1973). Part I.
3. <i>Major Financial Subsystems</i> —Support for the organization's financial policies, accounting system, and internal accounting policies.		
a. <i>Accounting Transaction System</i> —Data handling, ledger account processing, and financial control of accounting data.		

Summary Descriptions	Level 1 References	Level 2 References
(1) <i>Accounting and data storage systems</i> —Entry systems, transaction types, and handling; points of origination, documentation, and controls; safeguarding of records; documents of original entry; voucher preparation.	<i>Fundamentals of Financial Accounting</i> , Tracy (Wiley, 1973). Chs. 2,3.	Same citation as level 1.
(2) <i>Chart of accounts development</i> —Control accounts; contra accounts; coding systems; creation of accounts; revenue and expense accounts; organization considerations; data processing and control considerations; technology considerations.	<i>Intermediate Accounting</i> , 3d ed., Meigs, Mosich, Johnson & Keller (McGraw-Hill, 1974). Ch. 2.	Same citation as level 1.
(3) <i>General ledger and financial reporting system</i> —Subledgers, control ledgers, entries in "journals" and transference to ledgers; trial balance; statement preparation from ledger account balances; sales, payroll, purchase, assets, expenses.	<i>Intermediate Accounting</i> , 3d ed., Meigs, Mosich, Johnson & Keller (McGraw-Hill, 1974). Ch. 2.	<i>General Ledger and Financial Reporting System</i> , (Software International, 1974). Entire text.
(4) <i>Accounting periods, accrual practices and accounting conventions</i> —Business cycle; revenue and cost recognition; annual and interim accounting statements; selecting annual closing date, cutoffs, depreciation depletion, and amortization alternatives; receipt of assets and supplementary accounting statements; price-level accounting.	<i>Intermediate Accounting</i> , 3d ed., Meigs, Mosich, Johnson & Keller (McGraw-Hill, 1974). Chs. 3,4,11,12,16,17,25.	Same citation as level 1.
(5) <i>Accounting systems design concepts and consideration</i> —Types of activities such as purchasing, billing, credit and collection; their incorporation into financial transaction subsystems; accounting procedures, flows and concepts such as receipt of order, shipment on credit, collection of cash; accrual basis, generation of statements.	<i>Fundamentals of Financial Accounting</i> , Tracy (Wiley, 1974). Chs. 4,5,6,7,8,9 and <i>Intermediate Accounting</i> , 3d ed., Meigs, Mosich, Johnson & Keller (McGraw-Hill, 1974). Ch. 6.	<i>Corporate Treasurer's and Controller's Encyclopedia</i> , rev. ed., Goodman (Prentice-Hall, 1975). Chs. 16,28. and <i>Modern Accounting Systems</i> , 4th ed., Livingstone & Kerrigan (Ronald, 1975). Ch. 9-14,16,17.
(6) <i>Payroll and labor distribution</i> —Internal control considerations, objectives of labor and payroll considerations; determination of payroll tax and fringe benefits; reporting labor cost in products and services.		
b. <i>Cost Accounting and Reporting</i> —Cost measurement; recording and estimating systems in an organization.	<i>Cost Accounting: A Managerial Emphasis</i> , 3d ed., Horngren (Prentice-Hall, 1972). Ch. 19.	<i>Corporate Treasurer's and Controller's Encyclopedia</i> , rev. ed., Goodman (Prentice-Hall, 1975). Ch. 19. and <i>Modern Accounting Systems</i> , 4th ed., Livingstone & Kerrigan (Ronald, 1975). Chs. 18,19.
(1) <i>Production costs</i> —Cost system related to nature of operation (job, assembly, process); cost classification, including overhead and indirect cost distribution; inventory valuation and control.	<i>Cost Accounting: A Managerial Emphasis</i> , 3d ed., Horngren (Prentice-Hall, 1972). Chs. 4,12,17.	<i>Activity Costing and Input-Output Accounting</i> , Staubus (Irwin, 1971). Entire text, and <i>Modern Accounting Systems</i> , 4th ed., Livingstone & Kerrigan (Ronald, 1975). Chs. 20,26.

<u>Summary Descriptions</u>	<u>Level 1 References</u>	<u>Level 2 References</u>
(2) <i>Standard costs establishment</i> —Cost characteristics; engineered and managed costs; processing and uses of standard costs; assignment of indirect costs by activity levels.	<i>Cost Accounting: A Managerial Emphasis</i> , 3d ed., Horngren (Prentice-Hall, 1972). Chs. 7,8,9.	<i>Handbook of Modern Accounting</i> , Davidson (McGraw-Hill, 1970). Ch. 39.
(3) <i>Spoilage, waste and scrap</i> —Normal and abnormal waste; accounting for spoilage, waste, and scrap; relation to joint-product accounting controls.	<i>Cost Accounting: A Managerial Emphasis</i> , 3d ed., Horngren (Prentice-Hall, 1972). Ch. 18.	Same citation as level 1.

Electronic data processing

(Short explanations and references are representative and not exhaustive)

<u>Summary Descriptions</u>	<u>Level 1 References</u>	<u>Level 2 References</u>
1. <i>Systems and Data Processing Management</i> —Organization and operation of the EDP service in an organization, including its relations with other departments in the organization, efficient utilization of resources for routine data processing services, development of new services, framework for assigning responsibility and measuring performance.		
a. <i>Organization</i> —Definition of EDP line and staff positions, coordination levels, steering committees, organization charts, and standards for development of systems and services by EDP management.	<i>Information Processing Management</i> , Szveda (Auerbach, 1972). Ch. 3.	<i>Data Processing Administration: Handbook of Data Processing</i> , Vol. 6, Rubin (Brandon, 1971). Ch. 1.
b. <i>Relations with Users of EDP Services</i> —Interactions between EDP function and other organization divisions, especially in regard to development and/or modification of existing EDP services and development of new EDP services.	<i>Managing the EDP Function</i> , Ditri, Shaw & Atkins (McGraw-Hill, 1971). Ch. 4.	<i>Information Processing Management</i> , Szveda (Auerbach, 1972). Ch. 6. <i>Organization and Management of Information Processing Systems</i> , Albrecht (Macmillan, 1973). Chs. 4-8.
2. <i>EDP Systems Planning and Control</i> —Planning and development of EDP services required to support corporate business objectives over a three- to five-year planning horizon; design of systems to provide these services in adequate detail to meet requirements of corporate and user department management; determining economics of new services; planning accurate installation schedule; programming and testing of designed system; installation of the completed system and conversion to the new system including all non-EDP changes and human resources training, as made necessary by the new EDP system or service.		
a. <i>Forecasting Organization Requirements for EDP Services</i> —Management information systems and operational systems required to support the business plan; developing priorities for satisfying these requirements.		
(1) <i>Overall EDP strategy</i> —Management information and operational systems definitions and description; issues such as centralized or decentralized EDP operations; systems development and systems maintenance activities.	<i>Management Information Systems: Conceptual Foundations, Structure and Development</i> , Davis (McGraw-Hill, 1974). Ch. 14.	<i>The Organization of the Data Processing Function</i> , Withington (Wiley-Interscience, 1972). Chs. 2,3,6,7.

Summary Descriptions	Level 1 References	Level 2 References
(2) <i>Hardware and software</i> —Computer hardware, communications hardware, control software and data management software required to support the systems developed over the planning horizon; allowance for hardware/software flexibility.	<i>Management Information Systems: Conceptual Foundations, Structure and Development</i> , Davis (McGraw-Hill, 1974). Ch. 9.	<i>Computer-Based Management Information Systems</i> , Krauss (AMA, 1970). Chs. 4-7.
(3) <i>Scheduling planned conversions</i> —Process of allocating resources for planned conversions; breaking projects into segments for implementation; anticipating conversion manpower skills and levels required.	<i>Information Systems for Modern Management</i> , 2d ed., Murdick & Ross (Prentice-Hall, 1975). Ch. 10.	<i>Data Processing Administration: Handbook of Data Processing Management</i> , Vol. 6, Rubin (Brandon, 1971). Ch. 12.
(4) <i>EDP departmental budget</i> —Budget for EDP services for three to five years.	<i>Management Control of Information Systems Development</i> , Sollenberger (National Association of Accountants, 1971). Ch. 6.	<i>Data Processing Administration: Handbook of Data Processing Management</i> , Vol. 6, Rubin (Brandon, 1971). Ch. 4.
b. <i>EDP Systems Design</i> —Creation of comprehensive hardware-software-human plans for providing required information or operational services to the organization.		
(1) <i>Information requirements</i> —Information and operational requirements of EDP service users identified in terms of specific data inputs, outputs, and processing functions.	<i>Information Systems: Theory and Practice</i> , Burch & Strater (Hamilton, 1974). Ch. 10 & Appendix C.	<i>Business Systems and Data Processing</i> , Clark, Gale & Gray (Prentice-Hall, 1972). Chs. 9-10.
(2) <i>Design of files, processing system and input transactions</i> —Content and organization of master files; define input source documents for each input data element; input validation; master file updating and reporting.	<i>Information Systems for Modern Management</i> , 2d ed., Murdick & Ross (Prentice-Hall, 1975). Chs. 8,9.	<i>Information Systems for Operations and Management</i> , Voich, Mottice, & Shrode (South-Western, 1975). Chs. 8-10.
(3) <i>Flowcharting and decision tables</i> —Description of system functions through logical flowcharts and decision tables.	<i>Computer Data Processing</i> , Davis (McGraw-Hill, 1973). Ch. 9.	<i>Computer-Oriented Business Systems</i> , 2d ed., Boutell (Prentice-Hall, 1973). Ch. 4.
(4) <i>Documentation</i> —Administrative project files; systems design and installation work papers; production systems to support documentation and clerical operating procedures.	<i>Handbook of Data Processing Management, Vol. 2: System Life Cycle Standards</i> , Rubin (Brandon, 1970). Ch. 8.	<i>Documentation Standards</i> , London (Petrocelli Books, 1974). Entire text.
(5) <i>Human factors engineering</i> —Compatibility of system with existing organization and staff; planning for systems change and employee retraining.	<i>Computers: A Systems Approach</i> , Chapin (Van Nostrand Reinhold, 1971). Ch. 21.	<i>The Human Side of Data Processing Management</i> , Wadsworth (Prentice-Hall, 1973). Entire text.
c. <i>Equipment and Software Evaluation</i> —In-depth comparative analysis of a wide range of computer hardware and software combinations relative to the EDP systems design parameters; defining selection criteria for vendor proposals, developing specifications for hardware and software; evaluating vendor proposals, contract negotiations; evaluation of alternative methods of acquiring and financing hardware and software.	<i>Information Processing Management</i> , Szveda (Auerbach, 1972). Ch. 9.	<i>Data Processing Administration: Handbook of Data Processing Management</i> , Vol. 6, Rubin (Brandon, 1971). Chs. 7-9.

Summary Descriptions	Level 1 References	Level 2 References
d. <i>Specialized Technical Systems</i> —Design and implementation of specialized EDP techniques such as control functions, direct file access techniques and file organization, on-line data communication, interactive processing, and time-sharing—if called for by system plans.		
(1) <i>Systems software</i> —Evaluate and implement vendor programs interfacing between application programs and computer hardware.	<i>Managing the EDP Function</i> , Ditri, Shaw & Atkins (McGraw-Hill, 1971). Ch. 11.	<i>Software Selection</i> , Wooldridge (Auerbach, 1973). Chs. 4-9.
(2) <i>Data base management and data dictionary software</i> —design of systems to control advanced direct access file organization and file access; definition data characteristics for use by data administrator.	<i>Information Systems: Theory and Practice</i> , Burch & Strater (Hamilton, 1974). Ch. 6.	<i>Data Management Systems</i> , Cagan (Melville, 1973). Entire text.
(3) <i>Data communications</i> —Design of remote-to-central-processor links for on-line collection and batch processing; on-line control software; network configurations.	<i>Computer Data Processing</i> , Davis (McGraw-Hill, 1973). Ch. 16.	<i>Systems Analysis for Data Transmission</i> , Martin (Prentice-Hall, 1972). Chs. 3,6.
(4) <i>On-line systems</i> —Design of systems for interactive processing for inquiry and on-line update processing; checkpoint/restart; file backup and recovery; techniques to maximize throughput to retain design response time.	<i>Design of On-Line Computer Systems</i> , Yourdon (Prentice-Hall, 1972). Part I.	<i>Design of On-Line Computer Systems</i> , Yourdon (Prentice-Hall, 1972). Part II.
(5) <i>Time-sharing</i> —Design of interactive time-sharing systems.	<i>Computer Data Processing</i> , Davis (McGraw-Hill, 1974). Ch. 21.	<i>DATAPRO 70: The EDP Buyer's Bible</i> (DATAPRO Research Corp.; Monthly Updated Service).
e. <i>EDP Systems Installation</i> —Develop schedule for achieving installation; economic evaluation of installation plus operation of new system versus continued operation of existing system; final systems programming, testing, conversion.		
(1) <i>Installation schedule</i> —Identify activities, manpower, and costs required to perform the detailed design, programming, systems testing, and conversion; schedule activities; use PERT-CPM and/or other techniques to monitor installation development and adjust for schedule slippages.	<i>Information Systems: Theory and Practice</i> , Burch & Strater (Hamilton, 1974). Chs. 14,15 & Appendix A.	<i>Administering and Controlling the Company Data Processing Function</i> , Krauss (Prentice-Hall, 1969). Chs. 1-4.
(2) <i>Economic evaluation; presentations to management</i> —Analyze benefits of the new system versus continued operation of old system; presentation to management of alternatives.	<i>Fundamentals of Systems Analysis</i> , FitzGerald & FitzGerald (Wiley, 1973). Chs. 10,11.	Same citation as level 1.
(3) <i>Final systems programming and testing</i> —Development of the operational computer program from specifications; coding of program tests; applying tests of individual system components including user procedures, data processing control procedures, computer programs, and specialized technical systems.	<i>Handbook of Data Processing Management, Vol. 2: Introduction to the System Life Cycle</i> , Rubin (Brandon, 1970). Ch. 4.	<i>Managing a Programming Project</i> , Metzger (Prentice-Hall, 1973). Entire text.

Summary Descriptions	Level 1 References	Level 2 References
(4) <i>Final systems conversion</i> —Integrated systems testing including all programs and procedures; application of clerical controls and procedures, including manuals; training of all personnel affected by the new system.	<i>Information Systems: Theory and Practice</i> , Burch & Strater (Hamilton, 1974). Ch. 14.	<i>Data Processing Administration: Handbook of Data Processing Management</i> , Vol. 6, Rubin (Brandon, 1971). Chs. 12,14.
3. <i>EDP Operations and Facilities Administration</i> —Evaluating and sustaining effectiveness of EDP operations and services; monitoring computer systems operations and procedures to assure accurate entering, processing, and reporting of data; review of hardware and personnel operating effectiveness.		
a. <i>Operations Accuracy and Facilities Security</i> —Administrative, physical, program and data, clerical, and user controls over operations to assure accuracy of EDP services.		
(1) <i>Administrative controls</i> —Separation of operating responsibilities; hardware backup; rotation of duties; maintaining acceptable state of operator and other specialists' skills.	<i>EDP: Controls and Auditing</i> , Porter (Wadsworth, 1974). Ch. 4.	<i>Security, Accuracy and Privacy in Computer Systems</i> , Martin (Prentice-Hall, 1973). Part VI (Chs. 30-37.)
(2) <i>Physical security</i> —Assure only authorized entry to premises; prevent deliberate or accidental damage or destruction to EDP facilities.	<i>Computer Security Management</i> , Van Tassel (Prentice-Hall, 1972). Ch. 2.	<i>Security, Accuracy and Privacy in Computer Systems</i> , Martin (Prentice-Hall, 1973). Part III (Chs. 24-29.)
(3) <i>Program and data security</i> —Assure only authorized access to data; prevent deliberate or accidental alteration or destruction of data; assure correct program processing of valid information; provide reconstruction if data is lost.	<i>Computer Security Management</i> , Van Tassel (Prentice-Hall, 1972). Chs. 5-9.	<i>Security, Accuracy and Privacy in Computer Systems</i> , Martin (Prentice-Hall, 1973). Chs. 9-23.
(4) <i>Input, output, and programmed controls</i> —Clerical controls within EDP department and programmed controls within computer systems to verify receipt, processing, and output of data; proper distribution of output data; user controls to verify correct processing of data.	<i>EDP: Controls and Auditing</i> , Porter (Wadsworth, 1974). Chs. 6,7.	<i>Security, Accuracy and Privacy in Computer Systems</i> , Martin (Prentice-Hall, 1973). Chs. 6-18.
b. <i>Evaluation of Operations Performance</i> —Procedures and reports to appraise and modify performance of EDP hardware, software, and personnel relative to operating goals.		
(1) <i>Equipment and software evaluation</i> —Computer hardware and software adequacy to meet current and future operating requirements; review of operating logs and monitor reports; physical observation.	<i>Data Systems and Management</i> , Kindred (Prentice-Hall, 1973). Ch. 8.	<i>Information Systems Administration</i> , McFarland, Nolan, & Norton (Holt, Rinehart & Winston, 1973). Chs. 5,6.
(2) <i>Operations evaluation</i> —Operator run books; disk storage user charts; computer scheduling; utilization reporting; file library; routine systems and program testing and performance evaluations from EDP services users.	<i>Managing the EDP Function</i> , Ditri, Shaw & Atkins (McGraw-Hill, 1971). Ch. 10.	<i>Information Processing Management</i> , Szweda (Auerbach, 1972). Ch. 4.

Operations

(Short explanations and references are representative and not exhaustive)

Summary Descriptions	Level 1 References	Level 2 References
<p>1. <i>Operations Organization and Structure</i>—Nature of the operations organizational structure; its policies and objectives; organizational types and component elements; a framework for assigning responsibility and measuring performance. These concepts apply to administrative office functions as well as to manufacturing and service industry operations.</p>		
<p>a. <i>Line and Staff Functions</i>—Lines of authority, coordination levels; committee formulations; organization charts.</p>	<p><i>Manufacturing Management</i>, 4th ed., Moore (Irwin, 1965). Chs. 2,3,4.</p>	<p><i>Production Handbook</i>, 3d ed., Carson, Bolz and Young (Ronald, 1973). Ch. 1.</p>
<p>b. <i>Job Responsibility and Performance</i>—Job definitions; charters of responsibility; management performance objectives.</p>	<p><i>Job Evaluation: Text and Cases</i>, 3d ed., Patton, Littlefield & Self (Irwin, 1964). Parts II,III.</p>	<p><i>How to Use Management Ratios</i>, Westwick (Gower, 1973). Part 1 & 2: Chs. 7,9,11.</p>
<p>c. <i>Information Flow</i>—Analysis of flow between line operations and staff functions; transaction flow; formal reports; informal meetings.</p>	<p>No citation at level 1.</p>	<p><i>Handbook of Modern Manufacturing Management</i>, Maynard, (ed.) (McGraw-Hill, 1970). Section 2.</p>
<p>2. <i>Operations Planning and Control</i>—Supports resource planning activities in both the manufacturing and service industries; resource allocation alternatives; provides the reporting feedback to gauge performance vs. the operating plan.</p>		
<p>a. <i>Capacity Planning</i>—Setting the level of capacity in terms of facility, manpower, and material resource availability.</p>		
<p>(1) <i>Final product demand forecasting</i>—Relating historical and current customer order patterns and economic activity levels to future production requirements.</p>	<p><i>Production-Inventory Systems: Planning and Control</i>, rev. ed., Buffa & Taubert (Irwin, 1972). Ch. 2.</p>	<p><i>Production and Inventory Control Handbook</i>, Greene (McGraw-Hill, 1970). Ch. 8.</p>
<p>(2) <i>Capacity loading</i>—Infinite loading, finite loading; definitions of theoretical, standard, and rated capacity levels; machine-paced activities, manpower-paced activities.</p>	<p><i>Production and Inventory Control</i>, Plossl & Wright (Prentice-Hall, 1967). Ch. 9.</p>	<p><i>Communications Oriented Production Information and Control Systems</i>, vol. 5, (IBM G320-1973). Ch. 6.</p>
<p>b. <i>Production Planning</i>—Setting the master operations plan and assignment of resources through evaluation of capacity, availability, forecasted demand, backorder levels and current finished goods inventory levels.</p>	<p><i>Production-Inventory Systems: Planning and Control</i>, rev. ed., Buffa & Taubert (Irwin, 1972). Chs. 5,6,7.</p>	<p><i>Production and Inventory Control Handbook</i>, Greene (McGraw-Hill, 1970). Chs. 9,11.</p>
<p>c. <i>Materials Planning</i>—Setting the master materials requirements plan based upon the time-phased requirements of the master operations plan.</p>	<p><i>Materials Requirements Planning</i>, Orlicky (McGraw-Hill, 1975). Parts I,II,III.</p>	<p><i>Materials Requirements Planning</i>, Orlicky (McGraw-Hill, 1975). Parts IV,V,VI.</p>
<p>d. <i>Manpower Planning</i>—Setting the operations manpower plan based upon the time-phased analysis of skill level requirements needed to support the master operations plan.</p>	<p><i>Manpower Planning: Evolving Systems</i>, Wikstrom (Conference Board, 1971). Chs. 1-4.</p>	<p><i>Production and Inventory Control Handbook</i>, Greene (McGraw-Hill, 1970). Ch. 10.</p>

Summary Descriptions	Level 1 References	Level 2 References
<p>e. <i>Operations Scheduling and Control</i>—Converting the master operations plan into detail schedules that specify date and time requirements for facilities, materials, and personnel with the aim of optimizing the utilization of these resources.</p>	<p><i>Production Planning and Inventory Control</i>, 2d ed., Magee and Boodman (McGraw-Hill, 1967). Ch. 9.</p>	<p><i>Production and Inventory Control Handbook</i>, Greene (McGraw-Hill, 1970). Chs. 20,21,25.</p>
<p>(1) <i>Resource scheduling techniques</i>—Gantt charts and line-of-balance; queuing analysis; dynamic and linear program simulations; assembly line balancing; key resource profit contribution approach.</p>	<p>No citation at level 1.</p>	<p><i>Control Techniques for Office Efficiency</i>, Grillo (McGraw-Hill, 1963). Ch. 7.</p>
<p>(2) <i>Office manpower scheduling</i>—Peak period scheduling, work load leveling, work sequencing, overtime, and subcontract services scheduling.</p>	<p>f. <i>Operations Status and Performance Reporting</i>—Analyzing the efficiency and utilization of input resources to produce finished goods; production status reporting against master operation plan.</p>	<p>(1) <i>Data collection procedures</i>—Reporting of personnel time and facility use, use of job order tickets, time cards, work center production reports.</p>
<p>(1) <i>Data collection procedures</i>—Reporting of personnel time and facility use, use of job order tickets, time cards, work center production reports.</p>	<p><i>Office Operations Improvements</i>, Payne & Swett (AMA, 1967). Chs. 7,8.</p>	<p><i>Production and Inventory Control Handbook</i>, Greene (McGraw-Hill, 1970). Chs. 20,21,25.</p>
<p>(2) <i>Management reporting</i>—Job status, labor utilization, efficiency productivity; machine utilization and efficiency; rework and backlog; accident prevention; reporting energy utilization; social impact reporting; use of cost variance reports.</p>	<p><i>Office Operations Improvements</i>, Payne & Swett (AMA, 1967). Chs. 9,10.</p>	<p>Same citation as level 1.</p>
<p>3. <i>Operations Processing Functions</i>—This area defines the functional activities that sequentially support the production flow.</p>	<p>a. <i>Product Design</i>—Specifying the shape, composition, performance, and quality characteristics of the product by means of drawings, instructions, standard practices, and design engineering information such as coding and specification of product, parts and formulas, bills of material, assembly configuration control, engineering change control.</p>	<p><i>Fundamentals of Configuration Management</i>, Samaras & Czerwinski (Wiley-Interscience, 1971). Parts I,II,III.</p>
<p>b. <i>Maintenance Engineering</i>—Scheduling of maintenance and inspection; routing preventive maintenance; shut down and overhaul project control; repair record-keeping.</p>	<p><i>Effective Maintenance Management</i>, Newbrough (McGraw-Hill, 1967). Sec. I and Ch. 18.</p>	<p><i>Handbook of Modern Manufacturing Management</i>, Maynard (McGraw-Hill, 1970). Sec. 6.</p>
<p>c. <i>Customer Order Processing</i>—Receiving and approving orders; shipment date notification and back order control; returned goods authorization; receipt control.</p>	<p><i>Management-Oriented Management Information Systems</i>, Kanter (Prentice-Hall, 1972). Chs. 1-4.</p>	<p><i>Communications Oriented Production Information and Control Systems</i>, vol. 2, (IBM G320-1975). Ch. 2.</p>
<p>d. <i>Procurement</i>—Securing materials and supplies at a minimum cost in the quantity, quality, and timeliness needed to support production.</p>	<p>(1) <i>Request for quotation</i>—Vendor selection criteria and evaluation; request for quotation control; blanket order negotiation.</p>	<p><i>Modern Procurement Management</i>, 5th ed., England (Irwin, 1970). Chs. 2,3,4,8,9.</p>
<p>(1) <i>Request for quotation</i>—Vendor selection criteria and evaluation; request for quotation control; blanket order negotiation.</p>	<p><i>Purchasing Handbook</i>, 3d ed., Aljian (McGraw-Hill, 1973). Chs. 5,6,7,11,27,28.</p>	<p><i>Purchasing Handbook</i>, 3d ed., Aljian (McGraw-Hill, 1973). Chs. 5,6,7,11,27,28.</p>

Summary Descriptions	Level 1 References	Level 2 References
(2) <i>Purchase order release</i> —Open order control; order size and lot release size determination; shortage and late shipment expediting.	<i>Modern Procurement Management</i> , 5th ed., England (Irwin, 1970). Ch. 7. <i>Production-Inventory Systems: Planning and Control</i> , rev. ed., Buffa & Taubert (Irwin, 1972). Ch. 3.	<i>Communications Oriented Production Information and Control Systems</i> , vols. 4 & 7 (IBM G320-1980). Chs. 5,10.
e. <i>Order Scheduling</i> —Assigning finished goods production to customer orders, expediting production on critical orders; dispatching procedures; identifying deviations from schedule; scheduling techniques such as CPM, Pert, and other network analysis techniques; parallel scheduling.	<i>Production-Inventory Systems: Planning and Control</i> , rev. ed., Buffa & Taubert (Irwin, 1972). Chs. 11,12,13.	<i>Communications Oriented Production Information and Control Systems</i> , vols. 5, 6 (IBM G320-1978, 1979). Chs. 7,8. <i>Scheduling Handbook</i> , O'Brien (McGraw-Hill, 1969). Chs. 2,3,4, 5,7.
f. <i>Manufacturing Engineering Information</i> —Manufacturing bills of materials, tooling, and equipment specification; fabricated parts routings; assembly and process information; make/buy decision analysis.	<i>Scientific Programming in Business and Industry</i> , Vazsonyi (Wiley, 1958). Ch. 16.	<i>Communications Oriented Production Information and Control Systems</i> , vol. 4 (IBM G320-1977). Ch. 5.
g. <i>Materials Control and Handling</i> —Establishing the best methods for storing and transporting materials within the operations facility.	<i>Materials Management</i> , 3d ed., Ammer (Irwin, 1974). Ch. 14.	<i>Communications Oriented Production Information and Control Systems</i> , (IBM G320-1977). Ch. 5.
(1) <i>Material and component availability</i> —Vendor lead-time checking; projected shortage identification and expediting; scrap control, cycle counting.	<i>Production-Inventory Systems: Planning and Control</i> , rev. ed., Buffa & Taubert (Irwin, 1972). Parts I,II.	<i>Production and Inventory Control Handbook</i> , Greene (McGraw-Hill, 1970). Chs. 14-16.
(2) <i>Materials requisitioning and control</i> —Implementing material ordering rules, reorder points, safety stock levels; short-term materials scheduling; requisitioning and updates to master materials plan.	<i>Material Handling Systems Design</i> , Apple (Ronald, 1972). Chs. 1-3,6,7.	<i>Material Handling Systems Design</i> , Apple (Ronald, 1972). Chs. 11-15.
(3) <i>Materials handling</i> —Design and setup of materials flow and storage prior to and during operations, traffic, receiving, storeskeeping, kitting, finished goods warehousing, and shipment product packaging.	h. <i>Quality Assurance</i> —Setting quality acceptance standards and criteria for component purchase parts, in-process inspection, and finished goods reliability.	<i>Quality Control and Industrial Statistics</i> , 3d ed., Duncan (Irwin, 1965). Parts II,IV,V.
(1) <i>Statistical criteria</i> —Quality control decision rules, sampling and rejection probabilities, and confidence intervals; use of control charts.	<i>Quality Planning and Analysis</i> , Juran & Gryna (McGraw-Hill, 1970). Chs. 14-23.	<i>Quality Control Handbook</i> , 3d ed., Juran (McGraw-Hill, 1974). Sec. 22,23,24.
(2) <i>Inspection methods</i> —Inspection tools, methods, and locations; purchased parts reject control; process control and batch tests; assembly reliability tests.	<i>Quality Planning and Analysis</i> , Juran & Gryna (McGraw-Hill, 1970). Chs. 24-28.	<i>Quality Control Handbook</i> , 3d ed., Juran (McGraw-Hill, 1974). Sec. 12,13.
(3) <i>Customer service and complaint analysis</i> —Repair or replace decisions, field failure investigation, and product design revision recommendations; field failure reports.		<i>Quality Control Handbook</i> , 3d ed., Juran (McGraw-Hill, 1974). Sec. 15,21.

Summary Descriptions	Level 1 References	Level 2 References
<p>4. <i>Important Applications in Operations</i>—Specific knowledge related to certain applications is necessary to complete the operations body of knowledge.</p>		
<p>a. <i>Industrial Engineering and Standards Development</i>—Designing efficient layouts of work stations and setting standards and procedures for individual group and performance levels at work stations in the manufacturing plant and in office service operations.</p>		
<p>(1) <i>Performance standards development</i>—Work measurement using time logs; work sampling; time study; methods study; time measurement; learning curve analysis; job descriptions and procedures, documentation and manual preparation.</p>	<p><i>Motion and Time Study: Design and Measurement of Work</i>, 6th ed., Barnes (Wiley, 1968). Entire text.</p>	<p><i>Handbook of Modern Manufacturing Management</i>, 3d ed., Maynard (McGraw-Hill, 1970). Section 3: Ch. 8.</p>
<p>(2) <i>Work methods analysis and simplification</i>—Forms evaluation, design, and simplification; mechanization of repetitive tasks.</p>	<p><i>Administrative Office Management</i>, 6th ed., Neuner, Keeling, & Kallaus (South-Western, 1972). Chs. 15-19,23.</p>	<p><i>Handbook of Modern Office Management and Administrative Services</i>, Heyel (McGraw-Hill, 1972). Section 5.</p>
<p>(3) <i>Plant layout</i>—Design of flow patterns for: process, assembly, and job shop facilities; queuing analysis of service areas; environmental factors.</p>	<p><i>Plant Location, Layout, and Maintenance</i>, Reed (Irwin, 1967). Part II.</p>	<p><i>Handbook of Modern Manufacturing Management</i>, 3d ed., Maynard (McGraw-Hill, 1970). Section 3, Ch. 2.</p>
<p>(4) <i>Office layout</i>—Office space studies; selecting equipment and mechanical aids; security analysis; work flow patterns; environmental factors.</p>	<p><i>Office Space Administration</i>, Ripnen (McGraw-Hill, 1974). Entire text.</p>	<p><i>Management Objectives in Office Design: Planning and Implementation</i>, White (Industrial & Commercial Techniques, 1971). Entire text.</p>
<p>(5) <i>Systems and procedures</i>—Design and installation of systems and procedures including forms, schedules, and other necessary documentation.</p>	<p>No citation at level 1.</p>	<p><i>Systems and Procedures: A Handbook for Business and Industry</i>, 2d ed., Lazzaro (Prentice-Hall, 1968). Entire text.</p>
<p>b. <i>Office Management</i>—Coordinating the various office services including communications, records management, mailing and reproduction, and providing for efficient office furnishings and data handling equipment.</p>		<p><i>Handbook of Modern Office Management and Administrative Services</i>, Heyel (McGraw-Hill, 1972). Section 5, Chs. 1,2,3,4,9.</p>
<p>(1) <i>Communications</i>—Design of internal mail systems; evaluation of reproduction equipment and data transduction equipment; data transmission lines, their use and control.</p>	<p><i>Administrative Office Management</i>, 6th ed., Neuner, Keeling & Kallaus (South-Western, 1972). Chs. 7,9.</p>	<p><i>Handbook of Modern Office Management and Administrative Services</i>, Heyel (McGraw-Hill, 1972). Sec. 4, Chs. 4-7,11-13.</p>
<p>(2) <i>Records management</i>—File space allocation and arrangement; indexing procedures; file storage and record retrieval systems; security and government regulations; central filing systems and procedures.</p>	<p><i>Information and Records Management</i>, Maedke, Robek, & Brown (Glencoe, 1974). Parts 2-6.</p>	<p><i>Handbook of Modern Office Management and Administrative Services</i>, Heyel (McGraw-Hill, 1972). Sec. 4, Chs. 8-10.</p>
<p>(3) <i>Secretarial and clerical services</i>—Application and utilization of word processing centers; tape and magnetic card typing, and data input machines; manual record-keeping and tabulating equipment.</p>	<p><i>Management Services by Accounting Firms</i>, Arnstein (Ronald, 1967). Part IV.</p>	<p><i>Handbook of Modern Office Management and Administrative Services</i>, Heyel (McGraw-Hill, 1972). Sec. 4, Chs. 1-3.</p>

<u>Summary Descriptions</u>	<u>Level 1 References</u>	<u>Level 2 References</u>
(4) <i>Preparing administrative manuals</i> —Manual planning and organization, writing style, reproduction and distribution updating.	No citation at level 1.	<i>Office Planning for Profit</i> , Chambers (Business Books, 1972). Entire text. <i>How to Prepare an Effective Company Operations Manual</i> , Seltz, (Dartnell, 1974). Entire text.

Human resources

(Short explanations and references are representative and not exhaustive)

<u>Summary Descriptions</u>	<u>Level 1 References</u>	<u>Level 2 References</u>
1. <i>Personnel Management</i> —Major responsibilities relating to human resources management in an organization; functions and situations normally requiring personnel policy; relations and information exchanges with other organization functions.		
a. <i>Personnel Function Organization</i> —Major responsibilities within the personnel function to top management and to other functional divisions in the organization.	<i>Principles of Personnel Management</i> , 3d ed., Flippo (McGraw-Hill, 1971). Chs. 3,4.	<i>AMA Management Handbook</i> , Moore (AMA, 1970). Entire text.
b. <i>Industrial and Labor Relations and Working with Unions</i> —Essential principles of industrial relations; characteristics of unions; process of negotiating contracts and operating through a contract.	<i>Successful Labor Relations</i> , rev. ed., Levin (Fairchild, 1967). Secs. I,III,IV,V,IX.	<i>How to Manage With a Union</i> , Justin (Industrial Relations, 1969). Book I, Chs. 1-5.
c. <i>Legal Aspects of Human Resources Management</i> —Overall legal framework governing employer-employee relations, including familiarity with the major health, safety, wage, hours, and antidiscrimination provisions of federal labor law and their recent interpretations; role of major federal institutions such as the Federal Trade Commission and National Labor Relations Board.	No citation at level 1.	<i>Fair Employment Practices Under Federal Law</i> (Commerce Clearing House, 1975). Entire text.
2. <i>Human Resources Planning and Control</i> —Planning human resources requirements; recruiting, developing, maintaining, and utilizing these resources.		
a. <i>Responsibility Levels Other Than Executive</i> —Policy areas affecting non-managerial and lower to middle managerial employees.		
(1) <i>Human resources requirements forecasting</i> —Organizational goal and objective implications for human resources requirements; preparation and use of manpower and skills forecasts; forecasting different skills levels requirements (e.g., executive, specific highly skilled, specific less highly skilled).	"Manpower Planning Models and Techniques", <i>Business Horizons</i> , Bryant, Maggard, & Taylor (April, 1973). Pp. 69-78.	<i>On Manpower Forecasting</i> , Morton (Upjohn, 1968). Entire text.
(2) <i>Hiring practices and programs</i> —Creating or analyzing job descriptions, duties, and skill combinations; developing recruiting programs; determining and comparing qualifications of potential employees for the organization.	<i>Handbook of Wage and Salary Administration</i> , Rock (McGraw-Hill, 1972). Chs. 1-6.	<i>The Recruitment Function</i> , Hawk (AMA, 1967). Entire text. and

Summary Descriptions	Level 1 References	Level 2 References
(3) <i>Skills development and training</i> —Principles of training program planning, structuring, and administration for existing or new employees, for various levels of responsibility to develop new skills, improve existing skills, and/or learn safe procedures.	<i>Training for Development</i> , Lynton & Pareek (Irwin, 1967). Entire text.	<i>Job Descriptions: How to Write and Use Them</i> , Berenson & Ruhnke (Personnel Journal, 1967). <i>Designing Training and Development Systems</i> , Tracey (AMA, 1971). Entire text.
(4) <i>Wage and salary policy formulation</i> —Anticipating need for wage and salary adjustment; criteria for acceptable adjustment policy; process of developing policy to guide wages and salaries review.	<i>Personnel: The Management of People at Work</i> , 3d ed., Beach (Macmillan, 1975). Ch. 25.	<i>Handbook of Wage and Salary Administration</i> , Rock (McGraw-Hill, 1972). Chs. 48, 49.
(5) <i>Employee benefits</i> —Significance of employee benefits in terms of size relative to wages and tax status; actuarial principles and application in calculating insurance and other deferred benefits; financial reporting requirements applying to employee benefits; specific legal restrictions and regulations applying to pension, disability, medical, and leave benefits.	<i>Personnel: The Management of People at Work</i> , 3d ed., Beach (Macmillan, 1975). Ch. 29.	<i>Handbook of Wage and Salary Administration</i> , Rock (McGraw-Hill, 1972). Chs. 28–31, 51. <i>Management Bulletin 59: Employee Benefit and Pension Management</i> (AMA, 1965). Entire text. <i>Management Bulletin No. 113: Employee Benefit Cost Control</i> (AMA, 1968). Entire text. <i>Employee Benefit Plan Review</i> (Spencer & Assoc: monthly).
b. <i>Executive Responsibility Levels</i> —Policy areas that appear to uniquely affect only upper management employees.		
(1) <i>Executive search</i> —Identifying requirements of an open managerial position; locating and contacting qualified candidates; communication between client and candidate leading to position being filled.	<i>Confessions of a Corporate Headhunter</i> , Cox (Trident, 1973). Entire text.	<i>The Handbook of Executive Search</i> , Kennedy (Consultants' News, 1974). Entire text.
(2) <i>Executive compensation</i> —Need for "replacement income" for highly compensated executives; relative dollar, tax, and motivational significance of base salary, bonuses, capital accumulation plans (e.g., stock options), and managerial perquisites; use of survey and statistical techniques to establish valid comparative data; legal regulatory and financial reporting disclosure requirements applying to executive compensation; businessman's understanding of how profit is produced and relation of various incentive plans to profit production.	<i>Financial Motivation for Executives</i> , Crystal (AMA, 1970). Entire text.	<i>How to Compensate Executives</i> , Cheeks (Dow-Jones-Irwin, 1974). Entire text.
(3) <i>Executive development programs</i> —Anticipating executive talent re-		

<u>Summary Descriptions</u>	<u>Level 1 References</u>	<u>Level 2 References</u>
quirements; recognizing and encouraging such talent to develop within the organization; developing specialized executive training programs for potential and existing managerial talent; executive responsibility descriptions; review of executive performance.	<i>The Human Constraint: The Coming Shortage of Managerial Talent</i> , Miner (Bureau of National Affairs, 1974). Chs. 1,2,14,15.	<i>A Concise Guide to Management Development</i> , Desatnick (AMA, 1970). Entire text.
3. <i>Human Resources Operations</i> —Techniques and practices that are important in implementing human resources policies of an organization, especially in day-to-day activities.		
a. <i>Performance Review and Wage Classification</i> —Implementing policies for appraising employee performance; communicating performance evaluations to employees; adjusting compensation and responsibility through transfer or promotion to reflect results of performance evaluation.	<i>Personnel Management</i> , 8th ed., Jucius (Irwin, 1975). Chs. 11,12.	<i>What to Do About Performance Appraisal</i> , Kellogg (AMA, 1965). Entire text.
b. <i>Employee Relations</i> —Programs and activities conducive to a safe, equitable, enriched work environment.		
(1) <i>Grievance and disciplinary procedures</i> —Channels for handling grievances; establishing disciplinary procedures and penalties; employee participation in grievance and disciplinary procedures.	<i>Personnel: The Management of People at Work</i> , 3d ed., Beach (Macmillan, 1975). Chs. 23,24.	<i>How to Manage with a Union</i> , Justin (Industrial Relations, 1969). Book I, Secs. 3,4,5,6,7,8,9.
(2) <i>Health and safety</i> —Maintaining working conditions that are healthy and safe; inspection programs; safety equipment; identifying accident-prone workers; industrial health and safety programs' organization and function.	<i>Personnel: The Management of People at Work</i> , 3d ed., Beach (Macmillan, 1975). Ch. 28.	<i>Industry Roles in Health Care</i> (Conference Board, 1974). Entire text. and <i>OSHA and the Union, Bargaining on Job Safety and Health, A BNA Special Report</i> (Bureau of National Affairs, 1973). Entire text.
(3) <i>Environmental enrichment and communications programs</i> —Sports, community service, charitable activities; organization newsletters; employee suggestion incentive systems; making policies and policy interpretation known to employees.	<i>A Guide to Creative Personnel Management</i> , Benton (Prentice-Hall, 1962). Chs. 20,21.	<i>Employee Communications: Policy and Tools</i> , (Conference Board, 1966). Entire text. <i>New Perspectives in Job Enrichment</i> , Maher (Van Nostrand Reinhold, 1971). Chs. 1,10,11.
(4) <i>Job design and enrichment</i> —Development of interesting jobs; reduction or elimination of dull or boring routines.	No citation at level 1.	<i>New Perspectives in Job Enrichment</i> , Maher (Van Nostrand Reinhold, 1971). Chs. 1,10,11.

Marketing

(Short explanations and references are representative and not exhaustive)

<u>Summary Descriptions</u>	<u>Level 1 References</u>	<u>Level 2 References</u>
1. <i>Marketing Administration</i> —The nature of the marketing organizational structure; its policies and objectives; framework for assigning responsibility and measuring performance.		

Summary Descriptions	Level 1 References	Level 2 References
a. <i>Line and Staff Functions</i> —Lines of authority; coordination levels; committees; organization charts.	<i>Marketing Management: Analysis, Planning, and Control</i> , 2d ed., Kotler (Prentice-Hall, 1972). Ch. 9.	<i>Handbook of Modern Marketing</i> , Buell (McGraw-Hill, 1970). Sections 7.9.
b. <i>Job Responsibility and Performance</i> —Job definitions; charts of responsibility; management performance objectives.	No citation at level 1.	<i>Job Descriptions in Marketing</i> , Sperling (AMA Research Study 94). (American Marketing Association, 1969). Entire text.
c. <i>Information Flow</i> —Analysis of flow between line operations and staff functions; transactions flow; formal and informal information.	<i>Marketing Management: Analysis, Planning, and Control</i> , 2d ed., Kotler (Prentice-Hall, 1972). Ch. 10.	<i>Marketing Information Systems</i> , Schaffir & Trentin (AMACOM, 1973). Chs. 1-7,16.
2. <i>Marketing Research, Planning and Control</i> —Planning to develop marketing services related to organizational objectives over a three- to five-year planning horizon; development of products and marketing resources to provide these services; determining economics of proposed new products and services; planning schedules to implement marketing programs.		
a. <i>Marketing Research</i> —Techniques of analysis, investigation, and research used to identify and understand marketing problems and seek solutions to them.		
(1) <i>Consumer behavior and decision processes</i> —Micro and macro behavior, consumer tactics, social interaction, cultural and reference group effects.	<i>Consumer Behavior: Theory and Practice</i> , rev. ed., Walters (Irwin, 1974). Entire text.	<i>Consumer Behavior: Theory and Application</i> , Farley, Howard & Ring (Allyn & Bacon, 1974). Entire text.
(2) <i>Market institutional structure</i> —Interrelationships—static and dynamic, retail and wholesale, as required to understand the significance of a research question or result.	<i>Marketing: Principles and Methods</i> , 7th ed. Carman & Uhl (Irwin, 1973). Entire text.	<i>Marketing Decision Making: A Model Building Approach</i> , Kotler (Holt, Rinehart & Winston, 1971). Entire text.
(3) <i>Research process</i> —Phases, structure, and policies including administrative fundamentals and project management concepts as well as scientific method applied to research hypotheses.	<i>Marketing Research: Fundamentals & Dynamics</i> , Zaltman & Burger (Dryden, 1975). Chs. 1-4,14-17.	<i>Handbook of Marketing Research</i> , Ferber (McGraw-Hill, 1974). Sections I,II.
(4) <i>Methods of data collection</i> —Sampling, surveys, interviews, questionnaires, and selection of most appropriate means to obtain the data required.	<i>Marketing Research: Text and Cases</i> , 3d ed., Boyd & Westfall (Irwin, 1972). Chs. 1-11.	<i>Research for Marketing Decisions</i> , 3d ed., Green & Tull (Prentice-Hall, 1974). Chs. 1-7,16.
(5) <i>Data evaluation, interpretation and projection</i> —Applied to results of marketing research studies and historical data, using statistical techniques.	<i>Research for Marketing Decisions</i> , 3d ed., Green & Tull (Prentice-Hall, 1974). Chs. 8-15,17.	<i>Applications of the Sciences in Marketing Management</i> , Bass, King & Pessemier (Wiley, 1968). Entire text.
b. <i>Marketing Planning and Control</i> —Techniques, skills, and procedures related to all aspects of planning and controlling marketing activities and the marketing function.		
(1) <i>Marketing Planning</i> —Processes, techniques, and organization for market planning.	<i>Marketing Management: Analysis, Planning and Control</i> , 2d ed., Kotler (Prentice-Hall, 1972). Chs. 11,20.	<i>Marketing Planning: Approaches of Selected Companies</i> , Miller (AMA, 1967). Entire text.

Summary Descriptions	Level 1 References	Level 2 References
(2) <i>Sales forecasting</i> —Use of models based on time series analysis, regression analysis, exponential smoothing, subjective methods, forecasting new products, evaluation of forecasts; appraising forecast accuracy; use of models to simulate market processes.	<i>Marketing Management: Analysis, Planning and Control</i> , 2d ed., Kotler (Prentice-Hall, 1972). Ch. 7.	<i>Marketing Decision Making: A Model Building Approach</i> , Kotler (Holt, Rinehart & Winston, 1971). Parts I,II,III.
(3) <i>Use of sales analysis</i> —By region, product line, and market; by time period to show trend, market share, and product contribution; identifying effects of changing advertising, promotions, price changes, and other variables.	<i>Management of the Sales Force</i> , 4th ed., Stanton & Buskirk (Irwin, 1974). Chs. 23,24.	<i>Marketing Management: Analysis, Planning and Control</i> , 2d ed., Kotler (Prentice-Hall, 1972). Ch. 21.
(4) <i>Marketing strategy formulation</i> —Marketing mix decisions on product continuation or change, new product introduction, and timing; use of customer and product profitability analysis to evaluate sales emphasis, promotion, and distribution.	<i>Basic Marketing</i> , 4th ed., McCarthy (Irwin, 1971). Chs. 2,10-28.	<i>Managerial Analysis in Marketing</i> , Sturdivant (Scott Foresman, 1970). Chs. 5-16. <i>Managing Marketing Profitability</i> , Simon (AMA, 1969). Entire text.
3. <i>Marketing Operations</i> —Evaluating and sustaining effectiveness of marketing operations including management of the sales force, product promotion, distribution and handling, and understanding government regulations applying to marketing.		
a. <i>Sales Force Management</i> —Policies and procedures for developing and maintaining an effective selling organization for industrial, manufactured, or agricultural products.		
(1) Behavioral sciences, psychology of selling process, interpersonal relationships, motivation, and communication.	<i>Sales Force Management</i> , Davis & Webster (Ronald, 1968). Chs. 3,4,5,11.	<i>Selling: A Managerial and Behavioral Science Analysis</i> , 2d ed., Thompson (McGraw-Hill, 1973). Parts 3-6.
(2) Incentive and other compensation systems for sales personnel and circumstances that favor each system.	<i>Management of the Sales Force</i> , 4th ed., Stanton & Buskirk (Irwin, 1974). Chs. 13-15,17,18.	<i>The Dartnell Sales Manager's Handbook</i> , 11th ed., Aspley, Riso (ed.) (Dartnell, 1968). Chs. 42-44; 53,54.
(3) Sales territory and sales support identification and provision.	<i>Sales Force Management</i> , Davis & Webster (Ronald, 1968). Chs. 2,7.	<i>The Dartnell Sales Manager's Handbook</i> , 11th ed., Aspley, Riso (ed.) (Dartnell, 1968). Chs. 51,52
(4) Sales staff training and development, including use of in-house and external facilities, content of programs, and selection of persons to undergo training.	<i>Management of the Sales Force</i> , 4th ed., Stanton & Buskirk (Irwin, 1974). Chs. 10-12.	<i>The Dartnell Sales Manager's Handbook</i> , 11th ed., Aspley, Riso (ed.) (Dartnell, 1968). Chs. 48-50.
b. <i>Advertising and Product Promotions</i> —Media advertising, warranties, allowances, customer profiling.	<i>Promotional Strategy</i> , 3d ed., Engel, Wales & Warshaw (Irwin, 1975). Entire text.	<i>Sales Promotion Handbook</i> , 6th ed., Riso (Dartnell, 1973). Entire text.
c. <i>Product Distribution and Handling</i> —Economics of product handling after manufacture and before sale; getting product prior to delivery; control of product lines.		

<u>Summary Descriptions</u>	<u>Level 1 References</u>	<u>Level 2 References</u>
(1) <i>Distribution cost accounting and effectiveness</i> —Evaluation of alternative distribution channels including factory, warehouse and sales facility location.	<i>Physical Distribution Management</i> , rev. ed., Bowersox, Smykay & LaLonde (Macmillan, 1968). Chs. 1,3,4,5,10,12,13.	<i>The Marketing Channel: A Conceptual Viewpoint</i> , Mallen (Wiley, 1967). Entire text.
(2) <i>Inventory management and control</i> —Control of finished goods and spare parts for servicing; warehouse management.	<i>Business Logistics: Concepts and Viewpoints</i> , Daniel & Jones (Allyn & Bacon, 1969). Part 4.	<i>Physical Distribution Management</i> , rev. ed., Bowersox, Smykay & LaLonde (Macmillan, 1968). Ch. 8.
(3) <i>Transportation</i> —Moving product to specific locations when required for reasonable cost.	<i>Introduction to Logistics and Traffic Management</i> , McElhiney & Hilton (Brown, 1968). Entire text.	<i>Physical Distribution Management</i> , rev. ed., Bowersox, Smykay & LaLonde (Macmillan, 1968). Chs. 6,7.
(4) <i>Product packaging, handling, and storage</i> —As these affect or control the distribution process.	<i>Business Logistics: Concepts and Viewpoints</i> , Daniel & Jones (Allyn & Bacon, 1969). Part 7.	"Packaging's Role in Physical Distribution," <i>AMA Bulletin No. 77</i> (AMA, 1966). Entire text.
d. <i>Customer Service</i> —Setting customer service levels; customer service and repair support; warranty and service contract performance.	<i>The Consumer Affairs Department: Organization and Functions</i> , (Conference Board, 1973). Entire text.	<i>Product Service Management</i> , Gannon (American Marketing Association, 1972). Entire text.
e. <i>Government Regulation</i> —Understanding and complying with major regulations affecting competition and pricing policies of the firm, Sherman Act, Clayton Act, Robins or Putnam Act, antidumping provision of international commerce.	<i>Marketing Principles: The Management Process</i> , Enis (Goodyear, 1974). Ch. 5.	<i>Marketing Management: Analysis, Planning, and Control</i> , 2d ed., Kotler (Prentice-Hall, 1972). Ch. 22.

Management science

(Short explanations and references are representative and not exhaustive)

<u>Summary Descriptions</u>	<u>Level 1 References</u>	<u>Level 2 References</u>
1. <i>Management Science Problem Solving Frame of Reference</i> —Nature of management science knowledge and processes; use of management science knowledge in problem structuring, identifying acceptable strategies, and developing control benchmarks for performance appraisal; the operations research group; stages in an operations research undertaking.	<i>Fundamentals of Operations Research</i> , Ackoff & Sasieni (Wiley, 1968). Chs. 1,2,3,4,17. <i>Principles of Operations Research</i> , 2d ed., Wagner (Prentice-Hall, 1975). Chs. 1,22.	<i>Introduction to Operations Research</i> , Churchman, Ackoff, Arnoff (Wiley, 1957). Chs. 1-7,20,21,22.
2. <i>Management Science Models</i> —The major quantitative skills, models, and techniques that are most useful in a variety of management science applications.		
a. <i>Statistics and Mathematics</i> —Decision analysis and probability theory, especially as support for models or services in other areas such as industrial quality control, product reliability calculation, and analysis of competitive situations, and service level evaluation.		

Summary Descriptions	Level 1 References	Level 2 References
(1) <i>Statistical decision theory</i> —Utility theory; states of nature; alternatives; the "best" alternative; decision rules; the "best" decision rule; certainty and uncertainty; criteria for decision making under uncertainty.	<i>Statistical Analysis for Business Decisions</i> , Peters & Summers (Prentice-Hall, 1968). Ch. 10.	<i>Games and Decisions</i> , Luce & Raiffa (Wiley, 1957). Chs. 2,13.
(2) <i>Probability theory</i> —Interpretations of uncertainty; basic probability theorems; important probability theorems such as the binomial, normal, Poisson, beta, and gamma distributions and their major characteristics and applications.	<i>Statistical Analysis for Business Decisions</i> , Peters & Summers (Prentice-Hall, 1968). Chs. 1,2,3.	<i>Statistical Analysis for Business Decisions</i> , Peters & Summers (Prentice-Hall, 1968). Chs. 4,5,6.
(3) <i>Sampling</i> —Sampling distributions; design or selection of single, double, or sequential sampling plans; simple random, stratified, and cluster sampling; interpretation of sampling results.	<i>Statistical Analysis for Business Decisions</i> , Peters & Summers (Prentice-Hall, 1968). Chs. 6,11. <i>Statistical Sampling for Accounting Information</i> , Cyert & Davidson (Prentice-Hall, 1962). Chs. 1-10,13.	"A Statistical Interpretation of SAP No. 54," Roberts, <i>The Journal of Accountancy</i> , March 1974. "Relating Statistical Sampling to Audit Objectives", Elliott & Rogers, <i>The Journal of Accountancy</i> , July 1972, pp. 46-55.
(4) <i>Data relationships</i> —Regression analysis; multivariate analysis; design of experiments; hypothesis testing and statistical inference; type I and type II errors; use of cumulative probability distributions to accept or reject a hypothesis.	<i>Statistical Analysis for Business Decisions</i> , Peters & Summers (Prentice-Hall, 1968). Chs. 7,8,9,14,16.	<i>Statistical Analysis for Business Decisions</i> , Peters & Summers (Prentice-Hall, 1968). Chs. 12,13,15,17.
(5) <i>Matrix models</i> —Two-person zero-sum games; Markov processes; Leontief (input-output) matrices.	<i>Introduction to Operations Research</i> , Hillier & Lieberman (Holden-Day, 1967). Ch. 13.	<i>Input-Output Economics</i> , Leontief (Oxford, 1966). Chs. 1,2,7,8,11.
b. <i>Forecasting</i> —Use of time series to anticipate future values of variables or relationships among variables in order to predict demand, anticipate economic or financial relationships, or to model complex situations.		
(1) <i>Smoothing</i> —Single, double, and triple exponential smoothing; effect of size of smoothing constant; effect of transients such as step, ramp, or impulse change in time series being analyzed.	<i>Operations Research</i> , Siemens, Marting, Greenwood (Free Press, 1973). pp. 12-36.	<i>Operations Research in Production Planning, Scheduling, and Inventory Control</i> , Johnson & Montgomery (Wiley, 1974). pp. 416-451.
(2) <i>Time series analysis</i> —Simple and compound moving averages; dealing with random, seasonal, and cyclical variation; Fourier series analysis; multiple regression analysis.	<i>Operations Forecasting</i> , Abramson (ed.) (American Marketing Association, 1967). Entire text.	<i>Applied Time Series Analysis for Managerial Forecasting</i> , Nelson (Holden-Day, 1973). Chs. 1,2,3,4,5,7,8.
(3) <i>Forecasting standards</i> —If forecasts are of business financial position.	No citation at level 1.	<i>Guidelines for Systems for the Preparation of Financial Forecasts</i> , MAS Guidelines Series No. 3 (AICPA, 1975). Entire text.

Summary Descriptions	Level 1 References	Level 2 References
<p>c. <i>Mathematical Programming and Networks</i>—Network methods of analyzing complex problems, usually involving a large number of variables and relationships among variables; objective is to optimize some weighted sum of variable values.</p>		
<p>(1) <i>Linear programming</i>—Graphical and simplex methods of solution; postoptimality analysis; formulation of major prototype problems such as diet, warehouse, product mix, transportation, and production scheduling; goal programming; linear programming under uncertainty.</p>	<p><i>Principles of Operations Research</i>, 2d ed., Wagner (Prentice-Hall, 1975). Chs. 2,3,4,5,6,16.</p>	<p><i>Introduction to Operations Research</i>, Hillier & Lieberman (Holden-Day, 1967). Chs. 5,6,15.</p> <p><i>Management Models and Industrial Applications of Linear Programming</i>, vols. 1 & 2, Charnes & Cooper (Wiley, 1961). Entire text.</p>
<p>(2) <i>Integer programming</i>—When integer programming is preferable to ordinary linear programming and methods such as the cutting plane technique of seeking a solution to integer programming problems.</p>	<p>No citation at level 1.</p>	<p><i>Introduction to Operations Research</i>, Hillier & Lieberman (Holden-Day, 1967). Ch. 16.</p>
<p>(3) <i>Project scheduling and control</i>—Critical path methods; PERT, PERT-CPM and similar control methods; formulation of project scheduling problems and application of resulting control information to achieve desired combination of overall project cost and completion time.</p>	<p><i>Introduction to Operations Research</i>, Hillier & Lieberman (Holden-Day, 1967). pp. 225-235.</p>	<p><i>Fundamentals of Operations Research</i>, Ackoff & Sasieni (Wiley, 1968). Ch. 11.</p>
<p>(4) <i>Dynamic programming</i>—Principle of recursive optimization; problem formulation; continuous and discrete formulations; major prototype applications such as production scheduling and distribution of effort (maximum of two constraints); probabilistic dynamic programming.</p>	<p><i>Fundamentals of Operations Research</i>, Ackoff & Sasieni (Wiley, 1968). Ch. 9.</p>	<p><i>Principles of Operations Research</i>, 2d ed., Wagner (Prentice-Hall, 1975). Chs. 8,9,10.</p>
<p>d. <i>Waiting Line</i>—Queuing theory; queue discipline; service mechanism; arrivals; dynamic behavior and steady state.</p>	<p><i>Introduction to Operations Research</i>, Hillier & Lieberman (Holden-Day, 1967). pp. 285-304.</p>	<p><i>Introduction to Operations Research</i>, Hillier & Lieberman (Holden-Day, 1967). pp. 304-317, Ch. 11.</p>
<p>e. <i>Inventory Models</i>—Methods of analyzing relationships between demand and production; concept of inventory policy (order quantity and replenishment point); concept of service level; determining or estimating costs of inventory function.</p>		
<p>(1) <i>Basic models</i>—Economic order quantity (with and without stockouts permitted); "bin" method; safety stock; uncertainty in demand rate or order delivery time; sensitivity analysis.</p>	<p><i>Introduction to Operations Research</i>, Hillier & Lieberman (Holden-Day, 1967). Ch. 12.</p>	<p>Same citation as level 1.</p>
<p>(2) <i>Basic models implementation</i>—Linking demand forecasting to placing of orders; computer implementation; heuristic models to meet requirements of special situations.</p>	<p><i>Principles of Operations Research</i>, Wagner (Prentice-Hall, 1975). Ch. 19.</p>	<p><i>Decision Rules for Inventory Management</i>, Brown (Holt, Rinehart & Winston, 1967). Entire text.</p>

Summary Descriptions	Level 1 References	Level 2 References
f. <i>Simulation</i> —Model formulation, computer implementation, validation methods; analog, iconic, and symbolic models; adequacy of representation; static and dynamic simulation methods; deterministic and Monte Carlo approaches.	<p><i>Principles of Operations Research</i>, Wagner (Prentice-Hall, 1975). Ch. 21.</p> <p><i>System Simulation</i>, Gordon (Prentice-Hall, 1969). Chs. 1-4,6,7,8.</p>	<p><i>Computer Simulation Techniques</i>, Naylor, Balintfy, Burdick & Chu (Wiley, 1966). Entire text.</p> <p><i>Simulation in Business and Economics</i>, Meier, Newell & Pazar (Prentice-Hall, 1969). Chs. 3,4,5,7,8,9.</p>
3. <i>Management Science Application Areas</i> —Management science models and techniques are broadly applicable throughout the range of organizational activity. Knowledge of application areas is an essential part of a management scientist's proficiency. The application areas are numerous and include specific industry applications as well as functional applications. The following is a partial list of application areas in which the applications have become a part of the management sciences body of knowledge.		
a. <i>General Management</i> —Corporate planning; investment analysis; acquisition analysis; plant site selection; new product evaluation; project control; R&D planning and project selection; personnel scheduling.	<p><i>Executive Decisions and Operation Research</i>, Miller & Starr (Prentice-Hall, 1960). Entire text.</p>	<p><i>Scientific Decision Making Business</i>, Schuchman (Holt, Rinehart & Winston, 1963). Parts I,III,IV.</p>
b. <i>Finance and Accounting</i> —Financial planning projections; cash flow forecasting; capital budgeting; capital investment performance forecasting; credit analysis; long-range financial strategy; capital structure analysis; lease/buy decisions; reserves determination; auditing (sampling plans, and auditor-assignment scheduling).	<p><i>Information for Decision Making</i>, 2d ed., Rappaport (Prentice-Hall, 1975). Entire text.</p>	<p><i>Corporate Simulation Models</i>, Schreiber (University of Washington, 1970). Entire text.</p>
c. <i>Operations</i> —Multiplant production allocation; inventory management; production planning and scheduling; job scheduling and control; ingredients blending; routine and sequencing of materials flow; facilities and process layout; line balancing and pacing; shop loading and capacity planning; quality control; product reliability.	<p><i>Industrial Operations Research</i>, Fabrycky, Ghare & Torgerson (Prentice-Hall, 1972). Chs. 4,5,6.</p>	<p><i>Production and Operations Management</i>, Gavett (Harcourt Brace & World, 1968). Entire text.</p> <p><i>Operations Research in Production Planning, Scheduling, and Inventory Control</i>, Johnson & Montgomery (Wiley, 1974). Chs. 1-5.</p>
d. <i>Marketing</i> —Sales forecasting; market share analysis; product mix analysis; advertising media selection; sales force planning and control; advertising budgeting and planning; product-line planning; promotion budgeting and planning; distribution and logistics applications such as: facilities location, product routing, mode of transportation analysis, carrier routing and scheduling; multilocation inventory planning and control.	<p><i>Quantitative Analysis for Marketing Management</i>, King (McGraw-Hill, 1967). Chs. 4-11.</p>	<p><i>Application of Management Sciences in Marketing</i>, Montgomery & Urban (Prentice-Hall, 1969). Chs. 2-7.</p> <p><i>Applications of the Sciences in Marketing Management</i>, Bass, King & Pessemier (Wiley, 1968). Chs. 1-6,9,10,11-14.</p>

MAS survey instruments

A. A Study of Management Advisory Services Performed by CPA Firms: Questionnaire and summary results

Prepared for the American Institute of Certified Public Accountants by
The Roper Organization, Inc., August, 1974.

About this questionnaire

This questionnaire is divided into three parts. The first section—on this page—is information about your organization—analysis information that will make the data on the subsequent pages more meaningful. It is not necessary to indicate the name of your firm, but a knowledge of the size, age and location of your firm will enable AICPA to tailor its services according to the needs of its members.

The more substantive questions in the survey are on the following three pages. The second section comprising the inside spread of this four-page fold, contains half-a-dozen questions about *specific* Management Advisory Services of one kind or another. The third section—on the back page—consists of a few more questions about Management Advisory Services *in general*.

It should take you no more than fifteen or twenty minutes to fill out the entire questionnaire and it should not be necessary to look up any records or figures. If, however, there is another member of your organization who is more knowledgeable about your firm's activities in the Management Advisory Services area, it might be easier for him or her to complete the questionnaire than for you to do so.

About your firm

No. of Respondents 1152
100%

1. In which geographic region of the United States is your firm (main office) located?

Northeast (New England states,
N.Y., N.J., Penna.)..... 24%

<i>Middle West</i> (Ohio, Mich., Ind., Ill., Wisc., Minn., Iowa, Nebr., Kansas, Mo., N. Dakota, S. Dakota)	21%
<i>South</i> (Del., Md., D.C., Va., W. Va., N.C., S.C., Ga., Fla., Ky., Tenn., Miss., Ala., La., Ark., Okla., Tex.)	31%
<i>West</i> (Mont., Wyo., Col., Utah, Idaho, N. Mex., Ariz., Nevada, Cal., Wash., Oregon)	24%

2. Is there a city of 250,000 population or more within 25 miles of (any of) your office(s)?

Yes	61%
No	38%

3. How many separate offices does your firm maintain?

1	79%
2 or 3	18%
4 or more	2%

4. How many people are there in your firm (in all offices) who render *professional services, of any kind* (audit, tax, accounting services, and/or Management Advisory Services)?

	4. Total <u>professionals</u>	5. Full-time <u>MAS</u>
None		74%
1	8%	6%
2 - 5	40%	9%
6 - 10	29%	2%
11 - 24	18%	1%
25 - 49	4%	*
50 or more	*	*
Don't know/no answer		9%

5. How many of these people are engaged in Management Advisory Services on a substantially full-time basis? (Record in second column above)

6. How long has your firm (or a predecessor of it) been in business?

Under 5 years	14%
5 years up to 10	13%
10 years up to 20	27%
20 years or more	44%

Please answer Questions 7-12, shown below. For each of the services (a-m) shown below.

	7. How often does your firm perform each of these services (a-m)?		8. Has your firm actively developed business in each of these areas or only responded to client requests?		9. How much potential business do you feel there is in each of these areas among your clients and prospective clients?		10. How do you see the market demand for these services developing?		11. How would you describe your firm's capabilities in each of these areas?		12. If AICPA offered technical support for each of these services, which ones, if any, would your firm avail itself of?					
	Freq.	Occur- sionally	Never	Actively developed	Responded to clients	A lot	A moderate amount	Growing rapidly	Growing moderately	Staying about same		Strong capability	Moderate capability	No real capability		
a. <i>Counsel on General Business Matters.</i> (Advice on diverse managerial questions not involving a special study.)	75%	23	1	26%	72	45%	46	8	33%	50	16	41%	49	8	1	52%
b. <i>Financial and Economic Analysis.</i> (Capital requirements; structuring; resource allocation; merger analysis; financial feasibility studies; insurance studies; rate studies; etc.)	21%	70	8	14%	76	23%	54	20	23%	49	24	25%	52	17	2	58
c. <i>Managerial Information and Control Systems.</i> (Identification of information requirements; development and installation of planning, budgeting and reporting systems; records retention studies; etc.)	14%	71	14	14%	70	21%	50	25	17%	48	31	20%	52	20	6	49
d. <i>Manual Systems and Procedures.</i> (Development, installation of non-EDP systems, methods, e.g., order processing, billing, receivables, purchasing, payroll, general ledger, etc.)	50%	47	2	31%	66	32%	57	9	16%	55	27	54%	37	5	1	44
e. <i>EDP Systems.</i> (Evaluation, design, implementation of EDP systems or specific applications.)	6%	49	43	12%	43	22%	41	3	29%	42	21	10%	28	33	24	49
f. <i>EDP Operations.</i> (Helping clients utilize EDP effectively. Evaluating, developing improvements in data recording, processing concepts, equipment, scheduling, documentation, controls.)	5%	50	43	10%	45	18%	42	32	25%	44	22	9%	28	32	24	46
g. <i>Industrial Engineering.</i> (Manufacturing methods; equipment; plant, office layout; production standards; quality control methods; parts standardization; materials handling; work flow.)	••	15	84	1%	14	2%	19	66	4%	24	55	1%	8	27	54	15

	7. How often does your firm perform each of these services (a-m)?		8. Has your firm actively developed business in each of these areas or only responded to client requests?		9. How much potential business do you feel there is in each of these areas among your clients and prospective clients?			10. How do you see the market demand for these services developing?			11. How would you describe your firm's capabilities in each of these areas?			12. If AICPA offered technical support for each of these which ones, if any, would your firm avail itself of?		
	Frc- quently	Occa- sionally	Never	Actively developed	Responded to clients	A lot	A moderate amount	Very little	Growing rapidly	Growing moderately	Staying about same	Strong capa- bility	Moderate capa- bility		Minimum capa- bility	
h. <i>Production and Inventory Control.</i> (Systems for production planning, scheduling; control of material, product inventories.)	2%	50	46	5%	47	5%	38	48	6%	36	46	5%	30	33	24	28
i. <i>Cost Accounting.</i> (Development, installation of cost accounting systems; special purpose cost determinations.)	8%	72	19	13%	66	10%	52	33	8%	45	40	15%	50	23	7	38
j. <i>Organization and Personnel.</i> (Organization studies; manpower planning; personnel administration; job evaluation; salary studies; employee benefit analysis; personnel training.)	4%	53	42	7%	50	7%	39	44	7%	35	46	7%	33	32	20	28
k. <i>Executive and Managerial Recruitment.</i> (Specifying, identifying, investigating, evaluating executive, managerial candidates.)	4%	46	50	3%	46	4%	28	59	4%	26	57	6%	29	29	28	16
l. <i>Marketing.</i> (Development of market strategies; sales compensation programs; sales analysis; marketing information systems; counseling on distribution, pricing.)	2%	33	65	3%	31	4%	26	58	5%	28	54	3%	17	32	39	22
m. <i>Operations Research.</i> (Statistical, mathematical, simulation methods for solving complex problems.)	1%	17	81	2%	16	3%	19	64	3%	23	57	2%	12	27	48	19

Note: Question 8—answers only of respondents who answered “frequently” or “occasionally” to Question 7. Questions 9-12—all respondents who answered questions.

Please answer Questions 7-12, **----->** For each of the services (a-m) shown below.

13. If AICPA/State Societies were to provide each kind of technical support shown below in the field of Management Advisory Services, which of these, if any, would your firm use?
- | | |
|--|-----|
| Annual technical conference, seminar, workshop | 42% |
| Continuing professional education courses in major nearby cities | 65 |
| Technical studies—paperbacks on techniques, case histories | 43 |
| “How to” articles in <i>Journal of Accountancy</i> | 48 |
| Audio cassettes | 30 |
| Self-study courses | 29 |
| None of them | 4 |
14. Are Management Advisory Services a separate function and formal department in your firm or are they incidental to and a part of your overall service?
- | | |
|------------------------------------|----|
| Separate function, department..... | 2% |
| Part of overall service | 96 |
15. Are Management Advisory Services performed in your firm by people who were trained *primarily* in accounting, by people who were trained *primarily* in other fields, or by both types of people?
- | | |
|---------------------------------|-----|
| Accounting personnel only | 90% |
| Other personnel only..... | 1 |
| Both types of personnel | 8 |
16. How does your firm *usually* bill clients for Management Advisory Services performed?
- | | |
|---|-----|
| As a separate charge..... | 38% |
| As part of total service, without separate identification | 60 |
17. Approximately what percentage of your firm’s total *professional time* is accounted for by each of the functions below? (Percentages should add to 100%)
- | | Median |
|--------------|--------|
| Audits | 25.4% |
| Taxes..... | 30.4% |

Accounting Services (maintaining accounting records, preparing financial statements)	30.1%
Management Advisory Services	10.2%
Other services	%
Total 100%	

18. If you said in Question 17 that a portion of your firm's professional time is in "other services", please indicate below what the principal other services are:

	Median
Data processing.....	0.5
Legal services	0.5
Personal financial counsel	0.5
Other.....	0.6

19. During the last five years, how have Management Advisory Services changed as a percentage of your firm's total business?

	19. <u>Past 5 years</u>	20. <u>Next 5 years</u>
Great growth	9%	17%
Some growth	43	52
About the same	43	27
Decline	1	1

20. As a percentage of your firm's total business, what do you expect Management Advisory Services to do during the next five years? (Record in second column above)

21. Please indicate below any Management Advisory Services courses that professional personnel in your firm have attended during the last two years?

Courses conducted by:

Computer manufacturers	31%
Colleges, universities	12
AICPA/State Societies	58
Other professional societies	11
None of above	34

Thank you very much. No signature is necessary. Please return in enclosed business reply envelope to The Roper Organization Inc., One Park Avenue, New York, N.Y. 10016

B. MASBOKE CPA Firm Survey

Please answer all questions. Thank you for your time and effort.

- Individual MAS engagements are often oriented to one or more specific areas of service to the client. We have identified twelve major areas of service, and within each such major service area, a number of component services. These are all listed below.

Please indicate the *significance of each component service in your practice by respectively circling S, NS, or NP for each service area where the symbols have the following meanings:

- S = Significant in our MAS practice
- NS = Not significant in our MAS practice
- NP = Not performed by our firm

*Assume “significant” refers to the relative amount of time spent on each service area in your MAS practice.

General Management

- S NS NP Acquisitions, mergers, divestments
- S NS NP Evaluation of management
- S NS NP Executive compensation
- S NS NP Executive recruiting
- S NS NP Goals and objectives
- S NS NP Long range planning
- S NS NP Management audit
- S NS NP Management controls and reports
- S NS NP Organization structure and policies
- S NS NP Reorganizations
- S NS NP Other

Administration and Office Operations

- S NS NP Communications (Creditors, Investors, Public)
- S NS NP Legal department systems
- S NS NP Management controls and reports
- S NS NP Office management (Housekeeping, Security, Supplies, Facilities, Occupancy)
- S NS NP Public relations
- S NS NP Secretarial—corporate and stockholder
- S NS NP Other

Operations, Manufacturing, and Engineering

- S NS NP Construction management
- S NS NP Customer order processing

S NS NP Engineering paperwork
 S NS NP Engineering, product information
 S NS NP Factory loading and scheduling
 S NS NP Industrial engineering
 S NS NP Inventory control
 S NS NP Maintenance planning and control
 S NS NP Make or buy analysis
 S NS NP Management controls and reports
 S NS NP Material handling and storage
 S NS NP Methods study
 S NS NP Operations planning and control
 S NS NP Performance reporting
 S NS NP Plant equipment control
 S NS NP Plant layout
 S NS NP Plant location
 S NS NP Production planning and control
 S NS NP Project control
 S NS NP Purchasing and subcontracting
 S NS NP Quality control
 S NS NP Research rating and planning systems
 S NS NP Resource planning
 S NS NP Time and motion studies
 S NS NP Time standards
 S NS NP Work flow
 S NS NP Work measurement
 S NS NP Value engineering
 S NS NP Other

Marketing

S NS NP Channels of distribution
 S NS NP Consumer research
 S NS NP Customer profiles and records
 S NS NP Finished goods inventory policy
 S NS NP Management controls and reports
 S NS NP Market analysis
 S NS NP Merchandising, advertising, promotion
 S NS NP Order entry
 S NS NP Physical distribution
 S NS NP Price determination and estimating
 S NS NP Product or service life analysis
 S NS NP Product performance and life cycle
 S NS NP Sales analysis
 S NS NP Sales force compensation
 S NS NP Sales force management
 S NS NP Sales forecasting, demand planning
 S NS NP Service and repairs
 S NS NP Shipping
 S NS NP Test marketing plans
 S NS NP Warehousing
 S NS NP Other

Finance and Accounting

- S NS NP Accounts payable
- S NS NP Accounts receivable
- S NS NP Annual financial planning and budgeting
- S NS NP Asset revaluation studies
- S NS NP Billing and credit
- S NS NP Cash management
- S NS NP Cost accounting and allocation
- S NS NP Cost standards
- S NS NP Differential cost studies
- S NS NP Distribution cost studies
- S NS NP Financial reporting
- S NS NP Financing, selection of sources of capital
- S NS NP General accounting
- S NS NP Government contract costs and billings
- S NS NP Insurance coverage
- S NS NP Lease or buy analysis
- S NS NP Long range financial planning
- S NS NP Make or buy analysis
- S NS NP Management controls and reports
- S NS NP Payroll and labor distributions
- S NS NP Product profitability
- S NS NP Property
- S NS NP Replacement of plant and equipment studies
- S NS NP Responsibility reporting
- S NS NP Return on investment studies
- S NS NP Revenue accounting
- S NS NP Tax department systems
- S NS NP Other

Personnel

- S NS NP Arbitration
- S NS NP Contract negotiations
- S NS NP Financial benefit plans
- S NS NP Industrial relations (Collective bargaining and labor negotiation studies, Labor grievances, Arbitration—commercial or labor)
- S NS NP Job description and evaluation
- S NS NP Job design—enrichment
- S NS NP Labor and union relations
- S NS NP Management controls and reports
- S NS NP Merit rating
- S NS NP Morale and attitude survey
- S NS NP Organization manual
- S NS NP Organizational planning and development
- S NS NP Personnel compensation
- S NS NP Personnel evaluation
- S NS NP Personnel planning

S NS NP Personnel recruitment
 S NS NP Personnel selection, testing
 S NS NP Personnel training
 S NS NP Productivity analysis
 S NS NP Wage and salary administration
 S NS NP Other

Governmental Organizations (*Special Requirements*)

S NS NP Accomplishment of goals studies
 S NS NP Appropriation status
 S NS NP Campaign contributions system
 S NS NP Cost benefit analysis of urban transportation
 S NS NP Crime forecasting system
 S NS NP Determination of pupil-school assignments
 S NS NP Developing guidelines for municipal zoning decisions
 S NS NP Development of measures or program effectiveness
 S NS NP Drivers licensing system
 S NS NP Economy and efficiency studies
 S NS NP Environmental management
 S NS NP Fund accounting
 S NS NP Management controls and reports
 S NS NP Motor vehicle registration system
 S NS NP Off track betting system design
 S NS NP Police and emergency communications systems
 S NS NP PPBS and program budgeting systems
 S NS NP Public Welfare administration system
 S NS NP Scientific retrieval systems in research environment
 S NS NP State-wide student loan system
 S NS NP State-wide workmen's compensation system
 S NS NP Tax return processing system
 S NS NP Traffic report systems
 S NS NP Other

Not-for-Profit Organizations (*Special Requirements*)

S NS NP College alumni records system
 S NS NP Endowment income management
 S NS NP Fund accounting
 S NS NP Fund raising systems
 S NS NP Hospital—patient medical records retrieval system
 S NS NP Integration of financial and academic objectives of colleges
 S NS NP Library systems
 S NS NP Pledge and contribution collection systems
 S NS NP Pricing decisions in a non-profit environment
 S NS NP Program budgets
 S NS NP Research grant accounting system
 S NS NP Scientific retrieval systems in research environment
 S NS NP Special management reports for hospitals including patient profiles, census data, billing—medicare and other
 S NS NP Other

Management Sciences

- S NS NP Actuarial calculations
- S NS NP Algorithms for decision making
- S NS NP Forecasting techniques
- S NS NP Linear programming
- S NS NP Mathematical programming
- S NS NP Models (financial, corporate, network, inventory, economic, planning)
- S NS NP Queuing problems
- S NS NP Operations research
- S NS NP Pert, CPM (Network Analysis)
- S NS NP Reorder point and economic order calculations
- S NS NP Routing and scheduling algorithms
- S NS NP Simulation
- S NS NP Statistical inference and decision theory
- S NS NP Other

Electronic Data Processing

- S NS NP Application programming
- S NS NP Application software development
- S NS NP Computer operations evaluations
- S NS NP Data communications
- S NS NP Economic and feasibility studies
- S NS NP Equipment evaluation
- S NS NP Long range planning
- S NS NP Real time systems
- S NS NP Software evaluation
- S NS NP Systems design
- S NS NP Systems installation
- S NS NP Systems software development
- S NS NP Systems test and conversion preparation
- S NS NP Training programs
- S NS NP Other

Systems Concepts, Design, and Installation

- S NS NP Form design and installation
- S NS NP Information flow studies
- S NS NP Information systems (bases of internal and external data, functional, top management)
- S NS NP Policy and procedure manuals
- S NS NP Report design and installation
- S NS NP Systems and procedures analysis and documentation
- S NS NP Systems and procedures design
- S NS NP Systems and procedures installation
- S NS NP Other

Clerical Controls and Methods

- S NS NP Clerical systems and forms

- S NS NP Clerical work measurement and standards
- S NS NP Clerical work methods and simplification
- S NS NP Mail and postal services
- S NS NP Office equipment studies (other than EDP)
- S NS NP Office layout
- S NS NP Office manuals
- S NS NP Records management
- S NS NP Other

2. Below are listed the eight major MAS areas of service described in Question 1. Beside each area, please estimate the percentage of your total MAS practice oriented to this area of service. Do this by allocating 100 points among the areas with respect to the amount of your practice (percentage) in the area; the larger the percentage allocated to a particular area, the larger the amount of your practice.

- _____1. General Management
- _____2. Operations, Manufacturing, and Engineering
- _____3. Marketing
- _____4. Finance and Accounting
- _____5. Personnel
- _____6. Administration and Office Operations
- _____7. Special requirements of Governmental Organizations
- _____8. Special requirements of Not-for-profit Organizations
- 100% TOTAL .

3. The total number of MAS professional staff in our firm is about _____ persons full-time and _____ persons whose responsibilities also extend to non-MAS areas of our firm's practice.

4. Consider the highest degree held by each of your MAS professional staff members (both full-time and part-time) and the major field of academic study of each staff member. Indicate below the approximate number of your current MAS professional staff having their highest degree in each of the following major fields:

	Number whose highest degree is:		
	Bachelors	Masters	Doctorate
Accounting	_____	_____	_____
Management Science	_____	_____	_____
Other Business	_____	_____	_____
Industrial Engineering	_____	_____	_____
Other Engineering	_____	_____	_____
Computer Science	_____	_____	_____
Behavioral Sciences	_____	_____	_____
Physical Sciences	_____	_____	_____
Other (example: _____)	_____	_____	_____
TOTAL (should equal total from Question 3.)	_____	_____	_____

5. Consider the academic and employment backgrounds of your MAS professional staff *immediately prior* to their employment with your firm. Indicate below the approximate percentage of these staff members hired from each of the backgrounds listed. In Column A do this for those persons hired during the *past* two years. In Column B indicate the ideal percentage mix of new MAS professional staff additions during the *next* two years. Both columns should total 100%.

<u>Source of MAS Professional Staff</u>	A Hired (Past 2 Years)	B To Be Hired (Next 2 Years)
New Bachelor of Business Administration Graduate	_____	_____
New Bachelor of Science (Engineering, other technical) Graduate	_____	_____
New Bachelor of Arts (Liberal arts, other non-technical) Graduate	_____	_____
New Master of Business Administration Graduate	_____	_____
New Master of Science (Engineering, other technical) Graduate	_____	_____
New Master of Arts (Liberal arts, other non-technical) Graduate	_____	_____
From Computer Manufacturers	_____	_____
From Industry Other Than Computer Manufacturers	_____	_____
From University Teaching Faculties	_____	_____
From Government	_____	_____
From Your Own Firm Audit Staff	_____	_____
From Other CPA Firm's Consulting Staff	_____	_____
From Non-CPA Firm's Consulting Staff	_____	_____
Other (Specify: _____)	_____	_____
TOTAL	<u>100%</u>	<u>100%</u>

6. Below are some possible sources of knowledge which may be employed by MAS practitioners in the course of their work, and a set of phrases characterizing the relative importance of such knowledge sources to the MAS practitioner. For each source of knowledge, please circle the appropriate letter corresponding to the phrase which you feel (on the average) most accurately characterizes that source of knowledge. The possible responses are:

- EI = extremely important
- SI = somewhat important
- SU = somewhat unimportant
- EU = extremely unimportant

Response

Source

EI SI SU EU Undergraduate college degree in business

- EI SI SU EU Undergraduate college degree not in business
 EI SI SU EU Masters degree in business
 EI SI SU EU Masters degree not in business
 EI SI SU EU Non-consulting business experience
 EI SI SU EU Consulting experience outside CPA firms
 EI SI SU EU Consulting experience within CPA firms
 EI SI SU EU Staff training in your firm
 EI SI SU EU Continuing education in accounting (AICPA, State CPA Societies, NAA, etc.)
 EI SI SU EU Continuing education in other professions (AMA, APICS, ASM, etc.)
 EI SI SU EU Continuing education in trade associations or industry groups
 EI SI SU EU Self-study
 EI SI SU EU Other (please specify if possible: _____)

7. Below are listed seven general areas of knowledge which might be perceived as part of the relevant knowledge base for all MAS practitioners within CPA firms. For each area of knowledge, please circle the appropriate letter corresponding to the phrase which you feel (on the average) most accurately characterizes that area of knowledge. The possible responses are:

- EI = extremely important
 SI = somewhat important
 SU = somewhat unimportant
 EU = extremely unimportant

<u>Response</u>	<u>Knowledge Area</u>
EI SI SU EU	a. <i>How Business Operates</i> (Economics, business law, regulatory aspects, environmental considerations)
EI SI SU EU	b. <i>How Business is Managed</i> (Theory and practice, organizational forms, behavioral science)
EI SI SU EU	c. <i>Liberal Arts</i> (Humanities, written and oral English, logic and ethics)
EI SI SU EU	d. <i>CPA Profession</i> (Background and role in business, ethics, standards, nature of audit and tax services)
EI SI SU EU	e. <i>How to Conduct an MAS Assignment</i> (Identify objectives, obtain facts and data, define opportunities for improvement, evaluate alternatives, present findings and recommendations, assist with implementation, work closely with management)
EI SI SU EU	f. <i>MAS Standards and Procedures</i> (Integrity and objectivity, competence, role, technical standards, concurrent audit relationship, project management, arrangements, specific exclusions)
EI SI SU EU	g. <i>Professional Qualities</i> (Wisdom, imagination, judgment, perception, circumpsection, interpersonal aptness)

Thank you for your cooperation. Now that the questionnaire is completed, please place it in the self-addressed envelope provided so it may be returned as promptly as possible.

C. MASBOKE Individual Practitioner Questionnaire

Please answer all questions. Thank you for your effort.

1. Your age_____
2. Years in MAS practice in CPA firms_____ In consulting firms_____
3. Present title in firm _____
4. How many separate offices does your firm maintain? _____
5. Are you a CPA? Yes_____ No_____ Other accreditation (name) _____

6. How many persons are there in your firm (in all offices) who render *professional* service of any kind (audit, tax, accounting services, and/or Management Advisory Services)? Please respond with one check mark in each column below.

	<u>Total Professionals</u>	<u>Full-Time MAS</u>	<u>Part-Time MAS</u>
None	_____	_____	_____
1	_____	_____	_____
2-5	_____	_____	_____
6-10	_____	_____	_____
11-49	_____	_____	_____
50-99	_____	_____	_____
Over 100	_____	_____	_____

7. Below is a list of college majors. Please put "B" by your bachelor's degree major. If you have a master's degree, put "M" by your master's degree major. If you have a doctorate, please put "D" by your doctorate field.
 _____no college degree (insert check mark if applicable)
 _____business (accounting)

- _____business (management)
- _____business (finance)
- _____business (marketing)
- _____business (statistics and quantitative methods)
- _____economics
- _____engineering (industrial)
- _____engineering (other)
- _____liberal arts and/or humanities
- _____behavioral science (psychology, sociology, etc.)
- _____physical science (chemistry, physics, etc.)
- _____other (please describe)

8. Does the majority of your MAS practice as an individual consist of *informal counsel* on general business matters which *does not* involve special studies? YES, primarily informal counsel_____. NO, primarily special studies _____ .

If you answered "yes" above, please answer question 9 below. If you answered "no" above, please skip question 9 and go directly to question 10, which begins on page 131.

9. If the majority of your MAS practice consists of informal counsel to clients on general business matters, please indicate below the sources of your current knowledge which you employ in performing this service. Do this by putting "V" beside each source that is very significant, "S" beside each source that is somewhat significant, and "O" beside each source that is not significant or is irrelevant.

V = very significant

S = somewhat significant

O = not significant or irrelevant

- _____ 1. Formal education (as reported in Question 7)
- _____ 2. Experience in audit and/or tax work before entering MAS practice
- _____ 3. Other business experience
- _____ 4. On the job experience in MAS practice with CPA firms
- _____ 5. Structured training programs sponsored by a CPA firm (i.e., your present firm)
- _____ 6. Structured training programs sponsored by the AICPA, state CPA societies, trade associations, etc.
- _____ 7. Self-study (any self-scheduled and planned informal learning)

If you answered Question 9, please go on to Question 10, which follows.

10. In this question you are asked to relate your present proficiency in industry, functional, technical, and general knowledge to your past experience and the present sources of your knowledge.

In column A, rate your proficiency in each knowledge category listed on the left-hand side. Do this by putting in Column A the appropriate number from this scale:

- 1 = not proficient at all in this area of knowledge
- 2 = recognize basic skills and concepts but cannot apply them personally
- 3 = some knowledge and proficiency; can use this knowledge with supervision or assistance
- 4 = considerable proficiency; can normally use this knowledge without assistance
- 5 = expert in this area; can work without assistance and also help others understand or apply this area of knowledge

In Column B, estimate (1) that part in years of your total work experience spent using this knowledge area before entering MAS practice with a CPA firm, and (2) that part in years of your total consulting experience dealing with this knowledge area since entering MAS practice with a CPA firm.

In Column C, please mark "V" for sources of your current knowledge that you believe are very significant. Mark "S" for sources that are somewhat significant. Mark "O" in spaces that correspond to "not significant" or "irrelevant." Do this for each area of knowledge listed. The sources are:

- (1) Formal education (as reported in Question 7)
- (2) Experience before entering MAS practice with a CPA firm. Please enter separately your experience in auditing and/or tax work, and your other business experience.
- (3) On the job experience in MAS practice with CPA firms
- (4) Structured training programs. Please distinguish between programs offered by a CPA firm (i.e., your present firm) and programs offered by the AICPA, state CPA societies, trade associations, etc.
- (5) Self-study (any self-scheduled or planned informal learning)

Do you have an industry specialization? Such a specialization might be in an industry or industries in the private sector or in the public or not-for-profit sectors. If you do, please list up to three specializations here:

- 1. _____
- 2. _____
- 3. _____

Figure B

KNOWLEDGE AND SKILL CATEGORIES	Column A	Column B	
	Level of Proficiency	Total Years of Experience	
	1. Not proficient 2. Concept recognition 3. Some knowledge 4. Considerable knowledge 5. Expert in area	Before entering MAS practice in CPA firms	Since entering MAS practice in CPA firms
I. Utilizing Industry Knowledge Respond for the industries you listed on the preceding page. 1. 2. 3.			
II. Utilizing Functional Knowledge (Refers to specialized functions in all organizations and requiring many skills) A. General management B. Operations, manufacturing and engineering C. Marketing D. Finance and Accounting E. Personnel F. Administration & office operations G. Special requirements of governmental organizations H. Special requirements of not-for-profit organizations			
III. Utilizing Technical Knowledge (Refers to specialized skills applicable in all functions and industries) A. Management Sciences B. Electronic data processing C. Systems concept, design and installation D. Clerical controls and methods			
IV. Utilizing General Knowledge (Refers to knowledge that might be expected to some degree in all MAS practitioners) A. How business operates and is managed B. Communication skills C. How CPA profession operates D. How to conduct an MAS assignment E. MAS standards and procedures			

11. As an overall conclusion, what would you say were the most important sources of your knowledge and ability to practice in the MAS area? Indicate below in your own words:

A "Dictionary" further defining the above knowledge and skill categories will be found on page 135.

Thank you for completing this questionnaire. Please place it in the envelope provided for return to the researchers.

“DICTIONARY”

Defining knowledge and skill categories.

Administration and Office Operations—secretarial, public relations, legal department, office management

Clerical Controls and Methods—clerical systems and forms, clerical work measurement and standards, clerical work methods and simplification, mail and postal services, office equipment studies (other than EDP), office layout, office manuals, records management

Communication Skills and Liberal Arts—humanities, logic and ethics, written and oral English

Electronic Data Processing—application programming, application software development, computer operations evaluation, data communication, economic and feasibility studies, equipment evaluation, long range planning, real time systems, software evaluation, systems design, systems installation, systems software development, systems test and conversion preparation, training programs

Finance and Accounting—accounting, budgeting, credits and collections, financial, insurance, internal reporting, tax department

General Management—company organizations, long range planning, management controls

How Business Operates and Is Managed—behavioral science, business law, economics, environmental considerations, organizational forms, regulatory aspects, theory and practice

How CPA Profession Operates—background, ethics, nature of audit and tax services, role in business, standards

How to Conduct an MAS Assignment—assist with implementation, define opportunities for improvement, evaluate alternatives, identify objectives, obtain facts and data, present findings and recommendations, work closely with management

Management Sciences—actuarial calculations, algorithms for decision making, forecasting techniques, linear programming, mathematical programming, models (financial, corporate, economic, inventory, planning), queuing, operations research, PERT, CPM (network analysis), reorder point and economic order calculations, routing and scheduling algorithms, simulation, statistical inference and decision theory

Marketing—advertising, market research, physical distribution, sales operations

MAS Standards and Procedures—arrangements, competence, concurrent audit relationship, integrity and objectivity, project management, role, specific exclusions, technical standards

Operations, Manufacturing, and Engineering—construction, engineering management, industrial engineering, maintenance, manufacturing management, operations management, production planning and control, purchasing, quality control

Personnel—industrial relations, organizational planning and development, personnel administration, wage and salary administration

Special Requirements of Governmental Organizations—unique to public sector; not found in private sector or not-for-profit sector engagements

Special Requirements of Not-for-Profit Organizations—unique to engagements with not-for-profit organizations; not found in engagements in other sectors

Systems Concepts, Design, and Installation—form design and installation, information flow studies, information systems (bases of internal and external data, functional, top management), policy and procedure manuals, report design and installation, systems and procedures analysis and documentation, systems and procedures design, systems and procedures installation

Bibliography

Bibliography

CPA profession and business

- American Institute of Certified Public Accountants. *AICPA Professional Standards: Ethics, Bylaws*, vol. 2. New York: American Institute of Certified Public Accountants, 1974.
- Bierman, Harold, Jr.; Bonini, Charles P.; and Hauseman, Warren H. *Quantitative Analysis for Business Decisions*, 4th ed. Homewood, Ill.: Irwin, 1973.
- Buckley, John W., and Buckley, Marlene H. *The Accounting Profession*. Los Angeles, Calif.: Melville, 1974.
- Buffa, Elwood S., and Taubert, William H. *Production-Inventory Systems: Planning and Control*. Rev. ed. Homewood, Ill.: Irwin, 1972.
- Carey, John L. *The Rise of the Accounting Profession*. New York: American Institute of Certified Public Accountants, 1970.
- . ed. *The Accounting Profession: Where Is It Headed?* New York: American Institute of Certified Public Accountants, 1962.
- Corley, Robert N., and Robert, William J. *Principles of Business Law*. Englewood Cliffs, N.J.: Prentice-Hall, 1975.
- Daniels, Alan, and Yeates, Donald, eds. *Systems Analysis*. Palo Alto, Calif.: Science Research Associates, 1971.
- "A Description of the Professional Practice of Certified Public Accountants." *Journal of Accountancy*, December 1966, p. 61.
- Fuori, William M. *Introduction to the Computer: The Tool of Business*. Englewood Cliffs, N.J.: Prentice-Hall, 1973.
- Hamner, W. Clay, and Schmidt, Frank L. *Contemporary Problems in Personnel: Readings for the Seventies*. Chicago: St. Clair Press, 1974.
- Hampton, David R.; Summer, Charles E.; Webber, Ross A., eds. *Organizational Behavior and the Practice of Management*. Glenview, Ill.: Scott Foresman, 1973.

- Hohn, Franze E. *Elementary Matrix Algebra*. 3d ed. New York: Macmillan, 1973.
- Holmes, Arthur W., and Overmyer, Wayne S. *Auditing: Principles and Procedure*. 7th ed. Homewood, Ill.: Irwin, 1971.
- Jucius, Michael. *Personnel Management*. Homewood, Ill.: Irwin, 1971.
- Kast, Fremont E., and Rosenzweig, James E., eds. *Organization and Management: A Systems Approach*. 2d ed. New York: McGraw-Hill, 1974.
- Kogiku, Kiichiro C. *Microeconomic Models*. New York: Harper & Row, 1971.
- Koontz, Harold, and O'Donnell, Cyril. *Principles of Management: An Analysis of Managerial Functions*. 5th ed. New York: McGraw-Hill, 1972.
- Kotler, Phillip. *Marketing Management: Analysis, Planning and Control*. 2d ed. Englewood Cliffs, N.J.: Prentice-Hall, 1972.
- Lapin, Lawrence L. *Statistics for Modern Business Decisions*. New York: Harcourt Brace Jovanovich, 1973.
- Mader, Chris, and Hagin, Robert. *Information Systems: Technology, Economics, Applications*. Palo Alto, Calif.: Science Research Associates, 1974.
- Mann, Roland, ed. *The Arts of Top Management*. New York: McGraw-Hill, 1971.
- Mansfield, Edwin. *Microeconomics: Theory and Applications*. 2d ed. New York: Norton, 1975.
- Meigs, Walter B.; Mosich, A. N.; Johnson, Charles E.; and Keller, Thomas F. *Intermediate Accounting*. 3d ed. New York: McGraw-Hill, 1974.
- Moore, Carl L., and Jaedicke, Robert K. *Managerial Accounting*. 3d ed. Cincinnati: South-Western, 1972.
- Murphy, Mary Elizabeth. *Advanced Public Accounting Practice*. Homewood, Ill.: Irwin, 1966.
- Ofshe, Richard J., ed. *Interpersonal Behavior in Small Groups*. Englewood Cliffs, N.J.: Prentice-Hall, 1973.
- Rappaport, Louis H. *SEC Accounting Practice and Procedure*. 3d ed. New York: Ronald, 1972.
- Samuelson, Paul A. *Economics*. 9th ed. New York: McGraw-Hill, 1973.
- Shapiro, Edward. *Macroeconomic Analysis*. 3d ed. New York: Harcourt Brace Jovanovich, 1974.

- Toeplitz, Otto. *The Calculus: A Genetic Approach*. Chicago: University of Chicago Press, 1963.
- Van Horne, James C. *Financial Management and Policy*. 3d ed. Englewood Cliffs, N.J.: Prentice-Hall, 1974.
- Zweig, Jeanne. *Accountant's Office Manual and Practice Guide*. Englewood Cliffs, N.J.: Prentice-Hall, 1969.

The consulting art

- American Institute of Certified Public Accountants. *Documentation Guides for Administration of Management Advisory Services Engagements*. (Management Advisory Services Guidelines Series No. 2.) New York: American Institute of Certified Public Accountants, 1971.
- . *Guidelines for Administration of the Management Advisory Services Practice*. (Management Advisory Services Guidelines Series No. 1.) New York: American Institute of Certified Public Accountants, 1968.
- . *Guidelines for Cooperative Management Advisory Services Engagements*. (Management Advisory Services Guidelines Series No. 5.) New York: American Institute of Certified Public Accountants, 1976.
- . MAS Executive Committee. *Statements on Management Advisory Services*. New York: American Institute of Certified Public Accountants, 1974.
- Association of Consulting Management Engineers. *Personal Qualification of Management Consultants*. New York: Association of Consulting Management Engineers, 1966.
- . *Professional Practices in Management Consulting*. New York: Association of Consulting Management Engineers, 1966.
- Brown, Leland. *Effective Business Report Writing*. 3d ed. Englewood Cliffs, N.J.: Prentice-Hall, 1973.
- Cohen, Morris R., and Nagel, Ernest. *An Introduction to Logic and the Scientific Method*. New York: Harcourt, Brace & Co., 1936.
- International Labor Office. *Management Consulting—A Guide to the Profession*. Geneva: International Labor Office, 1976.
- Joplin, Bruce, and Patillo, James W. *Effective Accounting Reports*. Englewood Cliffs, N.J.: Prentice-Hall, 1969.
- Levoy, Robert P. *The Successful Professional Practice*. Englewood Cliffs, N.J.: Prentice-Hall, 1970.

- Lindauer, J. S. *Communicating in Business*. New York: Macmillan, 1974.
- Mambert, W. A. *Presenting Technical Ideas: A Guide to Audience Communication*. New York: Wiley, 1968.
- Schein, Edgar H. *Process Consultation: Its Role in Organization Development*. Reading, Mass.: Addison-Wesley, 1969.
- Shay, Philip W. *How to Get the Best Results from Management Consultants*. New York: Association of Consulting Management Engineers, 1974.
- Walley, B. H. *Management Services Handbook*. London: Business Books, 1973.
- Whiteside, Conon D. *Accountant's Guide to Profitable Management Advisory Services*. Englewood Cliffs, N.J.: Prentice-Hall, 1969.

Executive planning, implementation, and control

- Ackoff, Russell L. *A Concept of Corporate Planning*. New York: Wiley-Interscience, 1970.
- American Institute of Certified Public Accountants. *Analysis for Expansion or Contraction of a Business*. (Management Advisory Services Technical Study No. 3.) New York: American Institute of Certified Public Accountants, 1966.
- . *Analysis for Purchase or Sale of a Business*. (Management Advisory Technical Study No. 5.) New York: American Institute of Certified Public Accountants, 1967.
- Anthony, Robert N. *Planning and Control Systems: A Framework for Analysis*. Cambridge, Mass.: Harvard University Press, 1965.
- Backman, Jules, ed. *Business Problems of the Seventies*. New York: New York University Press, 1973.
- Barnard, Chester. *The Functions of the Executive*. Cambridge, Mass.: Harvard University Press, 1968.
- Bartlett, Alton C., and Kayser, Thomas A., eds. *Changing Organizational Behavior*. Englewood Cliffs, N.J.: Prentice-Hall, 1973.
- Bass, Bernard M., and Deep, Samuel D., eds. *Current Perspectives for Managing Organizations*. Englewood Cliffs, N.J.: Prentice-Hall, 1970.
- Bennett, C. L. *Defining the Manager's Job: The AMA Manual of Position Descriptions*. New York: American Management Association, 1958.

- Bower, Marvin. *The Will to Manage: Corporate Success Through Programmed Management*. New York: McGraw-Hill, 1966.
- Broom, Halsey, and Longenecker, Justin. *Small Business Management*. 3d ed. Cincinnati: South-Western, 1971.
- Chambers, John; Mullick, Satinder; and Smith, Donald. *An Executive's Guide to Forecasting*. New York: Wiley-Interscience, 1974.
- Christopher, William F. *The Achieving Enterprise*. New York: AMACOM, 1974.
- Dale, Ernest. *Management: Theory and Practice*. 2d ed. New York: McGraw-Hill, 1969.
- . *Organization*. New York: American Management Association, 1967.
- Drucker, Peter F. *Managing for Results: Economic Tasks and Risk-Taking Decisions*. New York: Harper & Row, 1964.
- Ewing, David W., ed. *Long-Range Planning for Management*. 3d ed. New York: Harper & Row, 1972.
- Finkle, Robert, and Jones, William. *Assessing Corporate Talent: A Key to Managerial Manpower Planning*. New York: Wiley-Interscience, 1970.
- Fortune Editors. *Challenges for Business in the 1970s*. Boston: Little, Brown & Co., 1972.
- Fox, Byron, and Fox, Eleanor. *Corporate Acquisitions and Mergers*. New York: Matthew Bender & Co., 1974.
- Harvey, John L., and Newgarden, Albert, eds. *Management Guides to Mergers and Acquisitions*. New York: Wiley-Interscience, 1969.
- Hennessy, J. H., Jr. *Acquiring and Merging Businesses*. Englewood Cliffs, N.J.: Prentice-Hall, 1966.
- Husband, William H., and Dockeray, James C. *Modern Corporation Finance*. 7th ed. Homewood, Ill.: Irwin, 1972.
- Hutchison, G. Scott, ed. *The Strategy of Corporate Financing*. New York: Hawthorn Books, 1971.
- Landsberg, Hans; Fischman, Leonard L.; and Fisher, Joseph L. *Resources in America's Future: Patterns of Requirements and Availabilities, 1960-2000*. Baltimore: Johns Hopkins Press, 1964.
- Lewis, Ronello B. *Financial Analysis for Management*. Englewood Cliffs, N.J.: Prentice-Hall, 1959.
- Lippitt, Gordon. *Organization Renewal: Achieving Viability in a Changing World*. New York: Appleton-Century-Crofts, 1969.
- McGregor, Douglas. *The Human Side of Enterprise*. New York: McGraw-Hill, 1960.

- Merrill, Harwood F., ed. *Classics in Management*. New York: American Management Association, 1970.
- Murdick, Robert G., and Demming, Donald D. *The Management of Capital Expenditures*. New York: McGraw-Hill, 1968.
- Paine, Frank T., and Naumes, William. *Strategy and Policy Formation: An Integrative Approach*. Philadelphia: W. B. Saunders, 1974.
- Robock, Stefan H., and Simmonds, Kenneth. *International Business and Multinational Enterprises*. Homewood, Ill.: Irwin, 1973.
- Sayles, Leonard R. *Managerial Behavior: Administration in Complex Organizations*. New York: McGraw-Hill, 1964.
- Schmuckler, Eugene. "The Personnel Audit: Management's Forgotten Tool." *Personnel Journal*, November 1973, pp. 977-980.
- Sethi, S. Prakash, and Holton, Richard H., eds. *Management of the Multinationals: Policies, Operations, and Research*. New York: Free Press, 1974.
- Sloan, Alfred P. *My Years with General Motors*. Garden City, N.Y.: Doubleday, 1964.
- Smith, George A., Jr.; Christensen, C. Roland; Berg, Norman A.; and Salter, Malcolm S. *Policy Formulation and Administration*. 6th ed. Homewood, Ill.: Irwin, 1972.
- Spencer, Milton H.; Clark, Colin G.; and Hogue, Peter W. *Business and Economic Forecasting: An Econometric Approach*. Homewood, Ill.: Irwin, 1961.
- Steiner, George A. *Top Management Planning*. New York: Macmillan, 1969.
- Stieglitz, Harold, and Janger, Allen R. *Top Management Organization in Divisionalized Companies*. (Conference Board Personnel Study No. 195.) New York: National Industrial Conference Board, 1965.
- Stokes, Paul M. *A Total Systems Approach to Management Control*. New York: American Management Association, 1968.
- Tannenbaum, Arnold S., ed. *Control in Organizations*. New York: McGraw-Hill, 1968.
- Van Horne, James C. *Financial Management and Policy*. 3d ed. Englewood Cliffs, N.J.: Prentice-Hall, 1974.
- Wikstrom, Walter S. *Managing By—and With—Objectives*. New York: National Industrial Conference Board, 1969.
- Wilcox, Clair and Shepherd, William G. *Public Policies Towards Business*. 4th ed. Homewood, Ill.: Dow Jones-Irwin, 1971.

- Williams, M. R. *Performance Appraisal in Management*. London: Heinemann, 1972.
- Wren, Daniel A. *The Evolution of Management Thought*. New York: Ronald, 1972.

Finance and accounting

- American Institute of Certified Public Accountants. Accounting Principles Board. *Basic Concepts and Accounting Principles Underlying Financial Statements of Business Enterprises*. (Accounting Principles Board Statement No. 4.) New York: American Institute of Certified Public Accountants, 1970.
- . *Analysis for Purchasing and Financing Productive Equipment*. (Management Advisory Services Technical Study No. 4.) New York: American Institute of Certified Public Accountants, 1967.
- . *Management Information Systems for the Smaller Business*. (Management Advisory Services Technical Study No. 8.) New York: American Institute of Certified Public Accountants, 1969.
- Anthony, Robert N. *Management Accounting: Text and Cases*. 4th ed. Homewood, Ill.: Irwin, 1970.
- Beyer, Robert, and Trawicki, Donald J. *Profitability Accounting for Planning and Control*. 2d ed. New York: Ronald, 1972.
- Bierman, Harold, Jr., and Smidt, Seymour. *The Capital Budgeting Decision: Economic Analysis and Financing of Investment Projects*. 3d ed. New York: Macmillan, 1971.
- Bower, James B.; Schlosser, Robert E.; and Zlatkovich, Charles T. *Financial Information Systems: Theory and Practice*. Boston: Allyn & Bacon, 1969.
- Cadmus, Bradford, and Child, Arthur J. *Internal Control Against Fraud and Waste*. New York: Prentice-Hall, 1953.
- Davidson, Sidney, ed. *Handbook of Modern Accounting*. New York: McGraw-Hill, 1970.
- Easton, Allan, and Broser, Arnold, eds. *Conference on Mergers and Acquisitions, Hofstra University, 1968*. Berkeley, Calif.: McCutchan, 1970.
- General Ledger and Financial Reporting System*. Andover, Mass.: Software International, 1974.
- Gillespie, Cecil. *Accounting Systems: Procedures and Methods*. 3d ed. Englewood Cliffs, N.J.: Prentice-Hall, 1971.
- Goodman, Sam R., ed. *Corporate Treasurer's and Controller's Encyclopedia*. Rev. ed. Englewood Cliffs, N.J.: Prentice-Hall, 1975.

- Griffin, Charles H.; Williams, Thomas H.; and Larson, Kermit D. *Advanced Accounting*. Rev. ed. Homewood, Ill.: Irwin, 1971.
- Horngren, Charles T. *Cost Accounting: A Managerial Emphasis*. 3d ed. Englewood Cliffs, N.J.: Prentice-Hall, 1972.
- Hunt, Pearson; Williams, Charles M.; and Donaldson, Gordon. *Basic Business Finance*. 4th ed. Homewood, Ill.: Irwin, 1971.
- Jones, Reginald L., and Trentin, H. George. *Budgeting—Key to Planning and Control: Practical Guides for Managers*. Rev. ed. New York: American Management Association, 1971.
- Kennedy, Ralph D., and McMullen, Stewart Y. *Financial Statements: Form, Analysis, and Interpretation*. 6th ed. Homewood, Ill.: Irwin, 1973.
- Livingstone, John L., and Kerrigan, Harry D. *Modern Accounting Systems*. 4th ed. New York: Ronald, 1975.
- Lock, Dennis. *Complete Guide to Project Management*. Boston: Cahners, 1969.
- Lyden, Fremont J., and Miller, Ernest G., eds. *Planning, Programming, Budgeting: A Systems Approach to Management*. 2d ed. Chicago: Markham Publishing Co., 1972.
- Mausser, Ferdinand F., and Schwartz, David J. *American Business: An Introduction*. 3d ed. New York: Harcourt Brace Jovanovich, 1974.
- Meigs, Walter B.; Mosich, A. N.; Johnson, Charles; and Keller, Thomas. *Intermediate Accounting*. 3d ed. New York: McGraw-Hill, 1974.
- Moore, Carl L., and Jaedicke, Robert K. *Managerial Accounting*. 3d ed. Cincinnati: South-Western, 1972.
- National Association of Accountants. *Financial Analysis to Guide Capital Expenditure Decisions*. (Research Report 43.) New York: National Association of Accountants, 1967.
- Novick, David, ed. *Program Budgeting: Program Analysis and the Federal Budget*. 2d ed. New York: Holt, Rinehart & Winston, 1969.
- Solomons, David. *Divisional Performance: Measurement and Control*. 2d ed. Homewood, Ill.: Irwin, 1968.
- Sommerfeld, Raynard M.; Anderson, Hershel M.; and Brock, Horace R. *An Introduction to Taxation*. 2d ed. New York: Harcourt Brace Jovanovich, 1972.
- Staubus, George J. *Activity Costing and Input-Output Accounting*. Homewood, Ill.: Irwin, 1971.
- Stieglitz, H., and Janger, A. R. *Top Management Organization in Divisionalized Companies*. New York: National Industrial Conference Board, 1965.

- Summers, Edward L. *An Introduction to Accounting for Decision Making and Control*. Homewood, Ill.: Irwin, 1974.
- Tracy, John A. *Fundamentals of Financial Accounting*. New York: Wiley, 1973.
- U.S. Treasury Department. Internal Revenue Service. *Tax Guide For Small Business*. Revised yearly.
- Vancil, Richard F. *Leasing of Industrial Equipment*. New York: McGraw-Hill, 1963.
- Vatter, William J. *Accounting Measurements for Financial Reports*. Homewood, Ill.: Irwin, 1971.
- Welsch, Glenn A. *Budgeting: Profit Planning and Control*. 3d ed. Englewood Cliffs, N.J.: Prentice-Hall, 1971.
- .; Zlatkovich, Charles T.; and White, John Arch. *Intermediate Accounting*. 3d ed. Homewood, Ill.: Irwin, 1972.
- Weston, J. F., and Brigham, Eugene F. *Essentials of Managerial Finance*. 3d ed. Hinsdale, Ill.: Dryden Press, 1974.
- Westwick, C. A. *How to Use Management Ratios*. New York: Wiley, 1973.

Electronic data processing

- American Institute of Certified Public Accountants. *Guidelines for Development and Implementation of Computer-Based Application Systems*. (Management Advisory Services Guidelines Series No. 4.) New York: American Institute of Certified Public Accountants, 1976.
- Albrecht, Leon K. *Organization and Management of Information Processing Systems*. New York: Macmillan, 1973.
- Boutell, Wayne S. *Computer-Oriented Business Systems*. 2d ed. Englewood Cliffs, N.J.: Prentice-Hall, 1973.
- Burch, John G., and Strater, Felix R. *Information Systems: Theory and Practice*. Santa Barbara, Calif.: Hamilton Publishing Co., 1974.
- Cagan, Carl. *Data Management Systems*. Los Angeles: Melville Publishing Co., 1973.
- Canadian Institute of Chartered Accountants. *Computer Control Guidelines*. Toronto, Canada: Canadian Institute of Chartered Accountants, 1970.
- Chapin, Ned. *Computers: A Systems Approach*. New York: Van Nostrand Reinhold, 1971.
- Clark, Frank J.; Gale, Ronald; and Gray, Robert. *Business Systems and Data Processing Procedures*. Englewood Cliffs, N.J.: Prentice-Hall, 1972.

- DATAPRO Research Corp. *DATAPRO 70: The EDP Buyer's Bible*.
Delran, N.J.: DATAPRO Research Corp. Monthly updated service.
- Davis, Gordon B. *Computer Data Processing*. New York: McGraw-Hill, 1973.
- . *Management Information Systems: Conceptual Foundations, Structure and Development*. New York: McGraw-Hill, 1974.
- Ditri, Arnold E.; Shaw, John C.; and Atkins, William. *Managing the EDP Function*. New York: McGraw-Hill, 1971.
- FitzGerald, John M., and FitzGerald, Ardra F. *Fundamentals of Systems Analysis*. New York: Wiley, 1973.
- Kindred, Alton R. *Data Systems and Management: An Introduction to Systems Analysis and Design*. Englewood Cliffs, N.J.: Prentice-Hall, 1973.
- Krauss, Leonard I. *Administering and Controlling the Company Data Processing Function*. Englewood Cliffs, N.J.: Prentice-Hall, 1969.
- . *Computer-Based Management Information Systems*. New York: American Management Association, 1970.
- London, Keith R. *Documentation Standards*. Rev. ed. New York: Petrocelli Books, 1974.
- Martin, James T. *Security, Accuracy and Privacy in Computer Systems*. Englewood Cliffs, N.J.: Prentice-Hall, 1973.
- . *Systems Analysis for Data Transmission*. Englewood Cliffs, N.J.: Prentice-Hall, 1972.
- McFarlan, F. Warren; Nolan, Richard L.; and Norton, David P. *Information Systems Administration*. New York: Holt, Rinehart & Winston, 1973.
- Metzger, Phillip W. *Managing a Programming Project*. Englewood Cliffs, N.J.: Prentice-Hall, 1973.
- Murdick, Robert G., and Ross, Joel E. *Information Systems for Modern Management*. 2d ed. Englewood Cliffs, N.J.: Prentice-Hall, 1975.
- Porter, W. Thomas. *EDP: Controls and Auditing*. Belmont, Calif.: Wadsworth Publishing, 1974.
- Rubin, Martin L., and Harrell, Thomas, eds. *Data Processing Administration. Handbook of Data Processing Management*, vol. 6. Princeton, N.J.: Brandon Systems Press, 1971.
- Sollenberger, Harold M. *Management Control of Information Systems Development*. New York: National Association of Accountants, 1971.

- Szweda, Ralph A. *Information Processing Management*. Princeton, N.J.: Auerbach, 1972.
- Van Tassel, Dennis. *Computer Security Management*. Englewood Cliffs, N.J.: Prentice-Hall, 1972.
- Voich, Dan, Jr.; Mottice, Homer J.; and Shrode, William A. *Information Systems for Operations and Management*. Cincinnati: South-Western, 1975.
- Wadsworth, M. D. *The Human Side of Data Processing Management*. Englewood Cliffs, N.J.: Prentice-Hall, 1973.
- Withington, Frederic G. *The Organization of the Data Processing Function*. New York: Wiley-Interscience, 1972.
- Wooldridge, Susan. *Software Selection*. Philadelphia: Auerbach, 1973.
- Yourdon, Edward. *Design of On-Line Computer Systems*. Englewood Cliffs, N.J.: Prentice-Hall, 1972.

Operations

- American Institute of Certified Public Accountants. *Practical Techniques and Policies for Inventory Control*. (Management Advisory Services Technical Study No. 6.) New York: American Institute of Certified Public Accountants, 1968.
- . *Production Scheduling*. (Management Advisory Services Technical Study No. 9.) New York: American Institute of Certified Public Accountants, 1973.
- Aljian, George W., ed. *Purchasing Handbook*. 3d ed. New York: McGraw-Hill, 1973.
- Ammer, Dean S. *Materials Management*. 3d ed. Homewood, Ill.: Irwin, 1974.
- Apple, James M. *Material Handling Systems Design*. New York: Ronald, 1972.
- Arnstein, William E. *Management Services by Accounting Firms*. New York: Ronald, 1967.
- Barnes, Ralph M. *Motion and Time Study: Design and Measurement of Work*. 6th ed. New York: Wiley, 1968.
- Buffa, Elwood S., and Taubert, William H. *Production-Inventory Systems: Planning and Control*. Rev. ed. Homewood, Ill.: Irwin, 1972.
- Carson, Gordon B.; Bolz, Harold A.; and Young, Hewitt H., eds. *Production Handbook*. 3d ed. New York: Ronald, 1972.

- Chambers, Harry T. *Office Planning for Profit*. London: Business Books, 1972.
- Duncan, Acheson J. *Quality Control and Industrial Statistics*. 3d ed. Homewood, Ill.: Irwin, 1965.
- England, Wilbur B. *Modern Procurement Management*. 5th ed. Homewood, Ill.: Irwin, 1970.
- Greene, James H., ed. *Production and Inventory Control Handbook*. New York: McGraw-Hill, 1970.
- Grillo, Elmer V. *Control Techniques for Office Efficiency*. New York: McGraw-Hill, 1963.
- Heyel, Carl, ed. *Handbook of Modern Office Management and Administrative Services*. New York: McGraw-Hill, 1972.
- IBM Corporation. *Communications Oriented Production Information and Control Systems*. (COPICS) Vols. I-VIII. IBM 320-5000. White Plains, N.Y.: IBM, 1973.
- Juran, Joseph M. *Quality Control Handbook*. 3d ed. New York: McGraw-Hill, 1974.
- . and Gryna, Frank M. *Quality Planning and Analysis: From Product Development Through Usage*. New York: McGraw-Hill, 1970.
- Kanter, Jerome. *Management-Oriented Management Information Systems*. Englewood Cliffs, N.J.: Prentice-Hall, 1972.
- Lazzarro, Victor, ed. *Systems and Procedures: A Handbook for Business and Industry*. 2d ed. Englewood Cliffs, N.J.: Prentice-Hall, 1968.
- Maedke, Wilmer O.; Robek, Mary F.; and Brown, Gerald F. *Information and Records Management*. Beverly Hills, Calif.: Glencoe Press, 1974.
- Magee, John F., and Boodman, D. M. *Production Planning and Inventory Control*. 2d ed. New York: McGraw-Hill, 1967.
- Maynard, Harold B., ed. *Handbook of Modern Manufacturing Management*. New York: McGraw-Hill, 1970.
- Moore, Franklin G. *Manufacturing Management*. 4th ed. Homewood, Ill.: Irwin, 1965.
- Neuner, John W.; Keeling, B. Lewis; and Kallaus, Norman F. *Administrative Office Management*. 6th ed. Cincinnati: South-Western, 1972.
- Newbrough, E. T. *Effective Maintenance Management Organization, Motivation, and Control in Industrial Maintenance*. New York: McGraw-Hill, 1967.

- O'Brien, James J. *Scheduling Handbook*. New York: McGraw-Hill, 1969.
- Orlicky, Joseph. *Materials Requirements Planning: The New Way of Life in Production and Inventory Management*. New York: McGraw-Hill, 1975.
- Patton, John A.; Littlefield, C. L.; and Self, Stanley A. *Job Evaluation: Text and Cases*. 3d ed. Homewood, Ill.: Irwin, 1964.
- Payne, Bruce, and Swett, David D. *Office Operations Improvements: How to Cut Costs and Improve Morale*. American Management Association, 1967.
- Plossl, G., and Wright, O., *Production and Inventory Control: Principles and Techniques*. Englewood Cliffs, N.J.: Prentice-Hall, 1967.
- Reed, Ruddell. *Plant Location, Layout, and Maintenance*. Homewood, Ill.: Irwin, 1967.
- Rippen, Kenneth H. *Office Space Administration*. New York: McGraw-Hill, 1974.
- Samaras, Thomas T., and Czerwinski, Frank L. *Fundamentals of Configuration Management*. New York: Wiley-Interscience, 1971.
- Seltz, David D. *How to Prepare an Effective Company Operations Manual*. Chicago: The Dartnell Corp., 1974.
- Vazsonyi, Andrew. *Scientific Programming in Business and Industry*. New York: Wiley, 1958.
- Westwick, C. A. *How to Use Management Ratios*. Epping, Essex: Gower Press, 1973.
- White, Anthony. *Management Objectives in Office Design: Planning and Implementation*. London: Industrial & Commercial Techniques, 1971.
- Wikstrom, Walter S. *Manpower Planning: Evolving Systems*. New York: The Conference Board, 1971.

Human resources

- American Management Association. *Employee Benefit and Pension Management*. (Management Bulletin No. 59.) New York: American Management Association, 1965.
- . *Employee Benefit Cost Control*. (Management Bulletin No. 113.) New York: American Management Association, 1968.
- Beach, Dale. *Personnel: The Management of People at Work*. 3d ed. New York: Macmillan, 1975.

- Benton, Lewis R. *A Guide to Creative Personnel Management*. Englewood Cliffs, N.J.: Prentice-Hall, 1962.
- Bryant, Donald R.; Maggard, Michael J.; and Taylor, Robert P. "Manpower Planning Models and Techniques." *Business Horizons*, April 1973, pp. 69-78.
- Bureau of National Affairs. *OSHA and the Union, Bargaining on Job Safety and Health*. (A Bureau of National Affairs Special Report.) Washington, D.C.: Bureau of National Affairs, 1973.
- Cheeks, James. *How to Compensate Executives*. Homewood, Ill.: Dow Jones-Irwin, 1974.
- Commerce Clearing House. *Fair Employment Practices Under Federal Law*. New York: Commerce Clearing House, 1975.
- Cox, Allan. *Confessions of a Corporate Headhunter*. New York: Trident Press, 1973.
- Crystal, Graefs. *Financial Motivation for Executives*. New York: American Management Association, 1970.
- Desatnick, Robert L. *A Concise Guide to Management Development*. New York: American Management Association, 1970.
- Dun's Reference Book of Corporate Management*. New York: Dun & Bradstreet Financial Service, 1975.
- Flippo, Edwin B. *Principles of Personnel Management*. 3d ed. New York: McGraw-Hill, 1971.
- Hawk, Roger. *The Recruitment Function*. New York: American Management Association, 1967.
- Jucius, Michael J. *Personnel Management*. 8th ed. Homewood, Ill.: Irwin, 1975.
- Justin, Jules. *How to Manage With a Union*. New York: Industrial Relations, 1969.
- Kellogg, Marion. *What to Do About Performance Appraisal*. New York: American Management Association, 1965.
- Kennedy, James H., ed. *The Handbook of Executive Search*. Fitzwilliam, N.H.: Consultants News, 1974.
- Levin, Noel A. *Successful Labor Relations: An Employer's Guide*. Rev. ed. New York: Fairchild, 1967.
- Lynton, Rolf, and Pareek, Udai. *Training for Development*. Homewood, Ill.: Irwin, 1967.
- Maher, John R., ed. *New Perspectives in Job Enrichment*. New York: Van Nostrand Reinhold, 1971.

- Megginson, Leon C. *Personnel: A Behavioral Approach to Administration*. Rev. ed. Homewood, Ill.: Irwin, 1972.
- Miner, John B. *The Human Constraint: The Coming Shortage of Managerial Talent*. Washington, D.C.: Bureau of National Affairs, 1974.
- Moore, Russell F. *American Management Association Management Handbook*. New York: American Management Association, 1970.
- Morton, J. E. *On Manpower Forecasting*. Kalamazoo, Mich.: Upjohn Institute for Employment Research, 1968.
- National Industrial Conference Board. *Employee Communications: Policy and Tools*. New York: National Industrial Conference Board, 1966.
- . *Industry Roles in Health Care*. New York: National Industrial Conference Board, 1974.
- Rock, Milton, ed. *Handbook of Wage and Salary Administration*. New York: McGraw-Hill, 1972.
- Tracey, William. *Designing Training and Development Systems*. New York: American Management Association, 1971.

Marketing

- American Institute of Certified Public Accountants. *Cost Analysis for Product Line Decisions*. (Management Services Technical Study No. 1.) New York: American Institute of Certified Public Accountants, 1965.
- . *Cost Analysis for Pricing and Distribution Policies*. (Management Services Technical Study No. 2.) New York: American Institute of Certified Public Accountants, 1965.
- American Management Association. "Packaging's Role in Physical Distribution." (American Management Association Bulletin No. 77.) New York: American Management Association, 1966.
- Aspley, J. C. *The Dartnell Sales Manager's Handbook*. Riso, Ovid, ed. 11th ed. Chicago: Dartnell Institute of Business Research, 1968.
- Bass, Frank; King, Charles; and Pessemeir, Edgar, eds. *Applications of the Sciences in Marketing Management*. New York: Wiley, 1968.
- Bowersox, Donald J.; Smykay, Edward W.; and LaLonde, Bernard J. *Physical Distribution Management: Logistic Problems of the Firm*. Rev. ed. New York: Macmillan, 1968.
- Boyd, Harper W., Jr., and Westfall, Ralph. *Marketing Research: Text and Cases*. 3d ed. Homewood, Ill.: Irwin, 1972.

- Buell, Victor P., ed. *Handbook of Modern Marketing*. New York: McGraw-Hill, 1970.
- Carman, James, and Uhl, Kenneth. *Philips and Duncan's Marketing: Principles and Methods*. 7th ed. Homewood, Ill.: Irwin, 1972.
- Conference Board. *The Consumer Affairs Department: Organization and Functions*. New York: Conference Board, 1973.
- Daniel, Norman E., and Jones, J. Richard. *Business Logistics: Concepts and Viewpoints*. Boston: Allyn & Bacon, 1969.
- Davis, Kenneth R., and Webster, Frederick E., Jr. *Sales Force Management*. New York: Ronald, 1968.
- Engel, James F.; Kollat, David T.; and Blackwell, Roger D. *Consumer Behavior*. 2d ed. New York: Holt, Rinehart & Winston, 1973.
- ; Wales, Hugh G.; and Warshaw, Martin R. *Promotional Strategy*. 3d ed. Homewood, Ill.: Irwin, 1975.
- Enis, Ben M. *Marketing Principles: The Management Process*. Pacific Palisades, Calif.: Goodyear Publishing Co., 1974.
- Farley, John; Howard, John; and Ring, L. Winston. *Consumer Behavior: Theory and Application*. Boston: Allyn & Bacon, 1974.
- Ferber, Robert, ed. *Handbook of Marketing Research*. New York: McGraw-Hill, 1974.
- Gannon, Thomas A., ed. *Product Service Management*. New York: American Marketing Association, 1972.
- Green, Paul E., and Tull, Donald S. *Research for Marketing Decisions*. 3d ed. Englewood Cliffs, N.J.: Prentice-Hall, 1974.
- Heskett, J. L.; Ivie, Robert M.; and Glaskowsky, Nicholas A. *Business Logistics: Physical Distribution and Materials Management*. 2d ed. New York: Ronald, 1973.
- Kotler, Philip. *Marketing Decision Making: A Model Building Approach*. New York: Holt, Rinehart & Winston, 1971.
- Magee, John F. *Physical-Distribution Systems*. New York: McGraw-Hill, 1967.
- Mallen, Bruce E., ed. *The Marketing Channel: A Conceptual Viewpoint*. New York: Wiley, 1967.
- McCarthy, E. Jerome. *Basic Marketing: A Managerial Approach*. 4th ed. Homewood, Ill.: Irwin, 1971.
- McElhiney, Paul, and Hilton, Charles. *Introduction to Logistics and Traffic Management*. Dubuque, Iowa: W. C. Brown, 1968.
- Miller, Ernest. *Marketing Planning: Approaches of Selected Companies*. New York: American Management Association, 1967.

- Press, Sheldon James. *Applied Multivariate Analysis*. New York: Holt, Rinehart & Winston, 1972.
- Riso, Ovid. *Sales Promotion Handbook*. 6th ed. Chicago: Dartnell Institute of Business Research, 1973.
- Schaffir, Kurt, and Trentin, H. George. *Marketing Information Systems*. New York: AMACOM, 1973.
- Simon, Sanford. *Managing Marketing Profitability*. New York: American Management Association, 1969.
- Smykay, Edward W. *Physical Distribution Management*. 3d ed. New York: Macmillan, 1973.
- Sperling, Jo Ann. *Job Descriptions in Marketing*. (American Management Research Study No. 94.) New York: American Management Association, 1969.
- Stanton, William J., and Buskirk, Richard H. *Management of the Sales Force*. 4th ed. Homewood, Ill.: Irwin, 1974.
- Sturdivant, Frederick D., et al. *Managerial Analysis in Marketing*. Glenview, Ill.: Scott Foresman, 1970.
- Thompson, Joseph W. *Selling: A Managerial and Behavioral Science Analysis*. 2d ed. New York: McGraw-Hill, 1973.
- Walters, C. Glenn. *Consumer Behavior: Theory and Practice*. Rev. ed. Homewood, Ill.: Irwin, 1974.
- Ward, Scott, and Robertson, Thomas S., eds. *Consumer Behavior: Theoretical Sources*. Englewood Cliffs, N.J.: Prentice-Hall, 1973.
- Zaltman, Gerald, and Burger, Philip C. *Marketing Research: Fundamentals and Dynamics*. Hinsdale, Ill.: Dryden Press, 1975.

Management sciences

- Abramson, A. G., ed. *Operations Forecasting*. New York: American Marketing Association, 1967.
- Ackoff, Russell L., and Sasieni, Maurice. *Fundamentals of Operations Research*. New York: Wiley, 1968.
- American Institute of Certified Public Accountants. *Guidelines for Systems for the Preparation of Financial Forecasts*. (Management Advisory Services Guidelines Series No. 3.) New York: American Institute of Certified Public Accountants, 1975.
- . *Techniques for Forecasting Product Demand*. (Management Advisory Services Technical Study No. 7.) New York: American Institute of Certified Public Accountants, 1968.

- Bass, Frank M.; King, Charles W.; and Pessemier, Edgar A. *Applications of the Sciences in Marketing Management: Logistic Problems of the Firm*. New York: Wiley, 1968.
- Brown, R. G. *Decision Rules for Inventory Management*. New York: Holt, Rinehart & Winston, 1967.
- Charnes, A., and Cooper, W. W. *Management Models and Industrial Applications of Linear Programming*. Vols. 1 & 2. New York: Wiley, 1961.
- Churchman, C. West; Ackoff, Russell; and Arnoff, E. Leonard. *Introduction to Operations Research*. New York: Wiley, 1957.
- Cyert, R. M., and Davidson, H. Justin. *Statistical Sampling for Accounting Information*. Englewood Cliffs, N.J.: Prentice-Hall, 1962.
- Elliott, Robert K., and Rogers, John R. "Relating Statistical Sampling to Audit Objectives." *Journal of Accountancy*, July 1972. pp. 46-55.
- Fabrycky, W. J.; Ghare, P. M.; and Torgersen, P. E. *Industrial Operations Research*. Englewood Cliffs, N.J.: Prentice-Hall, 1972.
- Gavett, J. W. *Production and Operations Management*. New York: Harcourt Brace and World, 1968.
- Gordon, Geoffrey. *System Simulation*. Englewood Cliffs, N.J.: Prentice-Hall, 1969.
- Hillier, F. S., and Lieberman, G. J. *Introduction to Operations Research*. San Francisco: Holden-Day, 1967.
- Johnson, Lynwood A., and Montgomery, Douglas C. *Operations Research in Production Planning, Scheduling, and Inventory Control*. New York: Wiley, 1974.
- King, William R. *Quantitative Analysis for Marketing Management*. New York: McGraw-Hill, 1967.
- Leontief, Wassily W. *Input-Output Economics*. New York: Oxford University Press, 1966.
- Luce, Robert D., and Raiffa, Howard. *Games and Decisions: Introduction and Critical Survey*. New York: Wiley, 1957.
- Meier, Robert C.; Newell, William T.; and Pazar, Harold L. *Simulation in Business and Economics*. Englewood Cliffs, N.J.: Prentice-Hall, 1969.
- Miller, David W., and Starr, Martin K. *Executive Decisions and Operation Research*. Englewood Cliffs, N.J.: Prentice-Hall, 1960.
- Montgomery, D. B., and Urban, Glen L., eds. *Application of Management Sciences in Marketing*. Englewood Cliffs, N.J.: Prentice-Hall, 1969.

- Naylor, T. H.; Balintfy, J. L.; Burdick, D. S.; and Chu, K. *Computer Simulation Techniques*. New York: Wiley, 1966.
- Nelson, Charles R. *Applied Time Series Analysis for Managerial Forecasting*. San Francisco: Holden-Day, 1973.
- Peters, William S., and Summers, George W. *Statistical Analysis for Business Decisions*. Englewood Cliffs, N.J.: Prentice-Hall, 1968.
- Rappaport, Alfred, ed. *Information for Decision Making: Quantitative and Behavioral Dimensions*. 2d ed. Englewood Cliffs, N.J.: Prentice-Hall, 1975.
- Roberts, Donald M. "A Statistical Interpretation of SAP No. 54." *Journal of Accountancy*, March 1974.
- Schreiber, Albert N., ed. *Corporate Simulation Models*. Seattle: University of Washington, 1970.
- Schuchman, Abraham, ed. *Scientific Decision Making in Business: Readings in Operations Research for Nonmathematicians*. New York: Holt, Rinehart & Winston, 1963.
- Siemens, Nicolai; Marting, C. H.; and Greenwood, Frank. *Operations Research: Planning, Operating, and Information Systems*. New York: Free Press, 1973.
- Wagner, Harvey M. *Principles of Operations Research: With Applications to Managerial Decisions*. 2d ed. Englewood Cliffs, N.J.: Prentice-Hall, 1975.

Government and not-for-profit organizations

- American Hospital Association. *Basic Personnel Policies and Programs for a Health Care Institution*. Chicago: American Hospital Association, 1974.
- . *Capital Financing for Hospitals*. Chicago: American Hospital Association, 1974.
- . *Classification of Health Care Institutions*. Chicago: American Hospital Association, 1974.
- . *Guide for Preparation of Constitution and Bylaws for General Hospitals*. Chicago: American Hospital Association, 1973.
- . *Hospital Engineering Handbook*. Chicago: American Hospital Association, 1974.
- . *Internal Control and Internal Auditing for Hospitals*. Chicago: American Hospital Association, 1969.
- American Institute of Certified Public Accountants. *Audits of State and Local Governmental Units*. (Industry Audit Guide Series.) New York: American Institute of Certified Public Accountants, 1974.

- Anderson, William H. *Financing Modern Government: The Political Economy of the Public Sector*. Boston: Houghton Mifflin, 1973.
- Benton, John B. *Managing the Organizational Decision Process*. Lexington, Mass.: Lexington Books, 1973.
- Bergwall, D. F., et al. *Introduction to Health Planning*. Information Resources Press, 1974.
- Bernstein, R. *A Computerized Cost Allocation System for Hospital Use*. Austin, Tex.: University of Texas, 1972.
- Black, Guy. *The Application of Systems Analysis to Government Operations*. New York: Praeger, 1968.
- Buechner, John C. *Public Administration*. Belmont, Calif.: Dickenson, 1968.
- Caiden, Gerald E. *The Dynamics of Public Administration: Guidelines to Current Transformations in Theory and Practice*. New York: Holt, Rinehart & Winston, 1971.
- Caruana, Russell A. *A Guide to Organizing the Hospital's Fiscal Services Division With Job Descriptions for Key Functions*. Chicago: Hospital Financial Management Association, 1974.
- Civil Service Commission; General Accounting Office; and Office of Management and Budget. *Measuring and Enhancing Productivity in the Federal Sector*. Washington, D.C.: U.S. Government Printing Office, 1974.
- Comparative Analysis of Capital Equipment Budgeting Systems in Health Care Institutions*. U.S. Department of Commerce, 1974.
- Comprehensive Health Planning—A Manual for Local Officials*. Washington, D.C.: National Association of Counties Research Foundation, 1971.
- Cost Analysis for Public Health*. Department of Public Health Nursing Services, 1964.
- Dimock, Marshall E. *A Philosophy of Administration Toward Creative Growth*. New York: Harper & Row, 1958.
- Donnelly, Paul R. *Guide for Developing a Hospital Administrative Policy Manual*. St. Louis, Missouri: Catholic Hospital Association, 1974.
- Drake, Alvin W.; Keeney, Ralph L.; and Morse, Philip M., eds. *Analysis of Public Systems*. Cambridge, Mass: M.I.T. Press, 1972.
- Due, John F., and Freedlaender, Ann F. *Government Finance: Economics of the Public Sector*. 5th ed. Homewood, Ill.: Irwin, 1973.
- Foyle, William R. *Cost of Patient Care Programs in a Mental Hospital*. University of Michigan: Bureau of Hospital Administration, 1968.

- Gross, Bertram M. *The Managing of Organizations: The Administrative Struggle*. 2 vols. New York: Free Press, 1964.
- Harbour, Mack D. *Job Evaluation—Handbook for Hospitals*. Memphis, Tenn.: Institutional Publishers, 1972.
- Hartley, Harry J. *Educational Planning, Programming, Budgeting: A Systems Approach*. Englewood Cliffs, N.J.: Prentice-Hall, 1968.
- Hasso, Nazar T. *A Model for Dynamic Administrative Planning*. Austin, Texas: University of Texas Press, 1970.
- Hay, Leon E., and Mikesell, R. M. *Governmental Accounting*. 5th ed. Homewood, Ill.: Irwin, 1974.
- Accounting Manual for Health Maintenance Organizations*. Washington, D.C.: Department of Health, Education and Welfare, 1972.
- Heller, Walter W., et al. *Revenue Sharing and the City*. Baltimore: Johns Hopkins Press, 1968.
- Henke, Emerson O. *Accounting for Nonprofit Organizations*. Belmont, Calif.: Wadsworth, 1966.
- Hospital Business Office Management*. Chicago: Hospital Financial Management Association, 1973.
- A Primer For Hospital Trustees*. Washington, D.C.: Chamber of Commerce of the United States, 1974.
- Hovey, Harold A. *The Planning-Programming-Budgeting Approach to Government Decision-Making*. New York: Praeger, 1968.
- Hyman, David N. *The Economics of Governmental Activity*. New York: Holt, Rinehart & Winston, 1973.
- Lippitt, Gordon L., et al. *Optimizing Human Resources: Readings in Individual and Organization Development*. Reading, Mass.: Addison-Wesley Publishing Co., 1971.
- Lyden, Fremont J., and Miller, Ernest G., eds. *Planning, Programming, Budgeting: A Systems Approach to Management*. 2d ed. Chicago: Markham Publishing Co., 1972.
- Millett, John D. *Government and Public Administration: The Quest for Responsible Performance*. New York: McGraw-Hill, 1959.
- . *Management in the Public Service: The Quest for Effective Performance*. New York: McGraw-Hill, 1954.
- Moak, Lennox L. *Administration of Local Government Debt*. Chicago: Municipal Finance Officers Association, 1970.
- ., and Gordon, Kathryn Killian. *Budgeting for Smaller Governmental Units*. Chicago: Municipal Finance Officers Association, 1968.

- ., and Hillhouse, Albert M. *Concepts and Practices in Local Government Finance*. Chicago: Municipal Finance Officers Association, 1975.
- ., and Killian, Kathryn W. *Municipal Finance Officers Association Capital Program and Capital Budget Manual*. Chicago: Municipal Finance Officers Association, 1964.
- ., and Killian, Kathryn W. *Municipal Finance Officers Association Operating Budget Manual*. Chicago: Municipal Finance Officers Association, 1963.
- Municipal Finance Officers Association. Terhune, George A. *Capital Budgeting Practices in the United States and Canada*. (MFOA Committee on Budgeting Report No. 3.) Chicago: Municipal Finance Officers Association, 1966.
- . Terhune, George A. *Local Governmental Budgeting Practices in the United States and Canada*. (MFOA Committee on Budgeting Report No. 1.) Chicago: Municipal Finance Officers Association, 1966.
- National Committee on Governmental Accounting. *Governmental Accounting, Auditing, and Financial Reporting*. Chicago: National Committee on Governmental Accounting, 1968.
- Pyhrr, Peter A. *Zero-Base Budgeting: A Practical Management Tool for Evaluating Expenses*. New York: Wiley, 1973.
- Record Controls, Inc., and Hospital Financial Management Association. *A Guide for the Retention and Preservation of Records With Destruction Schedules*. Fourth Hospital Edition. Chicago: Hospital Financial Management Association, 1973.
- Sayles, Leonard R., and Chandler, Margaret K. *Managing Large Systems: Organizations for the Future*. New York: Harper & Row, 1971.
- Seawell, L. Vann. *Hospital Financial Accounting Theory and Practice*. Chicago: Hospital Financial Management Association, 1975.
- Steiss, Alan W. *Public Budgeting and Management*. Lexington, Mass.: Lexington Books, 1972.
- Wagner, Richard E. *The Public Economy*. Chicago: Markham Publishing Co., 1973.
- Whittick, Arnold, ed. *Encyclopedia of Urban Planning*. New York: McGraw-Hill, 1974.
- Willner, William, and Hendricks, Perry B., Jr. *Grants Administration*. Washington, D.C.: National Graduate University, 1972.

Examination concepts

- Adams, Georgia S. *Measurement and Evaluation in Education, Psychology, and Guidance*. New York: Holt, Rinehart & Winston, 1964.
- Albright, Lewis E.; Glennon, J. R.; and Smith, Wallace J. *The Use of Psychological Tests in Industry*. Cleveland: Howard Allen, 1963.
- Berdie, Ralph F.; Layton, Wilbur F.; Swanson, Edward O.; and Hagenah, Theda. *Testing in Guidance and Counseling*. New York: McGraw-Hill, 1963.
- Black, Hillel. *They Shall Not Pass*. New York: William Morrow & Company, 1963.
- Bloom, Benjamin S.; Hastings, J. Thomas; and Madaus, George F. *Handbook on Formative and Summative Evaluation of Student Learning*. New York: McGraw-Hill, 1971.
- Bock, R. Darrell, and Jones, Lyle V. *The Measurement and Prediction of Judgment and Choice*. San Francisco: Holden-Day, 1968.
- Bormuth, John R. *On the Theory of Achievement Test Items*. Chicago: University of Chicago Press, 1970.
- Bradfield, James M., and Moredock, H. Stewart. *Measurement and Evaluation in Education*. New York: Macmillan, 1957.
- Buros, Oscar K., ed. *The Seventh Mental Measurement Yearbook*. Vol. 1. Highland Park, N.J.: Gryphon Press, 1972.
- Cronbach, Lee J., and Gleser, Goldine C. *Psychological Test and Personnel Decisions*. Urbana, Ill.: University of Illinois Press, 1965.
- Davis, Fredrick B. *Educational Measurements and Their Interpretation*. Belmont, Calif.: Wadsworth, 1964.
- Downie, N. M. *Fundamentals of Measurement: Techniques and Practices*. New York: Oxford University Press, 1958.
- Ellis, Brian. *Basic Concepts of Measurement*. New York: Cambridge University Press, 1966.
- Fishbein, Martin, ed. *Readings in Attitude Theory and Measurement*. New York: Wiley, 1967.
- Furst, Edward J. *Constructing Evaluation Instruments*. New York: David McKay, 1964.
- Goldman, Leo. *Using Tests in Counseling*. New York: Appleton-Century-Crofts, 1961.
- Horst, Paul. *Psychological Measurement and Prediction*. Belmont, Calif.: Wadsworth, 1966.

- Kleinmuntz, Benjamin. *Personality Measurement—An Introduction*. Homewood, Ill.: Dorsey Press, 1967.
- Lien, Arnold J. *Measurement and Evaluation of Learning: A Handbook for Teachers*. Dubuque, Iowa: W. C. Brown Company, 1967.
- Magnusson, David. *Test Theory*. Reading, Mass.: Addison-Wesley, 1966.
- McReynolds, Paul. *Advances in Psychological Assessment*. Vol. 1. Palo Alto, Calif.: Science and Behavior Books, 1968.
- Mehrens, William A., and Lehmann, Irvin J. *Standardized Tests in Education*. New York: Holt, Rinehart & Winston, 1969.
- Nunnally, J. C. *Educational Measurement and Evaluation*. New York: McGraw-Hill, 1964.
- . *Tests and Measurements: Assessment and Prediction*. New York: McGraw-Hill, 1959.
- Remmers, H. H.; Gage, N. L.; and Rummell, J. Francis. *A Practical Introduction to Measurement and Evaluation*. 2d ed. New York: Harper & Row, 1965.
- Shelly, Maynard W., II, and Bryan, Glenn L., eds. *Human Judgments and Optimality*. New York: Wiley, 1964.
- Stanley, Julian C. *Measurement in Today's Schools*. 4th ed. Englewood Cliffs, N.J.: Prentice-Hall, 1964.
- Tenbrink, Terry D. *Evaluation: A Practical Guide for Teachers*. New York: McGraw-Hill, 1974.
- Wood, Dorothy A. *Test Construction: Development and Interpretation of Achievement Tests*. Columbus, Ohio: Charles E. Merrill Books, 1960.

Index

Index

A

- Academic degrees. *See* Education
- Accounting. *See* Finance and accounting
- Accreditation
 - criteria, 67
 - examinations for MAS professionals, 7-8, 59, 63-64
 - non-CPAs in MAS practice, vi
 - specialization within professional organizations, viii-ix
- Administration
 - accounting practice, 39
 - compliance with ethical requirements, 18, 42
 - definition, 135
 - MAS examination, 11, 59-60, 77-80
 - marketing, 49
- Advancement, MAS professionals, 16-18, 25-26
- American Association of Collegiate Schools of Business, accredited business programs, 39
- American Group of CPA Firms, training MAS staff, 25
- American Institute of CPAs
 - accreditation criteria, 67
 - decision on examination designs, 11, 76
 - decision on knowledge profiles, 63-64
 - decision on levels of understanding, 61, 65
 - ethical requirements, 18, 42
 - examinations for MAS professionals, 7-8, 59-60, 67
 - MASBOKE study authorized, v
 - organization of task force, ix-x
 - passing percentage on examination, 72
 - policy decisions re MASBOKE study, vi
 - publications used in study, vii
 - recognition of specialization, vi
 - selection of research team, vi-vii
 - statements on management advisory services, 1-2
 - survey instruments, viii, 115-134
 - training MAS staff, 25
 - value of the report, viii-ix
- Analytical approach
 - criteria for selection, 40-41
 - description of approach, 1-2
 - use by MAS professionals, 5, 26
- Association of Consulting Management Engineers, publications used in study, vii
- Auditing
 - knowledge excluded from study, 39
 - management, 43
 - relation to MAS engagements, 21

- Auditing (*continued*)
 - services offered by CPA firms, 13, 27-28, 44-45
 - source of MAS engagements, 14

B

- Behavioral sciences
 - bibliography, 151-153
 - human resources knowledge, 6, 42, 47-48
 - inventories of concepts, 105-107
- Bibliography
 - CPA profession and business, 139-141
 - consulting art, 141-142
 - electronic data processing, 147-149
 - examination concepts, 161-162
 - executive planning, implementation, and control, 142-145
 - finance and accounting, 145-147
 - governmental organizations, 157-160
 - human resources, 151-153
 - management science, 155-157
 - marketing, 153-155
 - not-for-profit organizations, 157-160
 - operations, 149-151
- Bodies of knowledge
 - bibliography, 139-162
 - candidate choice on examinations, 68-69, 78
 - common factors, 35-38, 43
 - component bodies identified, 3
 - considerable knowledge, 8-9
 - extensive knowledge, 8-9, 61-62
 - general knowledge, 4-5, 38-42
 - industry and public sector, 7, 51-58
 - inventories of concepts, 83-113
 - knowledge concepts, 3-4, 35-38, 42-43
 - major bodies identified, 2-3
 - MAS body of knowledge, 82
 - organizational functions and technical disciplines, 5-6, 42-51
- Budgeting
 - clients' budgeting process, 52-54

- knowledge concept, 4-5, 40, 44
- public sector knowledge, 56-58

Business

- bibliography, 139-141
- knowledge of business operations, 3, 38-40, 52-55
- value of the report, viii-ix

C

- Candidates
 - choice among examination questions, 68-70, 76, 78
 - extensive or considerable knowledge, 71
 - knowledge profiles, v-vi, 8-9, 62
 - levels of understanding, 64-65, 67
 - objective and subjective questions, 66
- Career paths
 - information from MAS survey, viii, 22
 - levels of responsibility, 16-18, 24
 - MAS consultants, 22-26
- Certificate, CPA, requirement in MAS practice, 26
- Certified Public Accountant
 - career paths, 22-26
 - ethical requirements, 18, 21
 - extent of MAS practice, 1, 13-14
- CPA profession
 - bibliography, 139-141
 - career paths, 22-24
 - ethical requirements, 18, 21, 39
 - finance and accounting services, 44-45
 - knowledge of professional operations, 3, 38-40
 - recognition of non-CPAs, vi
 - registration of practitioners, v
 - representation on task force, ix-x
 - reputation with non-audit clients, 14-15
 - scope of MAS practice, vi, 13-16
 - value of the report, viii-ix
- Clients
 - activity classification, 52-53
 - auditor-client relationship, 21
 - audits source of MAS engagements, 14-15

- engagement letters, 14
 - executive planning, 43-44
 - industry and public sector, 51-58
 - informal MAS counsel, 19
 - MAS practice defined, 1-2
 - need for MAS services, 15-16, 28-30, 46
 - non-audit clients, 14-15, 21
 - objectives, 41, 43-44
 - size of MAS firm selected, 27-28
 - social contacts, 17-18
 - specific knowledge for MAS practice, 7, 32
 - third-party effect, 40-41
 - work with MAS practitioners, 19, 21, 30
- Cognition**
- definition, 60-61
 - examination concept, 59-60
 - levels of cognitive functioning, 60-61
 - objective v. subjective questions, 65-66
 - relation to levels of understanding, 61, 66
- Communication**
- component of general knowledge, 3, 38-39
 - definition, 132
 - levels of cognitive functioning, 60-61
 - levels of understanding, 61
 - practice development, 17-18
 - staff development, 28-29, 40
 - testing abilities, 66
 - understanding of concepts, 5
- Compensation**
- human resources knowledge, 47-48
 - MAS professionals, 16, 25-26
- Competence. *See* Proficiency**
- Computers, knowledge concepts, 6, 45-46**
- Considerable knowledge**
- definition, 8
 - knowledge profiles, 63-64
 - organizational functions, 8-9, 70-71
 - relation to examination designs, 9-10, 62, 70-76
 - technical disciplines, 8-9, 70-71
- Consulting art**
- bibliography, 139-140
 - component of general knowledge, 38-42
 - definition, 32
 - formality and documentation, 19-21
 - information from interviews, 32-33
 - personal attributes, 21
 - relation to bodies of knowledge, 2-4, 38-39
 - specialists and generalists, 28-29
 - training MAS staff, 25
- Control**
- appraisal of examination validity and reliability, 67
 - bibliography, 142-145
 - clients' control processes, 52-54
 - component body of knowledge, 42-44
 - definition, 135
 - examination administration, 59-60, 77-80
 - inventories of concepts, 90-93
 - knowledge required for MAS, 4-5, 40
 - levels of understanding, 61
 - management operations, 6, 41, 43-46
 - management science knowledge, 49-50
 - significance in MAS practice, 42
- Council of Institute**
- endorsement of MAS practice, 2
 - policy decisions, vi
- D**
- Data processing**
- bibliography, 147-149
 - component body of knowledge, 42, 45-46
 - definition, 135
 - description, 6
 - inventories of concepts, 97-100
 - MAS services offered, 15-16
 - significance in MAS practice, 42

Decentralization, organization of
 MAS practices, 27

Decision making
 attribute of MAS practitioners, 21
 client responsibility for, 2
 counseling with management, 43-44
 management science knowledge, 49-51
 marketing, 49
 systems approach, 41

Definitions
 administration, 135
 cognition, 60-61
 communication, 135
 considerable knowledge, 8
 "Consultant's Consultant," 28-29
 consulting art, 32
 control, 135
 electronic data processing, 6, 135
 examination concepts, 59-60
 extensive knowledge, 8
 finance and accounting, 6, 135
 generalist in MAS practice, 28-29, 31
 human resources, 6
 informal MAS counsel, 19
 knowledge profiles, 59-60
 levels of understanding, 36-37
 MAS practice, 1-2, 135
 management operations, 6, 135
 management science, 6, 135
 marketing, 6, 135
 operations, 6, 136
 reliability, 67
 systems approach, 136
 turnover, 26
 validity, 67

Degrees. *See* Education

Distribution. *See* Marketing

Documentation
 communication proficiency, 40
 electronic data processing, 46
 MAS engagements, 18-21
 management science engagements, 50
 relation to bodies of knowledge, 2-3
 systems approach, 41

Due care, MAS professionals, 19

E

Economics
 finance and accounting, 44-45
 general knowledge component, 4-5, 40
 industry and public sector, 7, 30, 51-58
 MAS practice and firm size, 27-28
 management science, 50-51
 marketing, 49

Education
 academic degrees, 22-24, 39
 background of MAS professionals, 24
 general knowledge, 4, 39
 levels of understanding, 35-38, 61
 proficiency level for examination, 9
 staff consultants, 16-17
 staff development policies, 24-26
 value of the report, viii-ix

Effectiveness
 career path in CPA firms, 24
 clients' organizational effectiveness, 52-54
 consulting art, 32-33
 demonstrated by accreditation, 67
 MAS consultant, 30-31, 40
 marketing, 49
 systems approach, 41
 use of MAS staff, 27-29

Efficiency
 analytical approach, 5
 industry competence, 30
 management science knowledge, 50
 operations, 46-47

Electronic data processing. *See* Data processing

Engagements
 activities, 18-19
 analytical approach, 40-42
 application of specialized skills, 28
 auditor-client relationship, 21
 consulting art, 32-33, 38-42
 firm size, 27-28

- formality and documentation, 18-21
- functional and technical knowledge, 5-6, 38, 42-51
- general knowledge, 4-5, 38-42
- growth rates for MAS, 15
- illustration of engagement progression, 20
- industry knowledge, 29-30
- knowledge concepts, 35, 42-43
- letter from firm to client, 14
- levels of understanding, 61
- major bodies of knowledge, 2-4
- performance, 30-31, 42
- progression and management, 18-21
- responsibility levels in firms, 16-18, 24
- sources of MAS engagements, 14-15
- stages, 42, 50
- systems approach, 41-42
- third-party effect, 40-41
- use of knowledge, 4
- Environment
 - finance and accounting, 44-45
 - general knowledge, 4-5, 40
 - industry and public sector, 29-30, 52-58
 - management science knowledge, 49-50
 - marketing, 49
 - systems approach, 41-42
- Ethical requirements
 - limitations on scope of services, 15
 - MAS practice, 42
 - MAS professionals, 18, 21, 39
- Evaluation
 - electronic data processing, 45-46
 - executive planning, 43-44
 - levels of cognitive functioning, 60-61, 66
 - marketing, 49
 - operations, 46-47
 - staff consultants, 24-25
 - stage in MAS engagement, 42
- Examination concepts
 - alternative aspects, v-vi
 - basis for examination designs, 68
 - bibliography, 161-162
 - definitions, 59-60
 - development of concepts, v
 - examination coverage and passing performance, 64-66
 - phases of research, vii
 - research findings, 7-10, 59-80
 - validity and reliability, 67
- Examination coverage
 - balanced coverage of knowledge concepts, 64
 - bodies of knowledge, 59, 64-66
 - breadth of understanding, 62
 - design considerations, 68-76
- Examination designs
 - administrative requirements and controls, 77-80
 - advantages and disadvantages, 76
 - definition, 59-60
 - description of designs, 75-76
 - design considerations, 8, 63-64, 68-76
 - divisions on examination, 70
 - extensive or considerable knowledge, 70-71
 - general knowledge, 6, 69
 - illustrative design, 10, 68-69, 72-75
 - industry knowledge, 9, 69
 - interviews with experts, vii
 - options among question groups, 9-10, 68-69
 - organizational functions, 9, 69-71
 - proficiency v. breadth of understanding, 9, 64
 - public sector knowledge, 9, 69
 - question types, 9
 - relation to examination coverage, 64
 - structure of examination, 9-10, 68-76
 - technical disciplines, 9, 69-71
 - theory and practice segments, 70-76
- Examination preparation
 - administrative requirements, 59-60, 77-78
 - feasibility, v, 59
 - questions contributed by MAS practitioners, 67

- Examination preparation (*continued*)
 writing and scoring questions, 66
- Executive planning
 bibliography, 142-145
 component body of knowledge, 42-44
 description, 6, 43-44
 finance and accounting knowledge, 45
 inventories of concepts, 90-93
 knowledge required for MAS, 4-5, 40
 levels of understanding, 61
 significance in MAS practice, 42
- Executive search. *See* Recruitment
- Experience
 general knowledge, 4
 industry knowledge, 29-30
 knowledge profiles identified, 60
 levels of understanding, 35-38, 61-62
 MAS consultants, 9, 22-25, 30-31
 sources of MAS knowledge, 33-34
- Experts
 consulting art, 32-33
 review of examination questions, 78-79
 role in study, vii
 scoring responses to subjective questions, 66
- Extensive knowledge
 bodies of knowledge, 8-9, 61-62
 definition, 8
 general knowledge, 8-9, 69
 industry knowledge, 8-9, 69
 knowledge profiles, 62-64
 organizational functions, 8-9, 70-71
 public sector, 8-9, 69
 technical disciplines, 8-9, 70-71
- F**
- Fees. *See* Compensation
- Finance and accounting
 application of technical skills, 29-31
 bibliography, 145-147
 component body of knowledge, 42, 44-45
 definition, 135
 description, 6
 electronic data processing, 45-46
 inventories of concepts, 93-97
 MAS services offered, 15-16, 44-45
 management science knowledge, 51
 public v. private sectors, 57-58
 significance in MAS practice, 42
- Firms
 auditor-client relationship, 21
 audits source of MAS engagements, 14
 communication proficiency, 40
 industry competence, 30
 internal organization, 16-18, 27
 levels of responsibility, 16-18, 25-26
 major bodies of knowledge, 2-4
 non-audit clients, 14-15
 number of MAS practitioners, 22, 31
 percentage offering MAS, 13-14
 policies. *See* Policies, firm
 range of MAS practice, 1-2, 13-16, 22
 size related to MAS practice, 27-28
 sources of staff, 22-23
 staff development policies, 24-26, 28-29
 survey instruments, viii, 115-134
 turnover of staff, 26
- Forecasts
 ethical requirements, 18
 finance and accounting, 44-45
 management science knowledge, 50
- G**
- Goals. *See* Objectives
- Governmental organizations
 bibliography, 157-160
 budgetary processes, 57-58
 common concepts, 51-52
 comparison with private sector, 40, 57-58
 functional and technical knowledge, 5, 42
 general knowledge, 4-5, 40

human resources, 47-48
 operations, 46-47
 public sector knowledge, 7, 40, 51-58

H

Human resources

bibliography, 151-153
 component body of knowledge, 42, 47-48
 description, 6
 inventories of concepts, 105-107
 significance in MAS practice, 42

I

Illustrations

comparison of private and public sectors, 54
 diversity of potential client activities, 53
 educational background of MAS professionals, 24
 engagement progression, 20
 examination administration process, 79
 examination design, 10, 68-69, 72-75
 examination review process, 80
 knowledge profile descriptions, 63
 MAS body of knowledge, 82
 pattern of MAS knowledge acquisition, 37
 scoring optional questions, 71
 sources of MAS knowledge, 34
 sources of new MAS staff, 23
 use of knowledge in engagement, 4
 variety of MAS services, 16

Illustrative citations

knowledge concepts inventories, 35-36, 42-43, 83-113
 levels of understanding, 36-38, 42-43

Implementation

bibliography, 142-145

component body of knowledge, 42-44
 inventories of concepts, 90-93
 involvement of MAS practitioner, 40-41
 levels of understanding, 61
 management science engagements, 50-51
 motivating clients, 21, 26
 significance in MAS practice, 42
 systems approach, 41

Independence

attribute of MAS practitioners, 21, 67
 decision on scope of services, 15
 ethical requirements, 18, 21, 39
 relation to bodies of knowledge, 2-3

Industry knowledge

application of specialized skills, 29-30
 categories for private sector clients, 55
 categories for public sector clients, 56-57
 changes in knowledge, 58
 common concepts, 51-52
 comparison with general knowledge, 40
 examination design, 9, 69-70, 72-76
 extensive knowledge, 8-9, 62-63
 factors related to competence, 29-30
 knowledge concepts, 7
 knowledge profiles, 62-64
 levels of understanding, 61
 major body of knowledge, 2-3, 7, 51-58
 operations, 46-47
 private sector knowledge, 54-55
 public sector knowledge, 55-57
 relation to general knowledge, 38
 relation to organizational functions, 51, 55-58
 relation to technical disciplines, 51, 55-58

Informal MAS council, type of service delivered, 19

Institute of Internal Auditors, value of the report, viii-ix
 Institute of Management Consultants publications used in study, vii
 representation on task force, ix-x
 value of the report, viii-ix

Interviews

consulting art, 32-33
 human resources knowledge, 48
 industry competence, 29-30
 MAS practitioners, vii, 22, 29-30

J

Judgment

levels of cognitive functioning, 60-61
 objective and subjective questions, 65-66
 staff consultants, 26, 28-29

K

Knowledge concepts

bibliography, 139-141
 choice among examination questions, 68
 electronic data processing, 6, 45-46
 examination design, 68
 examination to test understanding, 7-8, 64
 executive planning, 6, 43-44
 finance and accounting, 6, 44-45
 functional and technical knowledge, 5-6, 42-51
 human resources, 6, 47-48
 industry and public sector, 7, 51-58
 inventories of concepts, 83-113
 levels of understanding, 35-38, 61, 64
 management science, 6, 49-51
 marketing, 6, 49
 operations, 6, 46-47
 phases of research, vii
 relation to bodies of knowledge, 3-4, 35-38, 42-43
 sources of MAS knowledge, 33-34

Knowledge, considerable. *See* Considerable knowledge

Knowledge, extensive. *See* Extensive knowledge

Knowledge, general

acquisition of knowledge, 4, 28-29
 areas excluded, 39
 bibliography, 139-141
 consulting art, 32-33, 141-142
 examination concepts, v-vi
 examination design, 9, 69-70, 72-76
 extensive knowledge, 8-9, 62-63
 informal MAS counsel, 19
 inventories of concepts, 83-89
 knowledge profiles, 62-64
 levels of understanding, 61
 major body of knowledge, 38-42
 significance, 38

Knowledge of industry. *See* Industry knowledge

Knowledge profiles

alternative profile descriptions, 62-64
 breadth of understanding, 8-9, 62-64, 67
 choice of examinations, 68-69
 definition, 59-60
 depth of understanding, 67, 72
 designated for accreditation, 59
 levels of understanding, 9, 60
 relation to examination design, v-vi, 7-8, 10-11, 62-64, 68, 72-76

L

Legal knowledge

general knowledge component, 39
 human resources knowledge, 48
 industry and public sector, 7, 51-58

Levels of understanding. *See* Understanding, levels

Literature. *See* Bibliography

M

MAS executive committee

policy decisions, vi
 selection of research team, vi-vii

- task force appointed, v
- MAS practice
 - analytical approach. *See* Analytical approach
 - auditor-client relationships, 21
 - decentralization, 27
 - definition, 1-2, 135
 - description, 13-34
 - economic fluctuations, 15
 - effective use of staff, 27-28
 - engagements. *See* Engagements
 - ethical requirements. *See* Ethical requirements
 - firm size, 27-28
 - formality and documentation, 18-21
 - functional and technical knowledge, 5-6, 42-51
 - general knowledge, 3, 38-42
 - growth of MAS practice, 1, 23, 27-28
 - growth rate estimates, 15
 - industry knowledge, 7, 29-30, 51-58
 - informal MAS counsel, 19
 - personnel in firms, 16-18, 24-29, 31
 - practice development, 31
 - proficiency level for examination, 9
 - recognition of non-CPAs, vi
 - scope. *See* Scope of MAS practice
 - sources of engagements, 14-15
 - specialization by firms, 27-28, 31
 - specialization by industry, 14-15
 - staff development. *See* Staff development
 - survey information, viii, 13-16, 22-24
 - systems approach, 41-42
 - value of the report, viii-ix
 - variety of MAS services, 15-16
- MAS practitioners
 - academic degrees, 22-24, 39
 - accreditation by examinations, 7-8
 - analytical approach. *See* Analytical approach
 - career paths. *See* Career paths
 - communication proficiency, 40
 - "Consultant's Consultant," 28-29
 - consulting art, 32-33, 38-42
 - counseling with management, 43-44
 - educational background, 24
 - engagement performance, 30-31, 42
 - ethical requirements. *See* Ethical requirements
 - examination question contributed/reviewed, 67
 - formality and documentation, 18-21
 - functional and technical knowledge, 5-6, 42-51
 - general knowledge, 4-5, 38-42, 69
 - industry knowledge, 7, 29-30, 51-58, 69
 - informal MAS counsel, 19
 - interviews. *See* Interviews
 - knowledge profiles. *See* Knowledge profiles
 - levels of understanding, 35-38
 - major bodies of knowledge, 2-3
 - need for CPA certificate, 26
 - number of practitioners, 22, 31
 - percentage offering MAS, 13-14
 - personal attributes, 21-22, 32-33
 - responsibility levels in firms, 16-18, 25-26
 - scope of services, 1-2
 - senior consultants, 17
 - skill in working with management, 19
 - sources of MAS knowledge, 33-34
 - specialists and generalists, 28-31
 - staff consultants, 16-17
 - state regulation proposals, v, viii-ix
 - survey information, viii, 13-16, 22-24
 - systems approach, 41-42
- MASBOKE study
 - acknowledgements, xiii-xiv
 - areas of MAS practice, vi
 - bibliography, 139-162
 - bodies of knowledge, 35-58
 - description, viii

- MASBOKE study (*continued*)
- examination concepts, 59-80
 - general overview, 13-34
 - knowledge concepts inventories, 83-113
 - methodology, vii-viii
 - organization of task force, ix-x
 - phases of research, vii
 - purposes, v
 - scope of study, 11, 39, 54-55
 - selection of research team, vi-vii
 - summary of findings, 1-10
 - survey instruments, viii, 115-134
- Management, general
- application of knowledge, 29-30
 - component body of knowledge, 43-44
 - description of body of knowledge, 6
 - MAS practice defined, 1-2, 135
 - management science knowledge, 49-51
- Management information systems
- counseling with top management, 43-44
 - data processing knowledge, 6, 45-46
 - knowledge concept, 44-45
- Management science
- bibliography, 155-157
 - component body of knowledge, 42, 49-51
 - definition, 135
 - description, 6
 - engagement stages, 50
 - knowledge concepts inventories, 50-51, 110-113
 - significance in MAS practice, 42
- Marketing
- application of knowledge, 29, 31
 - bibliography, 153-155
 - component body of knowledge, 42, 49
 - definition, 135
 - description, 6
 - inventories of concepts, 107-110
 - management science knowledge, 51
 - public v. private sectors, 57
 - responsibilities of marketing function, 49
 - significance in MAS practice, 42
- Mathematics, management science knowledge, 6, 49-51
- Measurement
- achievement of knowledge profile, 59
 - levels of understanding, 61
 - management science knowledge, 49-51
 - performance, 45-46, 49, 67
 - statistical analysis of surveys, viii
 - validity and reliability of examination, 67
- Methodology
- interviews, vii
 - levels of cognitive functioning, 60-61
 - management science knowledge, 50
 - publications, vii
 - survey instruments, viii, 115-134
- N**
- National Association of Accountants
- representation on task force, ix-x
 - value of the report, viii-ix
- Non-CPAs in MAS practice
- duties and responsibilities, 16-18
 - education and experience, 22
 - ethical requirements, 18
 - need for CPA certificate, 26
 - proposals for recognition, vi
 - representation on task force, ix-x
- Not-for-profit organizations
- bibliography, 157-160
 - comparison with private sector, 40, 57-58
 - functional and technical knowledge, 5, 42
 - general knowledge, 4-5, 40
 - human resources, 47-48
 - industry knowledge, 7, 51-58
 - MAS practice by CPA firms, 1, 40, 44-45
 - operations, 46-47
- O**
- Objective questions. *See* Questions, objective

Objectives

- MAS staff development, 24
- management operations, 6, 43-44
- management science knowledge, 49-51
- marketing, 49
- public sector knowledge, 55-57
- systems approach, 41
- validity of examination, 67

Objectivity

- ethical requirements, 18
- research results, vi

Operations

- bibliography, 149-151
- component body of knowledge, 42, 46-47
- definition, 136
- description, 6, 46-47
- electronic data processing, 45-46
- inventories of concepts, 101-105
- knowledge concept, 46-47
- knowledge of industry, 29-30
- MAS practice by CPA firms, 44-45
- management science knowledge, 51
- significance in MAS practice, 42

Organizational functions

- component bodies of knowledge, 3, 5-6, 42-51
- conceptual structure of components, 5
- considerable knowledge, 8-9, 62-64
- examination design, 9, 69-76
- extensive knowledge, 8-9, 62-64
- general knowledge, 38
- industry knowledge, 51, 55-58
- knowledge concepts inventories, 42-43
- knowledge profiles, 8-9, 62-64
- levels of understanding, 61
- major body of knowledge, 2-3, 42-51

Organizations, Professional. *See* Professional organizations

P

Partners

- duties and responsibilities, 17-18

practice development, 17-18

- scope of MAS practice. *See* Scope of MAS practice
- timing of promotions, 25-26

Performance

- analytical approach. *See* Analytical approach
- average or normal performance, 55-57
- consulting art. *See* Consulting art
- electronic data processing, 45-46
- engagements. *See* Engagements
- examination concept, 59-60, 64-67
- examination design, 68
- executive planning, 43-44
- finance and accounting, 44-45
- marketing, 49
- passing level on examination, 7-8, 59-60, 65, 72
- specialists and generalists, 30-31

Personal characteristics, MAS practitioners, 21-22, 31-33

Personnel management

- human resources knowledge, 48
- MAS professionals, 16-18, 24-26
- sources of new MAS staff, 23

Planning. *See* Executive planning

Policies, firm

- communication proficiency, 40
- MAS practice, viii, 1-2, 27-28
- range of services offered, 15-16, 52
- staff development, 24-26

Practice development

- demand for MAS services, 27-28
- industry knowledge, 29-30
- MAS specialization, 28
- responsibility of partners, 17-18

Practice standards, MAS. *See* Statements on Management Advisory Services

Practitioners. *See* MAS practitioners

Principals

- duties and responsibilities, 17-18
- scope of MAS practice. *See* Scope of MAS practice
- timing of promotions, 25-26

Private sector

- categories for specific clients, 55
- common concepts, 51-52

- Private sector (*continued*)
- comparison with public sector, 4-5, 7, 40, 52-54, 57-58
 - functional and technical knowledge, 5, 42, 51, 58
 - MAS specialization, 29
 - specialized concepts, 54-55
- Probability
- levels of cognitive functioning, 60-61
 - management science knowledge, 6, 49-50
- Production, operations, 6, 46-47
- Professional organizations
- decentralization, 27
 - responsibility levels in firms, 16-18
 - specialization accreditation, viii-ix
 - value of the report, viii-ix
- Proficiency
- CPA profession, 39
 - communication skills, 40
 - comparison with breadth of understanding, 9
 - concepts used in MAS practice, 35-58
 - consulting art, 32-33, 38-42
 - ethical requirements, 18
 - feasibility of testing, v
 - firm profile, 15
 - industry knowledge, 29-30, 51
 - knowledge profiles, 62-63
 - levels, v-vi, 28, 42-43, 61
 - MAS professionals, 5, 16-19, 21, 31
 - MAS specialization, 29, 31
 - review of examination questions, 78-79
 - staff development, 24-26, 28-29
- Profiles. *See* Knowledge profiles
- Promotion. *See* Advancement
- Psychology. *See* Behavioral sciences
- Public sector
- application of technical skills, 29, 38
 - budgeting, 56-58
 - categories for specific clients, 56-57
 - common concepts, 51-52
 - comparison with private sector, 4-5, 7, 40, 52-54, 57-58
 - examination design, 9, 69-70, 72-76
 - extensive knowledge, 8-9, 62-63
 - human resources knowledge, 47
 - knowledge of unique characteristics, 3, 38-39, 51-58, 69
 - knowledge profiles, 62-64
 - levels of understanding, 61
 - major body of knowledge, 2-3, 7, 51-58
 - MAS practice by CPA firms, 1-2, 29-30, 44-45
 - specialized concepts, 55-57
- Publications
- bibliography, 139-162
 - ethical requirements in CPA profession, 18
 - illustrative citations. *See* Illustrative citations
 - material from professional groups, vii
 - sources of knowledge, 37-38
- Q**
- Questionnaires. *See* Surveys
- Questions, objective
- advantages, 9
 - compared to subjective questions, 65-66
 - examination design, 68
 - relative use on examinations, 7-8, 59-60
 - scoring and interpreting results, 80
- Questions, subjective
- compared to objective questions, 65-66
 - examination design, 68
 - relative use on examinations, 7-9, 59-60
 - scoring and interpreting results, 80

R

- Recruitment, human resources knowledge, 47-48
- Referrals, ethical requirements, 18
- Regulations
 - clients' regulatory environment, 52-54
 - component of general knowledge, 39
 - human resources knowledge, 48
 - private sector, 54-55
 - proposals for MAS practice, v, viii-ix
 - public sector, 55-57
- Reliability
 - compared to validity, 67
 - definition, 67
 - examination concepts, 7-8, 59-60, 67-68
 - scoring responses to subjective questions, 66
- Reports to clients
 - communication concepts, 5, 40
 - preparation by senior consultants, 17
 - stage in MAS engagements, 18-19, 42
- Research report
 - background information, v-vii
 - final report, vii
 - phases of research, vii
 - research team, x-xi
 - scope of report, vi
 - summary of findings, 1-10
 - value of the report, viii-ix
- Research team
 - cooperation with task force, xi
 - membership and qualifications, x-xi
 - method of selection, vi-vii
 - validation of research findings, vii
- Responsibility levels
 - human resources knowledge, 47-48
 - MAS professionals, 16-18, 24-26, 29
- Roper Organization, survey of MAS practice, viii, 13-14, 22, 115-120

S

- Scope and structure committee, value of MASBOKE study, viii-ix
- Scope of MAS practice
 - differences due to firm size, 27-28
 - differing opinions of CPAs, vi
 - engagement performance, 30-31
 - growth of services, 1, 23, 27-28
 - percentage offering MAS, 13-14
 - survey information. *See* Surveys
 - systems approach, 41-42
 - value of the report, viii-ix
 - variety of services rendered, 15-16, 52
- Scoring responses
 - administrative requirements, 11, 59-60, 80
 - choice among examination questions, 68
 - extensive or considerable knowledge, 71, 76
 - illustration, 71
 - measuring achievement, 59, 64-66
 - objective and subjective questions, 65-66
 - passing percentage, 72
 - relation to examination coverage, 64
 - reliability of examinations, 67
- Senior consultants
 - duties and responsibilities, 17
 - supervision of staff consultants, 24-25
- Skill. *See* Proficiency
- Specialization
 - decisions on scope of services, 15
 - effective use of staff, 27-29
 - engagement performance, 30-31
 - industry knowledge, 29-30, 54-57
 - knowledge profiles, 62-63
 - MAS practice units, 14-15, 28-30
 - practice development, 28
 - recognition by CPAs, v-vi
 - staff activities, 19
 - staff development, 16-18, 25, 28-31
 - trend in professional organizations, viii-ix
 - value of the report, viii-ix

- Staff consultants
 - duties and responsibilities, 16-17
 - specialization, 28-29
 - training, 24-26
 - turnover, 26
 - Staff development
 - communication proficiency, 28-29, 40
 - firm policies, 24-26
 - human resources knowledge, 47-48
 - levels of responsibility, 16-18
 - sources of staff, 22-23
 - specialists and generalists, 28-31
 - Standards. *See* Statements on Management Advisory Services
 - State Societies, CPA
 - ethical requirements, 18, 39
 - membership on task force, ix-x
 - training MAS staff, 25
 - value of the report, viii-ix
 - Statements on Management Advisory Services
 - competence and due care, 19
 - MAS practice defined, 1-2
 - Statistics
 - analysis of surveys, viii
 - management science knowledge, 6, 49-51
 - Subjective questions. *See* Questions, subjective
 - Supervision
 - degree of government control, 52
 - MAS professionals, 17-18, 24-25
 - Surveys
 - AICPA large firm survey, vii, 22
 - MAS practitioners survey, viii, 22, 129-131
 - MASBOKE practice unit survey, viii, 15-16, 23-24, 121-129
 - role in research study, viii
 - Roper Organization survey, viii, 13-14, 22, 115-120
 - statistical analysis, viii
 - Systems approach. *See also* Analytical approach
 - definition, 136
 - description, 41-42
 - electronic data processing, 45-46
 - management science knowledge, 49-51
 - use by MAS professionals, 5
- T**
- Taxes
 - knowledge excluded from MASBOKE study, 39
 - services offered by CPA firms, 13, 22, 27-28
 - Technical disciplines
 - application of specialized skills, 29
 - component bodies of knowledge, 3, 5-6, 42-51
 - conceptual structure of components, 5
 - considerable knowledge, 8-9, 62-64
 - examination design, 9, 69-76
 - extensive knowledge, 62-64
 - knowledge concepts inventories, 19-21, 90-113
 - knowledge profiles, 8-9, 62-64
 - levels of understanding, 61
 - major body of knowledge, 2-3, 42-51
 - relation to general knowledge, 38
 - relation to industry knowledge, 51, 55-58
 - significance, 42-43
 - Training
 - communication skills, 28-29, 40
 - human resources knowledge, 47-48
 - sources of MAS knowledge, 33-34
 - staff development, 16-18, 24-26
 - Turnover
 - definition, 26
 - staff development policies, 26
- U**
- Understanding, breadth
 - comparison with proficiency, 9
 - considerable knowledge, 8-9, 62
 - examination design, 9-10

- extensive knowledge, 8-9, 62
- knowledge profiles, 62-64
- validity of examinations, 67
- Understanding, levels
 - definition, 36-37
 - examination concept, 59-60
 - examination coverage, 64-66, 72
 - knowledge concepts included, 61-62
 - knowledge concepts inventories, 35-38, 42-43
 - objective and subjective questions, 9, 65-66
 - pattern of MAS knowledge acquisition, 37
 - relation to cognitive functions, 61, 66
 - review of examination questions, 78-79
 - scientific research, 38
 - validity of examinations, 67
- University of Texas
 - research team, x-xi
 - selected for research study, vi-vii
 - validation of research findings, vii

V

Validity

- compared to reliability, 67
- definition, 67
- examination concept, 7-8, 59-60, 67-68
- research findings, vii

Value of the report, uses of the report, viii-ix

W

Working papers, communication concepts, 5, 40

Writing questions

- administration of MAS examination, 11, 59-60, 77-80
- choice among examination questions, 68, 76, 78
- MAS practitioners, 67
- objective. *See* Questions, objective
- subjective. *See* Questions, subjective