AN INVESTIGATION OF INVESTORS' FINANCIAL STATEMENT KNOWLEDGE

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ABSTRACT

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By

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The present research is an attempt to measure the knowledge of financial statement terms and concepts currently held by the average nonprofessional investor. The research was justified in two ways. First, the accountant has as a goal the effective communication of the results of economic events. Attaining effective communication requires the accountant to learn about the receivers of his message. One important receiver of this message is the average nonprofessional investor. Second, a review of accounting literature shows only minimal investigation has been done in the area.

The problem of measuring the nonprofessional investor's knowledge of financial statement definitions and concepts was approached by employing the use of a direct mail questionnaire. The questionnaire contained two parts. Part one gathered demographic, attitudinal, and behavioral characteristics about each respondent. Part two tested the respondent's knowledge of the definitions and concepts used by accountants when creating financial statements. The test

contained in part two of the questionnaire is the result of employing techniques to insure the validity, reliability, and discrimination of the test as a scale. The steps employed included: (1) obtaining the opinion of experts about the validity of the questionnaire as a measure of financial statement knowledge, (2) testing the questionnaire in a pilot study by sending it to a subsample of 200 respondents, (3) statistically measuring the discrimination of each question and the reliability of the test as a whole, and (4) eliminating any questions that did not meet the strict requirements for the scale. Part two of the final questionnaire contained fourteen questions.

The data studied was gathered by sending the pretested questionnaire to a sample of 1,000 common stock investors in the state of Michigan. Two mailings and a nonrespondent follow-up were employed to insure the accuracy of the results from the sample. The results of the nonrespondent follow-up showed the characteristics of the nonrespondents to be statistically no different than those of the respondents. The data reported in the research is the result of responses from 554 investors. Unexpectantly, 89 professional investors were included in the 554 total respondents. These 89 responses allowed the comparison of professional investor characteristics with those of the nonprofessional investors.

Chapter III of the thesis reports in detail the results of the study. Specifically, a detailed breakdown

of the raw scores on the scale and a percentage breakdown of answers to each question on the scale are presented. Further, each demographic, attitudinal, and behavioral variable is examined statistically for its relationship to the score on the scale of financial statement knowledge.

Five general conclusions were made from the study's results. First, the average nonprofessional investor does not have sufficient knowledge of financial statements to employ them in an informed manner. The average nonprofessional investor could answer only 62.0 percent of the questions on the scale. On the other hand, professional investors have sufficient knowledge of financial statements. Professionals averaged 78.2 percent correct answers. Second, the demographic, attitudinal, and behavioral characteristics examined in the present research do not hold the clue to solving, or significantly aiding in, the accountant's communication problems. Third, the financial terms and concepts best understood by the average nonprofessional and professional investor are those which are most clearly defined by the label placed on them by accountants. Fourth, the average nonprofessional investor follows rational behavior patterns. Finally, and perhaps most startling to accountants, the average professional and nonprofessional investor does not adequately understand the scope of the independent auditor's opinion.

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CHAPTER I

INTRODUCTION

Purpose

This research is an attempt to measure the knowledge of financial statement terms and concepts currently held by the nonprofessional investor. In addition, this research attempts to discover if there is any relationship between the nonprofessional stockholder's level of knowledge and certain demographic, behavioral, and attitudinal variables.

The research design is intended to be exploratory in nature. The results of this study are primarily descriptive. However, these descriptions add to the accountant's knowledge about the people who read his statements and, at the same time, point out areas which are deserving of further research.

Background

In its broadest sense accounting can be defined as embodying two main processes.[1] The first process is

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[1]Examples of this broad definition of accounting may be found in James Don Edwards, Roger H. Hermanson, and R. F. Salmonson, Accounting: A Programmed Text, Volume One (Homewood Illinois: Richard D. Irwin, Inc., 1965), p. 2 and

measurement. When measuring, the accountant identifies, classifies, records, and analyzes economic events and related information. The second process is the communication of the results of the measurement process to interested persons. Accountants create messages in the form of statements and schedules which are transmitted to the intended receiver. This process of "communication is a vital link in accounting activity."[2] Accountants, however, have always suffered a degree of difficulty when transmitting the results of their measurement.

> The nature of this transmission problem may be visualized by recognizing the accountant as an observer of economic or related activities (past, present, or future) which he records in abstract form using descriptive words and numbers. If the accounting information is good and the accountant is properly skilled, these abstractions will present an accurate model or picture of the underlying activity. To convey an accurate picture of the activity to the user the accountant must use abstractions, but his objective is always to convey an understanding of the activity rather than merely to transmit words and numbers.[3] (Emphasis added.)

For the accountant, effective communication is the transfer of understanding about certain economic events.

Committee to Prepare a Statement of Basic Accounting Theory, A Statement of Basic Accounting Theory (Evanston, Illinois: American Accounting Association, 1966), p. 1.

[2] Ibid., p. 12.

[3] Ibid., p. 11.

One of the most important roles played in effective communication is that played by the receiver of the message. Literature in the field of communications contains repeated reference to the importance of the receiver. Introductory communication texts emphasize this point heavily. For example, a book by David K. Berlo contains the following statements:

> As sources we need to keep the receiver in mind at all times. We use codes the receiver can understand. We select elements from the code that will appeal to him, that are easy for him to decode. We choose content that will be convincing to the receiver, that will be pertinent to his interests, his needs. Finally we treat the message generally in order to achieve the maximum possible effect--to accomplish our purpose.[4]
>
> The receiver is the most important link in the communication process.[5]
>
> The only justification for the existence of the source, for the occurrence of communication, is the receiver, the target at whom everything is aimed.[6]

Knowledge of the receiver cannot be overemphasized when designing messages for his consumption. As explained by scholars in the field of communication design, designing a message (or designing anything for that matter) involves creating a fit between context and form. Context is defined as that part of the environment which the designer faces

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[4]David K. Berlo, The Process of Communication (New York: Holt, Rinehart, and Winston, 1960), p. 62.

[5]Ibid.

[6]Ibid.

that is given and unchangeable in the short term. Form is that part of the environment which can be changed to fit the situation. To design an effective message requires that the form of the message fit within the given context. When designing messages for particular persons or groups of persons, the designer should know as much as possible about those persons because they are a part of the context in which he is working.

For the accountant, the particular persons for whom he is designing a message are the people who read financial statements. The more the accountant knows about these people and the more accurate this knowledge is, the better he is able to communicate.

Justification

Personal ignorance about the attributes of the non-professional investors who provide funds for use by corporate entities led to an interest in this subject. That others are also unsure, or in disagreement about, the attributes of these investors is evidenced by the diversity of statements on the subject contained in the literature. For decades accounting scholars and practitioners have concerned themselves with the level of sophistication desired, desirable, or actually attained by "run-of-the-mill" shareholders. Statements have been made as to:

1. Where the average investor receives his information for investment purposes;
2. The level of understanding attained by shareholders when reading financial statements;
3. The level of competence that must be assumed of shareholders when accountants prepare statements;
4. The amount of time spent by shareholders reading financial statements; and,
5. The ways shareholders utilize financial statement information.

Statements about these topics range from assumptions and beliefs to isolated statements of fact. For example, the Committee on Accounting Concepts and Standards of the American Accounting Association assumes:

> The use of investors of published financial statements in making investment decisions and in exercising control over management should be considered of primary importance. It seems reasonable to assume that those using financial statements for these purposes will be willing and competent to read them carefully and with discrimination.[7] (Emphasis added.)

Mautz and Sharaf believe the stockholder "takes his advice from investment advisors who are quite competent to deal not

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[7]Committee on Accounting Concepts and Standards of the American Accounting Association, "1957 Revision of Accounting Concepts and Standards Underlying Corporate Financial Statements," Accounting Review, XXXII (October, 1957), 537.

only with financial statements as now prepared, but also with substantial amounts of other information."[8]

Perhaps a presentation of several statements from the literature without editorial comment will better emphasize my point.

> It has often been argued that most shareholders neither understand nor are interested in long detailed Annual Reports. . . . This is true.[9]

> I mean to suggest that a lay reader can read perfectly clear English and an orderly presentation of financial data and end up without a comprehension of the message sought to be conveyed.[10]

> To achieve rational decisions it is reasonable to assume that the individual resource holder will have need for the factual data necessary to delineate and evaluate various alternatives.[11]

> It is startling to realize how very little the ordinary run-of-the-mill stockholder knows about the company he partly owns.[12]

This study will focus on the lack of empirically verified knowledge currently available to the accounting

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[8] R. K. Mautz and Hussien A. Sharaf, The Philosophy of Auditing (Menasha, Wisconsin: American Accounting Association, 1961), p. 185.

[9] Corliss D. Anderson, What Financial Analysts Want to Know (Auburndale, Massachusetts: The Financial Analysts Federation, 1962), foreword.

[10] Jack M. Whitney, II, "Address Before the Washington, D.C. Society of Investment Analysts," Journal of Accountancy, CXVI (March, 1963), 9.

[11] Thomas R. Dyckman, "On the Investment Decision," Accounting Review, XXXIX, No. 2 (April, 1964), 285.

[12] Edward T. McCormick, "Reporting to Stockholders," Accounting Review, XXXV, No. 2 (April, 1960), 224.

profession concerning the level of understanding attained by the nonprofessional or "run-of-the-mill" investor when reading published financial statements.

Related Studies

With one major exception, past studies of investor needs and characteristics have been aimed at the professional investor. The ability to read and comprehend published financial statements on the part of these professionals was assumed. The knowledge most often acquired by these studies was the opinion of the professional investor as to what changes should be made in published financial data. For example, Morton Backer in a study sponsored by the Financial Executives Institute, surveyed large, but non-random, samples of security analysts, commercial bankers, investment bankers, and institutional lending organizations in an effort to discover their preference with respect to various reporting practices.[13] Representative findings of this study are that these individuals favor conservatism, expensing research and development costs, straight-line depreciation, and LIFO. They do not, on the other hand, favor more subjectivity or the inclusion of formal budgets in the annual report. It seems reasonable to assume that

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[13]Morton Backer, "Financial Reporting and Security Investment Decisions," Financial Executive, XXXIV (December, 1966), 50-61.

these professionals understand the components of published financial statements.

Although other research studies differed by varying degrees from the Backer study, all put major emphasis on investigating the professional investor and either ignored or only mentioned the nonprofessional.[14]

The major exception to the preceeding trend in research is a study conducted by Elmo Roper for the Controller's Institute Foundation in 1948.[15] This study covered a wide spectrum of investors including both the professional and the nonprofessional categories. Roper found that 60 percent of those surveyed used the company's annual report as the primary source of information about their favorite company. Fully 50 percent of those surveyed turned to the statement of earnings as the first item they read when receiving the annual report. However, Roper made no attempt to determine how well the investor understood what he was reading, if he understood at all.

The conclusion that follows from this review is that accountants, typically, do not have sufficient knowledge of

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[14] See, for example, Charles T. Horngren, "Disclosure: 1957," Accounting Review, XXXII (October, 1957); and Abraham Briloff, The Effectiveness of Accounting Communication (New York: Frederick A. Praeger, Publishers, 1967).

[15] Elmo Roper, A Report on What Information People Want About Policies and Financial Conditions of Corporations, Vols. I and II (New York: Controller's Institute Foundation, Inc., 1948).

the readers of financial statements. More specifically, the characteristics and levels of understanding the nonprofessional investor attains when reading financial statements have been virtually unknown.

Understanding

In its most basic form, understanding any message must begin with the ability on the part of the receiver to decode the message as he receives it from the channel. All messages are sent in some form of code. Whether this code is oral, written, English, Chinese, sign-language, or any other recognized code, if the receiver does not know the code, he cannot understand the message.[16] Accountants employ a specialized code when preparing financial statements and related footnotes. If the accountant desires to communicate understanding of economic events, he should first be sure that the receiver has a definitional knowledge of the code which coincides with the definition intended by accountants. Determining the existence of this definitional knowledge is the first goal of this study.

In addition, merely having a definitional knowledge of a code does not necessarily give the receiver a working understanding of the message. An additional type of knowledge is required. This additional knowledge requires that

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[16] Berlo, p. 51.

the receiver have some concept of the ramifications or consequences of the message. In other words, the receiver needs to comprehend the situation described by the code. Without this conceptual knowledge the receiver merely knows the definitions to several words used together. In accounting, this conceptual knowledge is considered of utmost importance. Depending on the accounting method and the conditions under which it is used, employing a given acceptable accounting technique might have drastic consequences on the amounts shown on accounting statements for asset values, current income, and future income. Consider, for example, the effect on the statements of the steel industry when conditions forced steel companies to dip into their LIFO base. This conceptual knowledge is the second type of knowledge that is tested in this study.

Research Approach

The problem of measuring the nonprofessional investor's knowledge of financial statement definitions and concepts was approached by employing the use of a direct mail questionnaire sent to a large sample of Michigan common stockholders. The questionnaire included two parts. Part one gathered demographic, attitudinal and behavioral characteristics about each respondent. Part two tested the respondent's knowledge of the definitions and concepts used by accountants when creating financial statements. The test contained in part two of the questionnaire is the result of

employing techniques to insure the validity, reliability, and discrimination of the scale. The test is then used as a scale to measure stockholder knowledge.

The results of administering the questionnaire are subjected to statistical analysis to discover significant relationships. The overall objective of these tests is to determine which of the demographic, attitudinal, and behavioral characteristics are good predictors of investors' financial statement knowledge. Specifically, answers to the following questions were sought:

1. Is the distribution of scores on the scale skewed toward higher scores, lower scores, or approximately normal?

2. What is the relationship between the shareholder's knowledge and his age?

3. What is the relationship between the shareholder's knowledge and the shareholder's sex?

4. What is the relationship between the level of formal education achieved by the stockholder and his knowledge level?

5. What is the relationship between the number of different common stock issues held by the investor and his knowledge of financial statements?

6. What is the relationship between the total dollar holdings in common stock of the investor and his knowledge level?

7. What is the relationship between the length of time the investor has held common stock and the investor's knowledge level?

8. What is the relationship between the investor's major source of knowledge about the companies in which he owns stock and his knowledge level?

9. What is the relationship between the degree statements used in making investment decisions and the investor's knowledge level?

10. What is the relationship between the length of time spent reading financial statements and the investor's knowledge level?

11. What is the relationship between the amount of contact the investor has with investment counselors or brokers and his knowledge level?

12. What is the relationship between the investor's own perception of his investment success and his knowledge level?

13. What is the relationship between the investor's own perception of his level of knowledge of financial statements and his true level of knowledge?

14. What is the relationship between the manner in which the investor acquired his knowledge and his level of knowledge?

Summary

This chapter has attempted to establish the need for accountants to acquire further information about the characteristics and knowledge levels of the nonprofessional investor. Justification for acquiring this knowledge was based on two arguments. First, communication theory was used to show that knowledge of the receiver is necessary for effective communication. Second, a review of the empirical work done on the subject revealed only minimal investigation had been done. The approach the study took is outlined and the specific questions to which answers were sought were listed.

The chapters that follow discuss in detail the results of this study. Specifically, Chapter II discloses

the specific population tested and the detailed steps taken in the research. Chapter III reveals the results of the questionnaire and the statistical tests employed to discover significant relationships. Chapter IV includes a discussion of the conclusions that may be drawn from these results and the implications revealed for further research.

CHAPTER II

METHODOLOGY

Introduction

This chapter explains in detail the methodology employed to accomplish the objectives of this research. The chapter is divided into six main sections. First, the sample population studied is defined and described. Second, the steps taken to create a reliable, valid, and discriminatory scale for measuring financial statement knowledge are explained. Third, the procedures followed in administering the questionnaire are described. Fourth, a description of the average respondent and a breakdown of the answers to the demographic, attitudinal, and behavioral questions are presented. Fifth, the statistical tests used to analyze the questionnaire data are detailed. Last, the formal hypotheses tested in this research are listed. Each of these sections follow in order.

The Population

At its conception, the present research was intended to examine the nonprofessional common stock investor in the state of Michigan. The above definition was intended to

exclude from the sample population professional security analysts, commercial bankers, institutional lending organizations, and any other professional investor. That is, the population would contain persons who own at least one share of common stock, do not invest in common stocks professionally, and live in the state of Michigan. Unfortunately, no tractable method could be found to gain access to this population. Problems of legal-liability and limited research finances thwarted all attempts at obtaining direct access to this category of people.

A surrogate population was obtained from the Dunhill International Lists Company, Inc. (hereafter referred to as Dunhill or "the company"). The company specializes in supplying lists of persons owning common stocks, preferred stocks, mutual funds, and other income producing securities. The company currently owns a list of approximately 12,000 names of common stockholders who reside in Michigan.

A sample numbering between 1,200 and 1,700 names was determined adequate for the needs of the research. The sample was drawn by drawing a systematic random sample of the 12,000 individuals. The company was instructed to begin at a previously determined random point and to choose every seventh name. The sample chosen by the company contained 1,712 names.

Negotiations with the company established that, with one exception, the techniques used to compile their list of Michigan stockholders should not introduce bias into the

results of the present study. The company exchanges its mailing lists with "the bulk of financial institutions, which includes stock brokers [sic], stock analysts, advisory services and financial publications."[1] The objective of these exchanges is to expand the size of the company's list. A possible bias is introduced by Dunhill because they eliminate the majority of the female names from their lists. The company's experience has been that the majority of stock held by females is done so for tax purposes and the actual manipulation of the funds is accomplished by a male.

One additional bias should be noted. The list of common stockholder names owned by Dunhill does not include all of the stockholders in Michigan. Further, no attempt was made on the part of the company to insure that their list was representative of the entire group. However, no intentional biases, other than the one mentioned, are apparent in the list.

The degree to which these shortcomings introduce error into the results of the present study is unknown. No means are available to measure any discrepancy between the Dunhill population and the object population. For this reason, the results of the present study are only generalizable to the 12,000 common stockholders contained in the

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[1]Letter dated December 10, 1969 from Mr. Herbert G. Odza, Dunhill International List., Inc.

list owned by Dunhill. Any generalizations made beyond that list should be made with these biases in mind.

Creating the Scale

Introduction

Measuring the knowledge nonprofessional investors have of financial statement definitions and concepts required the creation of a test which measures this attribute. The test or scale used as a measuring device in the present research is the result of detailed steps taken to assure its validity, reliability, and discrimination. Generally, the above assurance is gained in two sequential steps. First, an initial questionnaire must be created. Second, this questionnaire must be administered in a pilot study and the results used to construct a more reliable and discriminatory scale. The present section describes these steps in detail. Specifically, the subjects covered in this section are: the test level; the items tested; the demographic, attitudinal, and behavioral variables collected; the initial questionnaire format; the pilot study; discrimination and item analysis; item elimination; reliability; demographic, attitudinal, and behavioral question changes; and the final questionnaire.

The Test Level

The primary objective of any test of knowledge is to discriminate between those individuals who possess the knowledge in question and those who do not. A test which requires more knowledge than any of the respondents possess will not discriminate because no respondent will score a correct answer (except by chance). A test which requires less knowledge than all respondents possess will show all correct answers. Therefore, if a test is to be able to discriminate a major consideration must be the level of knowledge at which the test is aimed.

The initial questionnaire in the present research was aimed at the elementary word definitions and concepts contained in financial statements. The decision to use these elementary concepts and definitions as test items was made for these reasons:

First, the starting point for measuring the level of knowledge an individual has of any code is at the elementary level. Accountants need to be assured that readers know the elementary meaning of the terms they use to communicate before they can effectively prepare statements. If the reader does not have even the most elementary knowledge of financial statement terms, then attempting to use them to communicate an understanding of economic events is a grievous error. Understanding cannot be communicated. However, if, on the other hand, readers do understand the basic

definitions and concepts then these terms can be used effectively to transfer understanding.

The second reason for using the most elementary terms and concepts as test items was based on the opinions of the majority of writers on shareholder knowledge.[2] These writers feel that a significant number of common stock owners are extremely unsophisticated in financial statement terminology and concepts. One way to determine if these scholars are correct was to test statement readers on basic terms and determine their degree of sophistication on these basic items. Further, since the research is exploratory and has no valid empirical basis from which to work, a certain amount of reliance on the opinions of these writers was deemed necessary.

The Test Items

The items selected to test this elementary knowledge were chosen in light of certain criteria. These criteria were:

1. The item should have common use in financial statements and/or footnotes;

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[2]Examples of writers with this outlook are: A. C. Bekaert, "What's Wrong with Financial Reporting?" Accounting Review, XXVII (January, 1952), 57-62; Leopold A. Bernstein, Accounting for Extraordinary Gains and Losses (New York: The Ronald Press Company, 1967); Committee on Accounting Concepts and Standards of the American Accounting Association; and Howard C. Greer, "The Corporation Stockholder--Accountings Forgotten Man," Accounting Review, XXXIX (January, 1964), 22-31.

2. The item should, to a major degree, have a meaning which is unique to accounting and financial language;
3. The item should be in widespread use as evidenced by listing in the American Institute of Certified Public Accountants' Accounting Trends and Techniques;[3]
4. Items should include those which have an effect on both asset and income amounts shown on the statements; and,
5. The breadth of the items should allow testing of an overall knowledge of statement terminology.

In consideration of these criteria, the following were chosen as the items about which questions were asked on the initial questionnaire:

1. Inventories
   a. Costing methods
   b. Effects on current and future income
2. Property, plant, and equipment
   a. Basis of valuation
   b. Depreciation
   c. Depreciation methods
      1) Definitions
      2) Tax effects
3. Long-term debt
   a. Definitions
   b. Working capital relationship
4. Total stockholders equity
   a. Definition
   b. Par value of stock
   c. Retained earnings

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[3]American Institute of Certified Public Accountants, Accounting Trends and Techniques (New York: AICPA, published yearly).

5. Net earnings
   a. Before extraordinary items
   b. Extraordinary items
   c. Earnings per share
   d. Earnings prediction

6. The auditor's report
   a. Coverage
   b. Objective

Demographic, Attitudinal, and Behavioral Characteristics

The demographic, attitudinal, and behavioral characteristics which were gathered were chosen primarily because these variables had intuitive merit as those characteristics which might correspond with the level of the attribute financial statement understanding. Further, selection was made with the belief that information about the relationship between these characteristics and knowledge of financial statement definitions and concepts will provide a basis for improving the communication of published accounting information. A corollary reason for choosing certain of these variables was that they have been gathered and tested in other studies of significance.

The demographic, attitudinal, and behavioral variables which were gathered are:

1. The age of the investor;
2. The sex of the investor;
3. The level of formal education attained by the investor;
4. Whether the investor is an officer or director of a corporation;

5. Whether the investor uses financial statements as a part of his work;
6. The number of different common stock issues held by the investor;
7. The total dollar holdings the investor has in common stocks;
8. The length of time the investor has owned common stocks since his first purchase;
9. The major source of information the investor uses to make investment decisions;
10. The degree financial statements are used in making investment decisions;
11. The average amount of time spent reading any given annual report each year;
12. The amount of contact the investor has with investment counselors or stockbrokers;
13. The investor's perception of his success in investing in common stocks;
14. The investor's perception of his level of understanding of financial statement information; and,
15. The method used by the investor to acquire his understanding.

The Initial Questionnaire Format

The initial questionnaire was divided into two main parts. Part one contained questions which gathered the demographic, attitudinal, and behavioral variables listed

in the previous section. Sixteen questions were used to gather these data. Part two of the initial questionnaire contained questions designed to measure the definitional and conceptual knowledge of each respondent about the terminology used in the financial statements. This second section contained twenty-three questions.

Prior to each question or group of questions in part two, an example of the statement presentation of each item was given. The objective of this presentation was to give each respondent the same reference point from which to begin answering the questions. Each statement presentation example was designed to be representative only and was taken from the examples given in Accounting Trends and Techniques.[4] The examples were not all taken from one firm and the name of the firm from which an example is taken was not disclosed. The purpose for using nondisclosed companies was to eliminate the effects of any possible bias that might be present if a single, disclosed company were used. That is, the present research is designed to measure general financial statement knowledge and not how much an individual knows about the financial workings of any one company.

The questions about each item were multiple choice and contained five possible responses: one correct response, two incorrect responses, a response denoting the correct answer was not given, and a response for "I don't know."

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[4] Ibid.

This question format was chosen for the following reasons: First, inclusion of the correct answer allowed positive identification of those respondents who possessed that knowledge. Second, the two incorrect choices, sometimes called "distractors," would positively identify those who had an incorrect conception of the true answer. Third, certain respondents might feel they knew the answer but it was not included in the possible choices. The response denoting that the correct answer was not given allowed these respondents an opportunity to indicate such feeling. Lastly, the response of "I don't know" was available for those who wished to admit a lack of knowledge about a given item.

Table 2-1 contains, as an example, the two definitional and two conceptual questions asked about a representative Stockholders' Equity section of the Statement of Financial Position. The complete initial questionnaire is included in Appendix A at the end of this report.

The Pilot Study

The initial questionnaire was tested and improved by subjecting it to a pilot study. This trial run was designed to answer several important questions about the questionnaire and the overall research methodology. Specifically, the pilot study created data which could be used to improve the validity, reliability, and discrimination of the questionnaire. In addition, the responses to the pilot study could be deemed indicative of the responses that would be

TABLE 2-1

EXAMPLE OF THE DEFINITIONAL AND CONCEPTUAL QUESTIONS USED IN THE INITIAL QUESTIONNAIRE

Shareholders' Equity:	
Common Stock, par value 16 2/3¢ per share; authorized 30,000,000 shares; issued and outstanding at Dec. 31, 1969, 20,987,444 shares	$ 3,497,907
Capital in excess of par value	42,180,088
Retained earnings	170,690,363
Total Shareholders' Equity	$216,368,358

1. Total Shareholders' Equity means:
   - [ ]A. The total cash the company would bring if sold to another company.
   - [ ]B. The amount left after all company debts are subtracted from the total assets listed on the Balance Sheet.
   - [ ]C. The amount of cash the company has set aside to pay to common shareholders when the company goes out of business.
   - [ ]D. None of the above.
   - [ ]E. I don't know.

2. Retained earnings means:
   - [ ]A. Company earnings which have been retained for use in the business.
   - [ ]B. The amount of cash that is available for paying dividends.
   - [ ]C. Earnings the government has required the company to retain to protect the rights of shareholders and creditors.
   - [ ]D. None of the above.
   - [ ]E. I don't know.

3. Increasing the par value of each share of stock from 16 2/3¢ to 25¢ should:
   - [ ]A. Increase the market price of each share.
   - [ ]B. Increase the company's total earnings.
   - [ ]C. Have no effect on the total earnings of the company and little or no effect on the market price of each share.
   - [ ]D. None of the above.
   - [ ]E. I don't know.

4. Retained earnings tend to increase when:
   - [ ]A. The company pays dividends.
   - [ ]B. The company shows a loss.
   - [ ]C. The company earns a profit.
   - [ ]D. None of the above.
   - [ ]E. I don't know.

received to the proposed major study. The response rates and make up of the population could be compared with desired goals and judgments made as to the desirability of continuing the research or changing its nature.

The present section describes the procedures followed and the results of the pilot study carried out in conjunction with this research. The specific topics covered are: validity; sampling, mailing procedures, and response; discrimination and item analysis; item elimination; post-item analysis reliability; demographic, attitudinal, and behavioral question alterations; and the final questionnaire.

Validity. Validity is the accuracy with which a set of test scores measure the concept they are designed to measure. "There is no simple, uniform, wholly objective procedure for determining the validity of a test or of a test item."[5] Statistical measures of validity require a standard for comparison. Since no uniform, universally accepted standard for a test of financial statement knowledge exists, no attempt at statistically assuring validity was made. However, this lack of statistical validation was not overly restrictive since the validity of any test is never absolutely free of the judgment of the test maker or other professionals.[6]

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[5]Robert L. Ebel, Measuring Educational Achievement (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1965), p. 386.

[6]Ibid.

Validity of the initial questionnaire was attained through careful construction and through the judgment of competent professionals. Several professors and doctoral students in the Department of Accounting and Financial Administration, College of Business, Michigan State University, were asked to examine the questionnaire for subject coverage and question ambiguities. Each reader was asked to submit a list of written suggestions for improving the questionnaire's validity.

Primarily, the suggestions received concerning the validity of the initial questionnaire pertained to changes in wording and the degree of difficulty of particular questions. To the degree possible, each suggestion was incorporated into the initial questionnaire. As might be expected, however, certain suggestions were in direct conflict with each other. In these cases the discretion of the researcher was used to determine which suggestion appeared more beneficial.

Sampling, mailing procedures, and response. The statistical measures which allowed validation of the reliability and discrimination of the initial questionnaire required that the questionnaire be administered to a subsample of respondents. For this purpose, a subsample of 200 persons was chosen using systematic random sampling techniques from the total sample supplied by Dunhill. The systematic random subsample was drawn by choosing every eighth person in the main sample.

Each person in the subsample was sent, via first class mail, the following items: the initial questionnaire, a stamped return envelope, and a letter of introduction explaining the study.

The success or failure of the entire research project was dependent upon obtaining a reasonable response rate to the mailed questionnaire. For this reason, great care was taken to follow procedures which would increase the probability of receiving a response from each individual. The overall guides for these procedures were to make the envelope and its contents as personal and as noticeable as possible. With these guides in mind, the following procedures were followed:

1. Each questionnaire was sent in a 9x12 manila envelope with the return address of the Department of Accounting and Financial Administration, Michigan State University, in the upper left hand corner.
2. Each manila envelope was individually stamped with two six-cent postage stamps.
3. Each letter of introduction was personally addressed to the individual and individually signed by the researcher in ink.
4. Each letter of introduction contained a full explanation of the research and a plea for assistance.
5. The return envelope was a regular, business size envelope embossed with a six-cent stamp.

Two mailings were made to the subsample. The first mailing went to each individual in the sample. Two weeks after the first mailing, a second mailing was sent to those who did not respond to the first request.

Table 2-2 contains a breakdown of the response received to the initial questionnaire. The overall return rate of 58.0 percent and the usable response rate of 40.0 percent were considered adequate by this researcher to make valid measurements of the reliability and discrimination of the test items.

TABLE 2-2

BREAKDOWN OF THE RESPONSE TO THE INITIAL QUESTIONNAIRE

Category	Number	Percentage
Usable responses	80	40.0
Non-deliverable	6	3.0
Would not participate for personal reasons[a]	21	10.5
Have never owned common stock	9	4.5
Sub-total	116	58.0
No response	84	42.0
Total	200	100.0

[a]Reasons included: sickness in the family, lack of time, death of the addressee, unwillingness to disclose personal information, and lack of interest.

Discrimination and Item Analysis

A basic consideration in evaluating the performance of any question used on a test is the degree to which the question discriminates between respondents with high levels of knowledge and those with low levels of knowledge. Generally, if those scoring high on the test answer the item correctly and those scoring low answer incorrectly, then the item discriminates well. However, if the converse is true or if the same proportion of high scorers and low scorers answer the item correctly, then the item does not discriminate. "Literally dozens of indices have been developed to express the discriminating ability of test items. Most empirical studies have shown that nearly identical sets of items are selected no matter which of the indices of discrimination is used. A common conclusion is to use the index which is the easiest to compute and interpret."[7]

The index of discrimination used in the present research is simply the difference between the percentage of high scoring respondents who answered the question correctly and the percentage of low scoring respondents who answered the question correctly. These extreme high and low groups were chosen so that each category included approximately 27 percent of the total respondents. Using 27 percent in

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[7]Handout--Office of Evaluation Services, Interpretation of the Index of Discrimination, Michigan State University, July, 1969, p. 1.

each category is generally accepted as giving the best indication of item discrimination.[8]

Table 2-3 contains a complete tabulation of the correct response percentages of the upper and lower groups and the index of discrimination for each of the twenty-three items on the initial questionnaire. These statistics are the result of subjecting each question to a complete item analysis. Table 2-4 lists the items in rank order from highest to lowest index of discrimination.

Examination of these tables yields some interesting facts. First, all of the questions on the initial questionnaire are positive measures of financial statement knowledge. No negative indices occurred.[9] Second, the indices range from a high of .95 to a low of .52. This means that even on the poorest discriminating question more than twice the number of high scorers answered the question correctly than the low scorers. Last, the mean of the indices is .76 and the median is .78. Further, the distribution of indices is bimodal with the dual modes occurring at indices at .81 and .62. If the items were divided into two categories at the mean, each category would contain half the items.

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[8]The validity of using this 27 percent figure was proven by Truman L. Kelly in his "The Selections of Upper and Lower Groups for the Validation of Test Items," Journal of Educational Psychology, XXX (1939), 17-24.

[9]Note that a negative index would occur when a higher percentage of the low group answered the question correctly than the percentage of the high group that answered the question correctly.

TABLE 2-3

DISCRIMINATION DATA FOR THE ITEMS ON THE INITIAL QUESTIONNAIRE

Question Number	Percent of Upper Category Correct Responses	Percent of Lower Category Correct Responses	Index of Discrimination
1	81	14	67
2	90	14	76
3	81	10	71
4	76	14	62
5	100	19	81
6	76	14	62
7	100	14	86
8	100	19	81
9	90	10	80
10	86	5	81
11	95	0	95
12	100	5	95
13	100	10	90
14	100	14	86
15	95	19	76
16	95	5	90
17	100	14	86
18	86	5	81
19	95	29	66
20	76	24	52
21	100	38	62
22	95	29	66
23	76	14	62

TABLE 2-4

QUESTIONS ON THE INITIAL QUESTIONNAIRE
RANKED FROM HIGHEST TO LOWEST
INDEX OF DISCRIMINATION

Question Number	Index of Discrimination
11	.95
12	.95
13	.90
16	.90
7	.86
14	.86
17	.86
5	.81
8	.81
10	.81
18	.81
9	.80
2	.76
15	.76
3	.71
1	.67
19	.66
22	.66
4	.62
6	.62
21	.62
23	.62
20	.52

The conclusion that can be drawn from this analysis is that all of the items on the initial questionnaire are adequate discriminators of financial statement knowledge. None of the items need be eliminated because they do not discriminate. Nevertheless, certain questions were omitted from the final questionnaire. The criteria used to eliminate items and the items eliminated are the subjects of the following sub-section.

Item Elimination

The initial questionnaire was intentionally created to contain more questions than would be included on the final questionnaire. The philosophy used to create the initial questionnaire was to employ great care in designing each question and, at the same time, to design more questions than were intended to be used. Then, using the results of the pilot study, eliminate those questions which proved to be poor measurers of financial statement knowledge.

The overall objective in eliminating items was to build the strongest possible scale to measure financial statement knowledge. With this objective as a guide, the following criteria were predetermined as those which would be used to eliminate questions from the initial questionnaire.

First, the final questionnaire would be limited to that number of questions that would allow the final questionnaire to fit on both sides of a 17x11 inch sheet of

paper. The full questionnaire could then be folded to form a booklet-like whole that would contain as much as could be included on four 8½x11 inch sheets. This length limitation was imposed because a negative relationship was believed to exist between the length of a questionnaire and its respective response rate. That is, the longer the questionnaire the lower the response rate. A major consideration of questionnaire research is to obtain a response rate which will allow meaningful generalizations to be made from examining the sample. Of course, shortening the questionnaire limits the number of areas that can be covered. However, the expected increase in response rate and the resulting greater confidence that could be placed on the facts that were obtained, made these criteria appear justified.

Second, only questions with positive indices of discrimination would be included in the final questionnaire. Obviously, questions which do not properly discriminate do not add to the quality of the measurement and should not be included.

Third, if more questions on the initial questionnaire proved to have positive indices of discrimination than were needed, then, to the degree possible, those questions with the highest indices would be used.

Lastly, if the results of the pilot study allowed sufficient leeway to do so, the final questionnaire would contain as many of the areas covered by the initial questionnaire as possible. This criterion was included to allow

the greatest area coverage and the most information about financial statement knowledge to be gathered.

Part two of the final questionnaire used in this study is the result of applying these criteria to the results of the pilot study. Table 2-5 analyzes the final questionnaire by subject coverage and question frequency. The questionnaire includes five of the six areas covered in the initial questionnaire and includes fourteen of the twenty-three questions. Only two questions were included as the result of employing the last criterion, which deals with subject coverage. The questions covering the auditor's opinions were included to add additional subject coverage and complete the requirements of the first criteria dealing with the questionnaire's length.

TABLE 2-5

SUBJECT COVERAGE AND QUESTION FREQUENCY INCLUDED IN THE FINAL QUESTIONNAIRE TO MEASURE FINANCIAL STATEMENT KNOWLEDGE

Subject Covered	Number of Questions
Property, plant and equipment	4
Long-term debt	2
Total shareholder's equity	3
Net earnings	3
The auditor's opinion	2
Total questions	14

The mean index of discrimination of all questions included on the final questionnaire was .83. That is, the mean difference between the percentage of high scoring respondents answering a question correctly and the percentage of low scoring respondents answering the question correctly equals 83 percent. This average discriminating ability should have allowed the final questionnaire to discriminate between those individuals with a knowledge of financial statements and those who lack that knowledge.

An additional measure, reliability, was used to assure the soundness of the final questionnaire as a measure of financial statement knowledge. How reliability was used in this research is the subject of the following sub-section.

Reliability

"Reliability is the degree to which a scale consistently yields the same results when applied to the same sample of respondents."[10] Reliability, differs from validity. Perhaps an analogy will clarify the distinction.

> If the perforations on a target made by successive shots from a rifle are all clustered closely, the rifle is performing reliably. If those perforations are all clustered in the bull's eye, the rifle is also performing validly.[11]

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[10] An English abridgement of Chapter III in A. Eugene Havens, Everett M. Rogers, and Aaron Lipman, Medicion en Sociologia: Conceptosy Metodos (Bogota: Bogota Unifersidad Nacional de Colombia, Facultad de Sociologia, 1965), p. 2.

[11] Ebel, p. 310.

Measurement of reliability was accomplished by computing the reliability coefficient for the test. "A reliability coefficient . . . is an estimate of the coefficient of correlation between one set of scores on a particular test for a particular group of examinees and an independent set of scores on an equivalent test for the same examinees."[12] The coefficient of reliability resulting from employing the Kuder-Richardson Formula #20 proved to be operationally most efficient for the data produced in this research. This form of the formula is especially applicable to tests where a correct response is given one point, no points are given for incorrect responses, and the responses are not corrected for guessing. The formula reads:

$$r = \frac{k}{k-1} \left[1 - \frac{\Sigma pq}{\sigma^2} \right]$$

r = the coefficient of reliability

k = the number of items

p = the proportion of answers to one item which are correct

g = the proportion of answers to that same question which are not correct

σ^2 = the variance of scores on the test

The results of the formula give a coefficient of reliability ranging from 1.0 to 0.0. Perfect reliability, which is

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[12] Ebel, p. 311.

never attained in practice, is represented by a coefficient of 1.0. A complete lack of reliability scores 0.0. "While coefficients of .96 or higher are sometimes reported, most test constructors are reasonably well satisfied if their tests yield reliability coefficients in the vicinity of .90."[13]

Reliability coefficients were calculated for the initial questionnaire under two sets of circumstances. First, the reliability coefficient for the initial questionnaire prior to eliminating any questions was determined to be .93. This value was deemed more than sufficient to satisfy the requirements of this research. However, the reliability coefficient is greater from longer tests than from shorter tests. For this reason, the reliability coefficient was calculated again using the responses to the initial questionnaire but after the questions had been eliminated using the results of the previous section. This post-elimination reliability coefficient was .91 which represents a decrease of .02. This small decrease was believed insufficient to warrant any additional adjustment to increase the questionnaire's reliability.

The results of the previous analysis verify that the post-elimination questions remaining in part two of the questionnaire will reliably measure the respondent's knowledge

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[13]Ebel, p. 330.

of financial statement definitions and concepts. This verification concluded the changes made in part two of the initial questionnaire. However, certain changes were necessary in the demographic, attitudinal, and behavioral questions of part one. These changes are discussed next.

Demographic, Attitudinal, and Behavioral Question Changes

As stated in the beginning of this section, the objective of the pilot study was to answer several important questions about the research methodology. Among these questions was, "Do the demographic, attitudinal, and behavioral questions isolate the desired attributes?" The specific objective was to make sure that the questions asked and the responses received allowed meaningful interpretations to be made.

Table 2-6 contains a tabulation of the responses received to part one of the initial questionnaire. These results coupled with the additional comments written on the face of the questionnaire were used to improve the questions in part one. The questions changed and the reasons used as bases for these changes are discussed below.

Question four, which asked if the respondent was an officer or director of a corporation, was eliminated. Several respondents indicated through marginal notes that they had answered yes to this question because they were members of the board of an incorporated school district.

TABLE 2-6

FREQUENCY OF RESPONSE TO THE DEMOGRAPHIC, BEHAVIORAL, AND ATTITUDINAL QUESTIONS ON THE INITIAL QUESTIONNAIRE

Category	No.
Sex	
Male	75
Female	5
	80
Education Level	
Grade	0
Junior High	0
High School	3
Trade School	3
Two-Year College	4
Four-Year College	23
Masters	26
Doctoral	21
	80
Use Statements in Job	
No Response	2
No	45
Yes	33
	80
Dollar Value Held	
No Response	6
$0-$500	8
$501-$2,000	4
$2,001-$5,000	6
$5,001-$10,000	9
$10,001-$25,000	8
Over $25,000	39
	80
Information Source Most Used	
No Response	7
Stockbroker	22
Newspapers	20
Annual Report	9
From Friends	4
From Fellow Employees	2
Other	16
	80
Consulting Frequency	
No Response	3
Less than Once a Week	5
Once a Week	5
Once a Month	10
Every 2 or 3 Months	11
Twice a Year	15
Other	31
	80

Category	No.
Officer	
No Response	2
No	47
Yes	31
	80
Time Reading Report in Minutes	
No Response	3
None	13
0-5 Minutes	9
5-15 Minutes	19
15-30 Minutes	20
More than 30 Minutes	16
	80
Ever Look at Statement to Invest	
No Response	3
No	21
Always	20
Usually	23
Sometimes	8
Rarely	5
	80
Degree of Understanding	
No Response	2
Very Well	19
Above Average	11
Average	35
Below Average	6
Poor	4
Not at All	3
	80
Investment Success	
No Response	3
Very Successful	7
Above Average	22
Average	43
Below Average	1
Poor Success	4
	80
How Understanding Acquired	
Investing Experience	27
Formal Schooling	27
Self-Taught from Books	27
Through Broker	19
Other	11
	111

The objective of this research was to examine the nonprofessional investor. Being a school board member does not, in itself, invalidate the investor's amateur status. In addition, no means is readily available to determine how many respondents followed the same undesired pattern of response. Therefore, question four was replaced with the following question which attacks the investor's professional status in a more direct manner.

4. Do you invest in stocks or bonds as a part of your job? ___ yes ___ no

The frequency of response to category six of question seven, which determined the magnitude of the dollar holdings invested in common stock, indicated that the range of the dollar choices from $1 to $25,000 was too narrow. To allow for more meaningful results, the ranges were extended to increase category six from a previous high of $25,000 to a new high of $100,000. The new categories included the following amounts:

[ ] $1 to $2,000	[ ] $20,001 to $50,000
[ ] $2,001 to $10,000	[ ] $50,001 to $100,000
[ ] $10,001 to $20,000	[ ] Over $100,000

Questions 9, 10, and 13A dealing with major information source, analyst consulting frequency, and acquisition of financial statement understanding, contained an "other" category which allowed the respondent to write in any response that was appropriate for him and was not included as

an alternative. Table 2-7 lists the responses received to each of these questions and the frequency of these responses. Analysis of these results initiated two further changes. In question 9, almost half of the respondents who chose "other" indicated that they received most of the information about the companies whose common stock they own from an investment advisory service. Further, only six of eighty respondents indicated their information source to be friends or fellow employees. For these reasons, the choice of responses to question 9 were changed to consolidate into one choice--"from friends and fellow employees" and to add a category for "an investment advisory service."

In question 10, thirty-one of eighty respondents indicated the "other" category as their choice. Analysis of these responses revealed that the time segments available did not contain a comprehensive selection. Specifically, the longest time period did not appear to be long enough. To correct this deficiency the categories available in question 10 were altered to include the following:

[ ] more than once a week
[ ] about once a week
[ ] about once a month
[ ] about once every 2 or 3 months
[ ] once a year or less
[ ] never

The categories were believed to include sufficient variety to allow each respondent an appropriate choice.

TABLE 2-7

ANSWERS TO THE CHOICE OF "OTHER" ON QUESTIONS 9, 10, AND 13A OF THE INITIAL QUESTIONNAIRE

Item	Number
Question 9--Major Information Source	
Investment advisory services	6
Personal knowledge of company	1
Business associates	1
Combination of all	2
Investment club	3
Haven't bothered lately	1
Initiated corporations	1
Question 10--Consulting Frequency	
Rarely	7
Seldom	6
Every several years	2
Only when buying or selling	5
As required	1
None	1
Almost never	1
Once a year	1
Never	1
Sporadically	1
When occasion arises	1
I am an analyst	1
I own only mutual funds	1
Often	1
Question 13A--Understanding Acquisition	
Preparing statements	2
Investment club discussions	2
Certified public accountant	2
Experience in news reporting	1
General reading	1
From accountants	1
Talking to other investors	1
Company credit manager	1
Broker	1

The frequency of any given response to "other" in question 13A does not indicate any significant pattern. Therefore, no change was made in the choices available in this question.

The Final Questionnaire

The product of all the preceding examinations and eliminations is the final questionnaire used in this research. Within the bounds of the methodology employed, part two of the questionnaire contains a test which has been proven to be a valid, reliable, and discriminatory scale for measuring the nonprofessional investor's knowledge of the definitions and concepts contained in published financial statements. The full questionnaire as it was used is reproduced in Appendix B of this report.

Administering the Questionnaire

The final questionnaire was administered to a subsample of 1,000 individuals chosen from the original Dunhill sample of 1,712. How these people were chosen, the procedures used in administering the questionnaire, the resulting response rates, and the procedures used to follow-up on the nonrespondents are the subject of the following subsections.

Subsample Section

A subsample of 1,000 persons was chosen from the Dunhill sample using simple random sampling techniques.

The individuals in the Dunhill sample were numbered consecutively from 1 to 1,712 and selected using a computer-generated random numbers table. All individuals in the sample had an equal probability of being included in the 1,000 with the exception of the 200 previously employed in the pilot study. These 200 individuals were not asked to participate again and the results obtained in the pilot study are not included in the final results of this study.

Administration Procedures

The procedures followed in administering the final questionnaire were identical to those followed in administering the pilot study. Each individual was mailed a manila envelope containing a letter of introduction; the questionnaire; and a stamped, addressed, return envelope. Two weeks following this initial mailing, a second mailing was made to those individuals who had not responded. Again, the second mailing contained a letter of introduction; a questionnaire; and a stamped, addressed, return envelope. As in the pilot study, the mailings and letters were made as noticeable and as personal as possible. Examples of the letters used throughout this research are presented in Appendices C, D, and E of this report.

Response

Table 2-8 itemizes the responses received on the final questionnaire. The figures represent a response rate

TABLE 2-8

RESPONSE TO THE FINAL QUESTIONNAIRE

Category	Number	Percentage
Usable responses	442	44.2
Non-deliverable	44	4.4
Deceased	17	1.7
Would not participate for personal reasons	67	6.7
Have never owned common stock	90	9.0
Subtotal	660	66.0
No response	340	34.0
Total	1,000	100.0

of 54.4 percent.[14] The quantities of response included in the table did not vary significantly from the experience of the pilot study with the exception of the individuals who had never owned common stock. The percentage of these individuals (who should not have been included in the sample by Dunhill) doubled from 4.5 percent in the pilot study to 9 percent in the main study. Otherwise, the response to the final questionnaire was approximately as expected and was considered satisfactory.

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[14] This response rate was determined using the following formula:

$$RR = \frac{\text{Usable responses + nondeliverable}}{\text{1,000 - (deceased + never owned stock)}}$$

This form is an adaptation of generally accepted response rate computations.

Nonresponse Follow-Up

The use of a direct mail questionnaire as a technique for obtaining information about a group of individuals is open to at least one serious criticism. That criticism is the frequently large lack of response. "Returns of less than 40 or 50 percent are common. . . . If mail questionnaires are used, every effort should be made to obtain returns of at least 80 or 90 percent or more, and lacking such returns, to learn something of the characteristics of the nonrespondents."[15] The steps taken as follow-up procedures to examine the nonrespondents to this research are as follows.

First, a systematic random sample of nonrespondents was chosen. This sample included fifty individuals which was approximately 14 percent of the total nonrespondents.

Second, individuals were eliminated from the sample of fifty if they could not be reached by phone on one of the four toll-free lines maintained by Michigan State University to the Michigan cities of Detroit, Ann Arbor, Grand Rapids, and Lansing. Sixteen individuals were in this category and were eliminated. This elimination was made for purely economic reason--the ability to phone each person in the nonrespondent sample without toll. This elimination of course,

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[15]Fred N. Kerlinger, Foundations of Behavioral Research (New York: Holt, Rinehart, and Winston, Inc., 1967), p. 39.

meant introducing a possible bias into the sample. However, since no ex ante reasons could be found to isolate any specific possible bias, the effects of this elimination were believed negligible.

Third, each remaining person was mailed a letter (Appendix E) explaining the purpose of the follow-up and another copy of the questionnaire. The letter further explained that the individual could expect a phone call on or immediately after the following Monday in an attempt to obtain his response.

Fourth, an attempt was made to contact each individual personally by phone. A maximum of three phone calls were made to each person on three different days. Further, at least one of these calls was made between 5:30 and 7:00 p.m. Table 2-9 gives a breakdown of the results of these callings. The sixteen usable responses obtained were considered sufficient to make the necessary comparisons reported below.

Last, the difference between the mean values for sixteen of the seventeen variables collected in the questionnaire were tested for statistical significance using the Student's t.[16] The value of t required to show a significant difference between any of the variable means must be

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[16]William Mendenhall, Introduction to Probability and Statistics, 2nd ed. (Belmont, California: Wadsworth Publishing Company, Inc., 1969), pp. 189-214.

TABLE 2-9

RESULTS OF THE RESPONSE OBTAINED IN THE NONRESPONSE FOLLOW-UP BY TELEPHONE

Category	Number	Percentage
Usable response	16	47
No listed phone number	4	12
Would not participate for personal reasons	11	32
No stock	2	6
Deceased	1	3
Total	34	100

greater than 1.282 at the .10 level of significance. Table 2-10 shows that only one variable--the respondent's professional investor status--is significantly different between the respondents and nonrespondents. The professional investor variable is significant at the .01 level. That is, the difference between the mean responses to this question indicates that the respondent sample and nonrespondent sample are significantly different only in that proportionately more professional investors are included in the nonresponse telephone sample than in the respondent sample.

The general lack of difference found between the two sample groups is contrary to the findings of most previous research which employed direct mail questionnaires. That is, most previous research has found significant differences between respondents and nonrespondents in the majority of

TABLE 2-10

DIFFERENCES BETWEEN THE CATEGORY MEANS OF RESPONDENT AND TELEPHONE NONRESPONDENT GROUPS

Category	Respondent Mean	Non-respondent Mean	t Value
1. Age	53.393	51.000	0.002
2. Sex	1.063	1.062	0.000
3. Education	6.597	6.562	0.003
4. Professional investor status	1.862	1.750	3.660*
5. Use of financial statements in work	1.517	1.500	0.587
6. Number of companies	8.270	10.375	0.070
7. Dollar value invested	3.710	3.066	1.006
8. Years as investor	18.098	19.375	0.007
9. Information source	2.906	3.125	0.281
10. Analysts consulting frequency	4.433	4.375	0.143
11. Time reading annual reports	3.232	3.066	0.684
12. Percent of time reading financial statements	0.311	0.293	0.947
13. Look at statements to invest	2.494	2.400	0.189
14. Degree of understanding	2.688	3.000	0.871
15. Investment success	2.700	2.625	0.449
16. Score on the test of financial statement knowledge	9.354	8.312	0.251

*Significant at the .05 level.

attributes tested. The general lack of difference between the respondent and nonrespondent categories can be explained using two interrelated arguments.

First, the individuals who invest in common stocks are argued to be a reasonably homogeneous group. Even though individual attributes cover the full range of characteristics, the mean value within each attribute tends to be stable.

Second, the attitude that makes for a nonresponse is not correlated with the demographic, attitudinal, behavioral, and knowledge characteristics gathered in this research. More simply, if a person has one characteristic, the probability of his responding to the questionnaire is no higher or lower than a person who does not have that characteristic.

The difference in the respondent and nonrespondent categories with respect to professional investor status necessitated giving the difference recognition. In other words, the nonrespondents must be given proportionately equal weight as the respondents. Therefore, the nonrespondent group of usable responses was duplicated seven times and added to the respondent category. The figure seven was used because the nonrespondent sample was a one-seventh systematic random sample.

With this final weighting procedure, the total respondent category had been compiled and tested for representativeness of the entire sample. The findings of the research were obtained by examining this final category of responses. The following section contains a brief

description of the average respondent and a table showing the frequency of response to each question category.

The Average Respondent and Category Frequency

The Average Respondent

The average stockholder (including all respondents) in this research:

1. Is fifty-four years old;
2. Male;
3. Graduated from a four year college and did some post-graduate study;
4. Does not invest professionally;
5. Uses financial statements occasionally in his work;
6. Owns stock in eight companies;
7. Has $20,000 invested in stocks;
8. Has owned stock for eighteen years;
9. Acquires most of his information about the companies he owns from the annual report of the company;
10. Consults his stockbrocker every six months or so;
11. Spends an average of five to fifteen minutes reading the annual report of the companies he owns--31 percent of which is spent reading financial statements;
12. Usually looks at a company's financial statement before deciding to buy that company's stock;
13. Feels he has an average knowledge of financial statements;
14. Feels he has had better than average success in the market; and,
15. Can correctly answer nine of the fourteen questions about financial statements contained in the questionnaire.

Category Frequency

Table 2-11 contains a breakdown of the frequency of response to each category question contained in the questionnaire. The frequency of response by age, number of companies owned, and years since first acquiring common stock are in Appendix F of this report.

Statistical Analysis Employed

Introduction

The effectiveness of any statistical measure, whether descriptive or inferential, depends upon how well that measure actually attains the goal it was intended to attain. With this fact in mind, the following goals were outlined as those desired of the statistical measures employed in this research:

1. To fully describe the characteristics of the population in such a way as to allow future comparisons with other research results;
2. To measure and evaluate the financial statement knowledge test scores of the respondents in the sample;
3. To determine the relationships which exist between the independent variables of demographic, attitudinal, and behavioral characteristics and the dependent variable--the financial statement knowledge test score; and,

TABLE 2-11

FREQUENCY OF RESPONSE TO THE DEMOGRAPHIC, BEHAVIORAL, AND ATTITUDINAL QUESTIONS OF THE FINAL QUESTIONNAIRE

Category	No.
Sex	
Male	516
Female	33
No Response	5
	554
Education Level	
Grade School	2
Junior High School	4
High School	18
Trade School	5
2-Year College	40
4-Year College	189
Master's Degree	125
Doctorate	170
	554
Time Reading Report in Minutes	
None	54
Less than 5 Minutes	76
5 to 15 Minutes	197
15 to 30 Minutes	131
More than 30 Minutes	82
No Response	14
	554
Percent of Time on Financial Statements	
0%	93
10	131
20	63
30	50
40	17
50	77
60	12
70	27
80	40
90	14
100	7
No Response	23
	554
Ever Look at Statements to Invest	
No	143
Always	137
Usually	136
Sometimes	84
Rarely	31
No Response	23
	554
Investment Success	
Very Successful	26
Above Average Success	171
Average Success	273
Below Average Success	31
Poor Success	13
No Response	40
	554

Category	No.
Professional Investor	
Yes	89
No	463
No Response	2
	554
Dollar Value Held	
$1 to $2,000	89
$2,001 to $10,000	97
$10,001 to $20,000	64
$20,001 to $50,000	86
$50,001 to $100,000	67
Over $100,000	121
No Response	30
	554
Information Source Most Used	
Stockbroker	138
Newspapers and Magazines	114
Annual Report	101
Friends or Fellow Employees	36
Investment Advisory Service	73
Other	62
No Response	30
	554
Consulting Frequency	
More than Once a Week	22
Once a Week	22
About Once a Month	72
Every 2 or 3 Months	139
Once a Year or Less	178
Never	120
No Response	1
	554
Use Statements in Job	
Yes	270
No	280
No Response	4
	554
Degree of Understanding	
Very Well	77
Above Average	167
Average	199
Below Average	57
Poor	25
Not at All	25
No Response	4
	554
How Understanding Acquired	
Experience Through Investing	191
Formal Schooling	167
Self-Taught	197
Through Broker or Profes.	126
Other	79
	760

4. To arrange the data in such a way as to point out as many interesting relationships among the variables and misconceptions which exist about the test items as possible.

To attain these goals, four categories of statistical analysis were employed. Each category is discussed in a separate subsection below.

General Descriptive Statistics

Several descriptive statistics are used to fully describe the relationships contained in the data. All of these methods of description such as means, standard deviations, and frequency distributions, are considered to be general knowledge in most academic fields and, therefore, not worthy of detailed definition. However, the statistical methods which were felt to be significant to the present study are described in the following sections.

One-Way Analysis of Variance

The statistical technique known as one-way analysis of variance is used to partially determine which relationships exist between the independent variables of demographic, attitudinal, and behavioral characteristics and the dependent variable--the financial statement knowledge test score.[17]

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[17] A complete explanation of this technique can be found in Fred N. Kerlinger, Foundations of Behavioral Research (New York: Holt, Rinehart and Winston, Inc., 1967).

The analysis of variance determines if a statistically significant difference exists between the mean test scores of each category of the independent variable. That is, the one-way analysis of variance tests the null hypothesis that the mean test score is equal across all categories of the independent variable against the alternative hypothesis that the mean test score is not equal across all categories of the independent variable. Algebraically, these hypotheses are stated as:

$$H_0: \mu_1 = \mu_2 = \mu_3 = \cdots \mu_n$$
$$H_1: \mu_1 \neq \mu_2 \neq \mu_3 \neq \cdots \mu_n$$

where μ = the category's mean test score and

n = the number of categories of the independent variable.

The assumptions of the analysis of variance are:

1. For each category in n, the distribution of observation errors is assumed to be normal;
2. The variances of all category observation errors are assumed to be equal; and,
3. The errors associated with any pair of observations are assumed to be independent.

If the null hypothesis is rejected and the alternative hypothesis accepted, the researcher is accepting the hypothesis that the independent variable makes a significant difference on the values of the dependent variable. In this research, accepting the alternative hypothesis means that a

particular demographic, behavioral or attitudinal variable makes a significant difference in the categories' mean test scores and, therefore, caused them to be different above and beyond the difference that would arise by chance alone. More specifically, the demographic, attitudinal, or behavioral variable in one way or another significantly effects the difference between the mean financial statement knowledge test score of the individuals in, at least, two of the categories tested.

The inability to reject the null hypothesis means that the researcher accepts the hypothesis that the independent variable makes no significant difference on the value of the dependent variable. This means the category mean test scores are not different beyond the difference that could be expected by chance.

One-way analysis of variance can detect when a significant difference exists between at least two category mean test scores. However, the results of this analysis do not provide sufficient information about the relationships existing between the variables being examined. The results of the analysis are lacking in, at least, two ways when significant results are obtained.

First, significant results only mean that a significant difference exists between the mean test scores of, at least, two categories. However, no indication of which categories exhibit this difference is available. The difference may be between all categories or between only two.

The results do not reveal this information. Second, the test does not reveal the direction of any significant difference. No statement can be made about whether individuals in a given category score significantly higher than the individuals in another category.

The technique of post-hoc comparisons among means will be used to remedy these deficiencies. This technique is the subject of the following subsection.

Post-hoc comparisons among means. The post-hoc comparison among means, created by Scheffé,[18] allows the further analysis of differences between category means to evaluate any interesting comparisons. "The technique for comparisons . . . is applicable only to the situation where a preliminary analysis of variance . . . has shown over-all significance. It is not a device for rescuing poor experiments by data-juggling."[19] Specifically, this technique allows the comparison of individual category means to discover specific significant differences between category means. Further, if the technique shows significant differences, the direction of the difference can be read from the individual category means. That is, if two category means prove to be significantly different then the larger mean is significantly larger than the smaller mean.

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[18]H. Scheffé, The Analysis of Variance (New York: John Wiley and Sons, Inc., 1959).

[19]William L. Hays, Statistics (New York: Holt, Rinehart, and Winston, Inc., 1963), p. 483.

Pearson Product Moment Correlation

Pearson Product Moment Correlation (r)[20] will be used to determine if any functional, linear relationships exist between certain of the demographic, attitudinal, and behavioral characteristics and test scores. This statistic cannot be calculated for all characteristics, however, because the correlation coefficient is only meaningful if quantitative (interval measurement) data are examined. Since much of the data collected in this study are qualitative in nature, the use of r is inappropriate. Nevertheless, where appropriate, r was used to determine how much of the variation of the dependent variable can be explained by knowing the value of the independent variable. In other words, r indicates the degree to which knowing the value of the independent variable allows the prediction of the dependent variable. When r equals zero, if a predictive statistical relation exists for the set of data, it is not linear, and a linear rule gives no predictive power. On the other hand, if r equals positive or negative one, each prediction is exactly correct. Any values of r between positive and negative one except zero indicate that some prediction is possible using a linear rule but the prediction is not perfect.

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[20] A complete explanation of this test is available in Hays, pp. 490-501.

Any given value of r can be obtained by chance when the true relationship between the variables is zero. For this reason, each r is tested to determine the confidence that can be placed in assuming that the computed r is the true value and not a chance occurrence when the true value is zero.

Pearson Chi Square Tests of Association

The final major statistical technique used in this research is the Pearson X^2 test for association. This measure was used to test the independence of several of the qualitative attributes gathered in the questionnaire. The objective here was to determine if the fact that a respondent was a member of a given category within an attribute had any effect on his classification within another attribute. For example, the question--"Is the source most used to obtain information about the companies owned by a respondent dependent or independent of the average amount of time spent reading annual reports?"--can be answered using this technique.

The method employs the use of a contingency table and the observed frequencies of joint events. A joint event in this case being the event that a respondent falls in a given category of one attribute and a given category of another attribute. These observed joint event frequencies are then used to compute expected joint event frequencies to be used in the calculations.

Very briefly, the chi square method compares the expected frequency of occurrence of any joint event with the actual frequency of occurrence of that event. The null hypothesis tested is that the two attributes are independent. Specifically:

$$H_o: \quad \theta_{ij} = (\theta_i)(\theta_j) \quad \text{for } i = 1,2,\ldots, r \quad j = 1,2,\ldots, k$$

where

r = the number of categories of any attribute A;

k = the number of categories of any attribute B;

θ_{ij} = the probability of a respondent will fall in the ith category of A and the jth category of B;

θ_i = the probability the respondent will fall in the ith category of A; and,

θ_j = the probability the respondent will fall in the jth category of B.

The decision is based on the statistic:

$$X^2 = \sum_{i=1}^{r} \sum_{j=1}^{k} \frac{(F_{ij} - E_{ij})^2}{E_{ij}}$$

where

F_{ij} = the actual rate of occurrence of a joint event; and,

E_{ij} = the expected rate of occurrence of a joint event.

The null hypothesis is rejected if the value of X^2 is greater than or equal to the value of X^2 at a .05 level of confidence and the correct degrees of freedom. Rejection of the null

hypothesis allows the conclusion that dependence exists between the two attributes tested. Failure to reject the null means the hypothesis of independence is accepted.

The Goodman and Kruskal Index of Predictive Association (λB)

The chi square test makes a judgment as to the dependence between two attributes. However, "if N is very large, as it should be for the best application of the test, virtually any 'degree' of true statistical relationship between attributes will show up as a significant result."[21] In other words, if any departure from strict independence exists, the departure will show up as a significant departure using the Pearson x^2. For this reason, the Goodman and Kruskal λB[22] was calculated for each contingency table created in determining the Pearson statistic.

The λB statistic answers the following question, "How much will the probability of making an error in classifying a respondent in one attribute be reduced if I know his classification in another attribute?" The value of the index ranges from zero to 1.00. If knowing which attribute category the respondent falls in does not reduce the probability of error at all, the index is zero. On the other hand, if the index is 1.00, knowing the attribute category

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[21] Hays, p. 613.

[22] L. A. Goodman and W. H. Kruskal, "Measures of Association for Cross-Classifications," Journal of the American Statistical Association, XLIX (1954), 732-64.

gives complete predictive association. The unknown category can be chosen with assurance.

Perhaps an example will clarify the index. Suppose two attributes are being compared--attribute A and attribute B--and each contains four categories. The problem is to predict which of the four categories of B a respondent falls in if the A category is known. If λB equals zero, knowing the A category does not reduce the probability of error in choosing the respondent's correct B classification. If λB equals 1.0, then the probability of error is completely reduced. If λB lies between zero and 1.0, then the probability of error in making the prediction is proportionately reduced by the value of λB. "The index is other than 0 only when <u>different B</u> categories would be predicted for different A_j category information."[23]

At first glance, the inclusion of the λB statistic may appear to be adding unnecessary "frosting to the cake." The following quote from Hays points out vividly the reason for the addition of the test.

> When the value of X^2 turns out significant one can say with confidence that the attributes A and B are not independent. Nevertheless, the significance level alone tells almost nothing about the strength of the association. Usually we want to say something about the predictive strength of the relation as well. If there is the remotest interest in actual predictions using the relation studied, then the measures are worthwhile. Statistical relations so small as to be

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[23]Hays, p. 608.

> almost nonexistent can show up as highly significant X^2 results. . . . All too often the experimenter then "kids himself" into thinking that he has discovered some relationship observable to the "naked eye," which will be applicable in some real-world situation. Plainly, this is not necessarily true. The indices, however, suggest just how much the relationship found implies about real predictions, and how much one attributes actually tells us about another.[24]

The results of the λB test are not applicable to hypothesis testing. Therefore, the λB statistics are reported in matrix form, following the chi square results.

Hypotheses

The remainder of this chapter is devoted to the formulation of hypotheses which will be tested by the statistical methods described in the previous section. The hypotheses are divided into two classifications: Those tested using the Pearson Product Moment Correlation and those tested using the one-way analysis of variance.

Hypotheses Tested with the Pearson Product Moment Correlation

Four hypotheses were tested using the Pearson Product Moment Correlation and are noted using the letter R. They are as follows:

Age R_o: The correlation coefficient between age and financial statement knowledge test score equals zero.

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[24] Ibid., p. 610.

R_1: The correlation coefficient between age and financial statement knowledge test score does not equal zero.

Number of Companies

R_o: The correlation coefficient between the number of companies owned and financial statement knowledge test score equals zero.

R_1: The correlation coefficient between the number of companies owned and financial statement knowledge test scores does not equal zero.

Years Since First Acquiring Stock

R_o: The correlation coefficient between the number of years since first acquiring stock and financial statement knowledge test score equals zero.

R_1: The correlation coefficient between the number of years since first acquiring stock and financial statement knowledge test scores does not equal zero.

Percent of Time Reading Financial Statement

R_o: The correlation coefficient between the percent of time spent reading financial statements and financial statement knowledge test score equals zero.

R_1: The correlation coefficient between the percent of time spent reading financial statements and financial statement knowledge test score does not equal zero.

Hypotheses Tested Using the One-Way Analysis of Variance

Twelve hypotheses were tested using the one-way analysis of variance and are noted using the letter H. They are as follows:

Sex

H_o: The mean financial statement knowledge test score for women equals the mean financial statement knowledge test score for men.

H_1: The mean financial statement knowledge test score for women does not equal the mean financial statement knowledge test score for men.

Education Level	H_o:	The mean financial statement knowledge test score is equal across all education levels.
	H_1:	The mean financial statement knowledge test score is not equal across all education levels.
Professional Investor	H_o:	The mean financial statement knowledge test score of nonprofessional investors equals the mean financial statement knowledge test score of professional investors.
	H_1:	The mean financial statement knowledge test score of nonprofessional investors does not equal the mean financial statement knowledge test score of professional investors.
Financial Statement Use	H_o:	The mean financial statement knowledge test score of those investors who use financial statements as a part of their job equals the mean financial statement knowledge test score of those investors who do not use financial statements as a part of their job.
	H_1:	The mean financial statement knowledge test score of those investors who use financial statements as a part of their job does not equal the mean financial statement knowledge test score of those investors who do not use financial statements as a part of their job.
Dollar Value	H_o:	The mean financial statement knowledge test score is equal across all categories of the total dollar value of common stock held by the investor.
	H_1	The mean financial statement knowledge test score is not equal across all categories of total dollar value of common stock held by the investor.
Major Information Source	H_o:	The mean financial statement knowledge test score is equal across all categories of major information source about the companies whose common stock is held.
	H_1:	The mean financial statement knowledge test score is not equal across all

categories of major information source about the companies whose common stock is held.

Consulting Frequency

H_o: The mean financial statement knowledge test score is equal across all categories of the frequency of consulting with a stockbroker or professional stock analyst.

H_1: The mean financial statement knowledge test score is not equal across all categories of the frequency of consulting with a stockbroker or professional stock analyst.

Time Reading Annual Report

H_o: The mean financial statement knowledge test score is equal across all categories of time spent reading the annual report.

H_1: The mean financial statement knowledge test score is not equal across all categories of time spent reading the annual report.

Financial Statement and Investments

H_o: The mean financial statement knowledge test score is equal across all categories of the frequency of looking at a company's financial statements before deciding whether or not to buy that company's common stocks.

H_1: The mean financial statement knowledge test score is not equal across all categories of the frequency of looking at a company's financial statements before deciding whether or not to buy that company's common stock.

Financial Statement Understanding

H_o: The mean financial statement knowledge test score is equal across all categories of the investor's perceived degree of understanding of the financial statement contained in an annual report.

H_1: The mean financial statement knowledge test score is not equal across all categories of the investor's perceived degree of understanding of the financial statements contained in an annual report.

Understanding Acquisition	H_o:	The mean financial statement knowledge test score is equal across all categories of number of sources used to acquire knowledge of financial statements.
	H_1:	The mean financial statement knowledge test score is not equal across all categories of number of sources used to acquire knowledge of financial statements.
Investment Success	H_o:	The mean financial statement knowledge test score is equal across all categories of the investor's perceived personal success in investing in common stocks.
	H_1:	The mean financial statement knowledge test score is not equal across all categories of the investor's perceived personal success in investing in common stocks.

CHAPTER III

RESULTS OF THE STUDY

Introduction

The following chapter presents in detailed form the results of the present study. As stated in Chapter I, the purpose of this study was to examine and report certain attributes of the nonprofessional investor. The results contained in this chapter seek to fulfill this purpose. However, a significant number of professional investors (89 of 554) also answered and returned the questionnaire. These responses provided an unexpected opportunity to report and compare the answers of both professional and nonprofessional investors to the same questionnaire. For this reason, the results of both categories are compared. Unfortunately, the number of respondents contained in the professional investor category did not always allow the application of statistical tests concurrent with those applied to the nonprofessional category. Where this occurred, of course, the comparisons could not be made.

The present chapter contains four main sections. First, a description of the distribution of scores on the scale of financial statement knowledge is presented. Second,

the results of testing each hypothesis with the appropriate statistical measure are reported. Third, results of the Pearson Chi Square and the Goodman and Kruskal index of association tests are presented. Last, a breakdown of the frequency of answers to the alternatives presented to each question in the scale are detailed.

Scores on the Financial Statement-Knowledge Scale

This section presents a description of the results of administering the scale which measures financial statement knowledge. As previously stated the scale was proven to be a discriminant, reliable, and valid measure. A reasonable score on this scale is assumed necessary to be able to employ financial statement information in an informed manner. However, no conclusions drawn from the results of the scale are given here. Only the numerical results are presented.

The scale contains fourteen items to measure knowledge. The scores in both the professional and nonprofessional respondent group ranged from zero to fourteen correct answers. The nonprofessional investors had a mean score of 8.68 (or 62.0%) correct answers with a standard deviation of 4.46. The professional investors mean score equaled 10.94 (or 78.2%) correct with a standard deviation of 2.82. Sixty-eight percent scored 10 or more correct answers in the professional group compared with 55.0 percent of the nonprofessional investors.

Figure 1 presents graphically the distributions of correct answers for both the professional and nonprofessional investors. Each distribution is negatively skewed. The value denoting skewness for the nonprofessionals is -.72 and compares with -1.02 for the professionals. An idealized normally distributed variable has a skewness value of 0.0.[1] A negative skewness is interpreted as indicating a distribution with more respondents in the upper region or tail of the distribution than in the lower region or tail.

Results of Hypotheses

Introduction

This section reports the results of testing each hypothesis listed in the previous chapter. Each hypothesis was tested using the appropriate statistical measure and the results of these tests are grouped by means of the method employed. The order of presentation is: (1) hypotheses tested using the Pearson product moment correlation and (2) hypotheses tested using one-way analysis of variance.

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[1] Skewness is computed with the following formula:

$$\text{Skewness} = \frac{\sqrt{N}\sum_{t=1}^{N}(X_{it} - \bar{X}_i)^3}{\left[\sum_{t=1}^{N}(X_{it} - \bar{X}_i)^2\right]^{3/2}}$$

where X_i = the variable being measured;

N = the total number of observations; and,

$\bar{X}_i$ = the mean of the X_i observations.

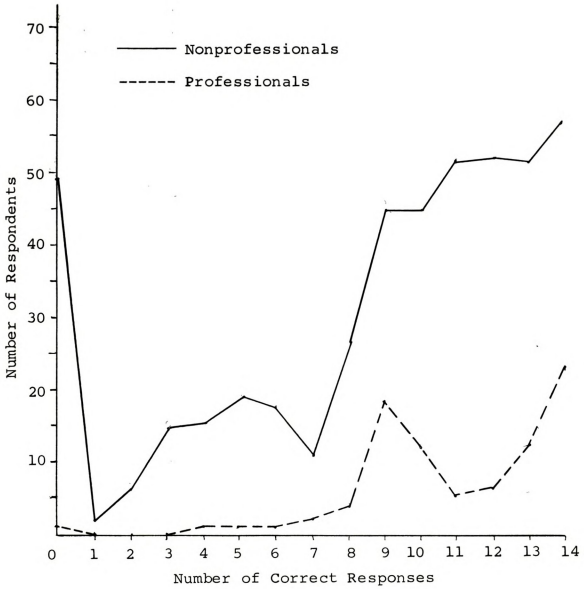

Figure 1. Distribution of responses to part two of the final questionnaire.

TABLE 3-1

PERCENTAGE FREQUENCY OF TOTAL SCORES ON THE SCALE OF FINANCIAL STATEMENT KNOWLEDGE

Score	Professional (%)	Nonprofessional (%)
0	1.1	10.7
1	0.0	0.1
2	0.0	1.2
3	0.0	2.6
4	1.1	6.0
5	1.1	3.7
6	1.1	3.7
7	2.2	3.5
8	4.5	6.5
9	20.0	7.1
10	14.6	8.4
11	6.7	9.9
12	7.8	14.7
13	13.5	9.9
14	25.8	12.1
Total	99.5[a]	100.1[a]
Mean test score	10.94	8.68

[a]Discrepancy due to rounding.

Within each subsection each hypothesis is restated, the results of the test are reported, and a conclusion reached about the relationship contained in the hypothesis is stated. Throughout this section, a hypothesis is significant only if the level of significance obtained is .05 or smaller. The choice of .05 was arbitrary but this figure does enjoy wide usage in research.

Often researchers present ex ante arguments concerning the expected results to be obtained when testing hypotheses. For most of the questions tested here, rational arguments can be made for obtaining statistical evidence to support either the null or alternative hypothesis. Any attempt to include all arguments for both hypotheses is doomed to failure from the outset. Further, the present research is intended to be exploratory. The objective was not to prove a predetermined set of events exists, but to discover what relationships exist between the attributes studied. For these reasons, no attempt is made to predict the outcome of any set of hypotheses. As previously stated, however, the results of these tests are discussed in the conclusions section of the following chapter.

Hypotheses Tested with the Pearson Product Moment Correlation

Age

R_o: The correlation coefficient between age and financial statement knowledge test score equals zero.

R_1: The correlation coefficient between age and financial statement knowledge test score does not equal zero.

The results of the test show the correlation coefficient (r) between age the test scores is -.140 for the nonprofessionals. This relationship is significantly different from zero. The r for professionals is -.138 which is not significantly different from zero.

The null hypothesis is rejected for the nonprofessional investor and accepted for the professional investor. That is, the correlation coefficient between age and test scores is negative but small for nonprofessional investors and is not significantly different from zero for professional investors.

Number of Companies Owned

R_o: The correlation coefficient between the number of companies owned and financial statement knowledge test score equals zero.

R_1: The correlation coefficient between the number of companies owned and financial statement knowledge test score does not equal zero.

The r between number of companies owned and test scores for the nonprofessional group equals .178. This relationship is significantly different from zero. The corresponding figure for the professionals is r = .308 which is also significantly different from zero.

The null hypothesis is rejected at a significant level for both the professional and nonprofessional groups.

Years Since First Acquiring Stock	R_o:	The correlation coefficient between the number of years since first acquiring stock and financial statement knowledge test score equals zero.
	R_1:	The correlation coefficient between the number of years since first acquiring stock and financial statement knowledge test score does not equal zero.

The r for the nonprofessional group equals .132 which is significantly different from zero. The corresponding figures for the professionals are r = .280. This figure is also significantly different from zero.

The null hypothesis is rejected at a significant level for both the nonprofessional and professional investors.

Percent of Time Spent Reading Financial Statements	R_o:	The correlation coefficient between the percent of time spent reading the financial statement and financial statement knowledge test score equals zero.
	R_1:	The correlation coefficient between the percent of time spent reading the financial statement and financial statement knowledge test score does not equal zero.

The r for the nonprofessional group equals .365 which is significantly different from zero. The corresponding figure for professionals is r = .025 which is not significantly different from zero.

The null hypothesis is rejected for the nonprofessional investor and not rejected for the professional investor.

This concludes the presentation of hypotheses tested with the Pearson Product Moment correlation coefficient. Table 3-2 contains a summary of each of the results of the hypothesis tested. The next section contains hypotheses tested with the one-way analysis of variance.

TABLE 3-2

SUMMARY OF THE PEARSON PRODUCT MOMENT CORRELATION TESTS OF HYPOTHESES ABOUT THE RELATIONSHIP BETWEEN TEST SCORE AND OTHER CHARACTERISTICS

Characteristic	Correlation Coefficient (r)[a]	Probability of Obtaining r when True Relation Equals Zero
Age		
Nonprofessionals	-.140	.003
Professionals	-.138	.196
Number of Companies		
Nonprofessionals	.178	.0005
Professionals	.308	.003
Years Since First Acquiring Stock		
Nonprofessionals	.132	.005
Professionals	.280	.008
Percent of Time Reading Annual Report That Is Spent on the Financial Statements		
Nonprofessionals	.365	.0005
Professionals	.025	.815

[a]Values are rounded to the third decimal place.

Hypotheses Tested with One-Way Analysis of Variance

Sex

H_o: The mean financial statement knowledge test score for women equals the mean financial statement knowledge test score for men.

H_1: The mean financial statement knowledge test score for women does not equal the mean financial statement knowledge test score for men.

The mean test scores for nonprofessional men and women are:

1. Men 9.00
2. Women 4.36

The results of the analysis of variance for nonprofessional men and women produce an F statistic of 16.48 which is significant at the .05 level.[2]

The null hypothesis is rejected for nonprofessional men and women. Men score significantly higher than women on the scale of financial statement knowledge.

The number of women included in the group of professional investors did not equal the minimum number of five needed in each category for the analysis of variance to be valid. However, the mean test scores for professional men and women are presented below as a point of interest.

1. Men 10.95
2. Women 10.33

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[2]The interpretation of the significance level of this and of all subsequent analysis of varience hypothesis is that the significance number is the probability of obtaining this value of F when no difference exists between the category means. For the hypothesis regarding men and women, the significance level says there are less than five chances in 100 of getting an F value of 16.48 when the true mean scores for men and women are equal.

Education H_o: The mean financial statement knowledge test score is equal across all education levels.

H_1: The mean financial statement knowledge test score is not equal across all education levels.

The mean test scores by highest education level attained for nonprofessional investors are:

1. Jr. High or Less	6.57
2. High School	9.25
3. 2-Year College*	8.81
4. 4-Year College	9.68
5. Master's Degree	8.30
6. Doctoral Degree	7.92

The results of the analysis of variance for education among nonprofessional investors produce an F statistic of 9.92, which is significant at the .05 level. The null hypothesis is rejected. The mean test score is not equal across all levels of education. The nonprofessional investor's mean test score on the scale of financial statement knowledge is not equal across all categories of highest education level attained.

The brackets connecting pairs of test score indicate where the significantly interesting differences occurred.

The mean test scores by highest education level attained for professional investors are:

1. 2-Year College or Less	8.28
2. 4-Year College	11.56
3. Master's Degree	10.52
4. Doctoral Degree	11.00

*No Trade School graduates responded to the questionnaire.

The results of the analysis of variance for education among professional investors produce an F statistic of 3.03 which is significant at the .05 level. Again, the null hypothesis is rejected. The professional investors' mean score on the scale of financial statement knowledge is not equal across all categories of highest education level attained.

The brackets on the mean test scores show where this significant difference exists.

Professional Investor

H_o: The mean financial statement knowledge test score of nonprofessional investors equals the mean test score of professional investors.

H_1: The mean financial statement knowledge test score of nonprofessional investors does not equal the mean test score of professional investors.

The mean test scores for professional and nonprofessional investors are:

1. Nonprofessional 8.68
2. Professional 10.94

The results of the analysis of variance for professional investor status produce an F statistic of 21.06 which is significant at the .05 level. The null hypothesis is rejected. Professional investors score significantly higher on the scale of financial statement knowledge.

Financial Statement Use in Job

H_o: The mean financial statement knowledge test score of those investors who use financial statements as a part of their job equals the mean test score of those investors who do not use financial statements as a part of their job.

H_1: The mean financial statement knowledge test score of those investors who use financial statements as a part of their job does not equal the mean test score of those investors who do not use financial statements as a part of their job.

The mean test scores for those who do and those who do not use financial statements as a part of their job for the nonprofessional investors are:

1. Do Not 7.29
2. Do 10.68

The results of the analysis of variance produce an F statistic of 38.03 which is significant at the .05 level. The null hypothesis is rejected. Nonprofessional investors who use financial statements as a part of their job score significantly higher than those nonprofessional investors who do not use financial statements as a part of their job.

Interestingly, thirteen of eighty-nine professional investors stated they did not use financial statements as a part of their job. The mean test scores for these categories are:

1. Do Not 8.92
2. Do 11.29

The F statistic for the analysis of variance equals 8.46 which is significant at the .05 level. Here again, the null hypothesis is rejected. Professional investors who use

financial statements as a part of their job score significantly higher than those who do not use financial statements as a part of their job.

Dollar Value

H_o: The mean financial statement knowledge test score is equal across all categories of the total dollar value of common stock held by the investor.

H_1: The mean financial statement knowledge test score is not equal across all categories of total dollar value of common stock held by the investor.

For nonprofessional investors, the mean test scores by category of dollar value invested in stock are:

1.	$1 to $2,000	6.43
2.	$2,001 to $10,000	8.66
3.	$10,001 to $20,000	8.98
4.	$20,001 to $50,000	8.61
5.	$50,001 to $100,000	8.83
6.	Over $100,000	10.65

The F statistic for the analysis of variance equaled 7.13 which is significant at the .05 level. The null hypothesis is rejected. The mean test score is not equal across all categories of dollar value held in stock by the nonprofessional investor.

The results of the post-hoc analysis are indicated by the brace and brackets. For the attribute of dollars invested, categories one through five are significantly different than six and category one differs from three.

For the professional investors, the mean test scores by category of dollar value invested in stock are:

1.	$1 to $2,000	9.83
2.	$2,001 to $10,000	9.24
3.	$10,001 to $20,000	9.22
4.	$20,001 to $50,000	11.20
5.	$50,001 to $100,000	12.15
6.	Over $100,000	12.05

The value of the F statistic in the analysis of variance equals 3.97 which is significant at the .05 level. As in the nonprofessional investor analysis, the null hypothesis is rejected. The mean test score on the scale of financial statement knowledge is not equal for professional investors across all categories of dollar value invested in stock.

Again, the brackets denote the significantly different pairs of means.

Major Information Source

H_o: The mean financial statement knowledge test score is equal across all categories of major information source about the companies whose common stock is held.

H_1: The mean financial statement knowledge test score is not equal across all categories of major information source about the companies whose common stock is held.

For the nonprofessionals, the mean test scores for the categories of major information source are:

1.	Stockbroker	8.86
2.	Newspapers and Magazines	8.72
3.	The Annual Report	9.71
4.	Friends and Fellow Employees	5.93
5.	Investment Advisory Services	7.43
6.	Other	9.59

The analysis of variance results produce an F statistic of 4.64 which is significant at the .05 level. The null hypothesis is therefore rejected. The nonprofessional investor score on the scale of financial statement knowledge

is not equal across all categories of major information source about the companies he owns. Significant differences in means are bracketed.

For the professional investor, the mean test scores for the categories of major information source are:

1.	Stockbroker	11.61
2.	Newspapers and Magazines	9.50
3.	The Annual Report	9.85
4.	Friends and Fellow Employees	10.33
5.	Investment Advisory Services	12.27
6.	Other	13.66

However, the cell frequency of the category "Other" was too small to make any measurement with the analysis of variance.

Consulting Frequency

H_o: The mean financial statement knowledge test score is equal across all categories of the frequency of consulting with a stockbroker or professional stock analyst.

H_1: The mean financial statement knowledge test score is not equal across all categories of the frequency of consulting with a stockbroker or professional stock analyst.

The mean test scores of the nonprofessional investors for all categories of frequency of consulting with a stockbroker or other professional analyst are:

1.	More than once a week	9.50
2.	About once a week	9.46
3.	About once a month	9.55
4.	About once every 2 or 3 months	9.85
5.	Once a year or less	8.26
6.	Never	7.18

The F statistic determined through the analysis of variance equaled 5.05 which is significant at the .05 level. The null hypothesis is rejected. The nonprofessionals mean test score on the scale of financial statement knowledge is

not equal across all categories of frequency of consulting with a stockbroker or other professional analyst.

The post-hoc analysis indicated that the only mean scores which exhibited significant differences were those for categories four and six.

The mean test score for professional investors for all categories of frequency of consulting with a stockbroker or other professional analyst are:

1.	More than once a week	12.07
2.	About once a week	10.55
3.	About once a month	11.00
4.	About once every 2 or 3 months	11.11
5.	Once a year or less	10.91
6.	Never	9.84

The F statistic of .87 is not significant at the .05 level. Therefore, the null hypothesis for professional investors is not rejected. The professional investor's mean test score on the scale of financial statement knowledge is equal across all frequencies of consulting with a stockbroker or professional analyst.

Time Reading Annual Report

H_o: The mean financial statement knowledge test score is equal across all categories of time spent reading the annual report.

H_1: The mean financial statement knowledge test score is not equal across all categories of time spent reading the annual report.

The mean test scores of the nonprofessional investors for all categories of time spent reading the annual report are:

1.	None	5.09
2.	Less than 5 minutes	8.39
3.	5 to 15 minutes	9.20
4.	15 to 30 minutes	9.72
5.	More than 30 minutes	9.48

The value of F from the analysis of variance equals 12.35 which is significant at the .05 level. The null hypothesis is therefore rejected. The average test score on the scale of financial statement knowledge does vary with the time a nonprofessional investor spends reading the annual report of a company he owns.

The brace on the mean scores indicates no significant difference was found between categories two through five. However, the bracket indicates category one to be significantly different from two through five.

The mean test score for the professional investors for all categories of time spent reading the annual report are:

1.	None	5.00
2.	Less than 5 minutes	12.60
3.	5 to 15 minutes	11.18
4.	15 to 30 minutes	10.53
5.	Over 30 minutes	10.75

However, the respondent frequency of "None" was too small to make meaningful measurements with the analysis of variance.

Financial Statements and Investments	H_o:	The mean financial statement knowledge test score is equal across all categories of the frequency of looking at a company's financial statements before deciding whether or not to buy that company's common stock.
	H_1:	The mean financial statement knowledge test score is not equal across all categories of the frequency of looking at a company's financial statements before deciding whether or not to buy that company's common stock.

The mean test scores for all categories of the frequency nonprofessional investors look at a company's financial statements before deciding whether to buy that company's common stock are:

1.	No (Never)	5.99
2.	Always	10.40
3.	Usually	9.61
4.	Sometimes	9.14
5.	Rarely	10.80

The analysis of variance yielded an F statistic of 21.18 which is significant at the .05 level. The null hypothesis is again rejected. The mean score on the scale of financial statement knowledge is not equal across all categories of the frequency with which nonprofessional investors look at a company's financial statements before deciding to invest.

In this case, only the mean score of category "No" proved significantly different from all other categories at the .05 level. This relationship is shown with a brace and bracket.

The mean test scores for all categories of the frequency professional investors look at a company's financial statements before deciding whether to buy that company's common stock are:

1.	No (Never)	11.78
2.	Always	11.52
3.	Usually	10.63
4.	Sometimes	9.12
5.	Rarely	9.60

The analysis of variance yielded an F statistic of 2.06 which is not significant at the .05 level. The null hypothesis is not rejected. The mean test score is equal across all categories of the frequency professional investors look at a company's financial statements before deciding whether to buy that company's common stock.

Financial Statement Understanding

H_o: The mean financial statement knowledge test score is equal across all categories of the investor's perceived degree of understanding of the financial statements contained in an annual report.

H_1: The mean financial statement knowledge test score is not equal across all categories of the investor's perceived degree of understanding of the financial statements contained in an annual report.

The means test scores of the nonprofessional investors for all categories of perceived degree of financial statement understanding are:

1.	Very well	11.08
2.	Above average	11.16
3.	Average	8.41
4.	Below average	6.43
5.	Poor	4.45
6.	Not at all	1.04

The F statistic for the analysis of variance equals 50.00 which is significant at the .05 level. The null hypothesis is rejected. The nonprofessional investor's mean score on the scale of financial statement understanding varies with his perception of his understanding of financial statements.

The above brackets show where the breaks occurred for significant differences between the category means.

The mean test scores of the professional investors for all categories of perceived degree of understanding of financial statements are:

1.	Very well	11.46
2.	Above average	12.14
3.	Average	9.70
4.	Below average	8.61
5.	Poor	9.00
6.	Not at all*	....

Again, the cell frequency for "Poor" was insufficient to allow meaningful results with the analysis of variance.

Understanding Acquisition

H_o: The mean financial statement knowledge test score is equal across all categories of number of sources used to acquire knowledge of financial statements.

H_1: The mean financial statement knowledge test score is not equal across all categories of number of sources used to acquire knowledge of financial statements.

*No respondents answered "Not at all."

The data inputs for this hypothesis need explaining before presenting the results. These hypotheses are the results of employing the data collected in question 13A of the final questionnaire. The respondent was asked to indicate which of the methods listed he used to gain his understanding of financial statements. The question included no restrictions as to the number of choices to be made. Therefore, each respondent could choose zero to five scores. The respondents were then classified by the number of sources chosen. The mean test scores for the nonprofessional investors by this classification scheme are:

1.	Zero	7.36
2.	One	9.51
3.	Two	9.77
4.	Three*	10.42

The F statistic for the analysis of variance is 8.40 which is significant at the .05 level. Therefore, the null hypothesis is rejected. The nonprofessional investor's mean test score on the scale of financial statement knowledge is not equal across all categories of the number of sources used to acquire knowledge of financial statements.

The brace and bracket show that the post-hoc analysis indicates the zero category to be significantly lower than categories one, two, and three which do not vary significantly from each other.

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*Three was the most categories chosen.

The mean test score by category of the number of sources used to gain financial statement knowledge for the professional investors are:

1.	One	10.47
2.	Two	11.46
3.	Three	11.20

The F statistic using the analysis of variance equals 1.16 which is not significant at the .05 level. The null hypothesis is not rejected. The professional investor's mean test score on the scale of financial statement knowledge is equal across all categories of the number of sources used to acquire knowledge of financial statements.

Investment Success

H_o: The mean financial statement knowledge test score is equal across all categories of the investor's perceived personal success in investing in common stocks.

H_1: The mean financial statement knowledge test score is not equal across all categories of the investor's perceived personal success in investing in common stocks.

For nonprofessional investors, the mean test scores for all categories of perceived personal success in investing in common stocks are:

1.	Very successful	9.50
2.	Above average success	10.30
3.	Average success	8.06
4.	Below average success	8.00
5.	Poor success	7.50

The F statistic of the analysis of variance equaled 6.27 which is significant at the .05 level. Therefore, the null hypothesis is rejected. The nonprofessional investor's mean test score on the scale of financial statement knowledge

is not equal across all categories of perceived personal success in investing in common stocks.

The above braces and brackets indicate that the results of post-hoc analysis show where differences between groups of categories exist. In this case, categories one and two, which are not significantly different, are significantly different from categories three, four, and five, which are not significantly different within themselves.

For professional investors, the mean test scores for all categories of perceived personal success in investing in common stocks are:

1.	Very successful	12.33
2.	Above average success	12.05
3.	Average success	9.82
4.	Below average success	8.85
5.	Poor success*	....

The analysis of variance yielded an F statistic of 8.61 which is significant at the .05 level. The null hypothesis is rejected. The professional investor's mean test score on the scale of financial statement knowledge is not equal across all categories of perceived success in investing in common stocks.

The braces and brackets are again used to group categories which are equal and groups of categories which are not considered equal.

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*No professional investors reported having poor success.

Table 3-3 summarizes the results of the tests of hypotheses using the analysis of variances. The probabilities listed in Table 3-4 are the actual approximate significance level of the F obtained in each case.

The above hypothesis concludes the results of formal hypothesis testing within this research. Table 3-4 presents a summary of the test employed and the results of testing the null hypothesis for each variable examined by means of a formal hypothesis. The following section reports the results of the Pearson Chi Square and the Goodman and Kruskal index of association.

The Pearson Chi Square and the Goodman-Kruskal Test Results

Introduction

The Pearson Chi Square and the Goodman and Kruskal index of association test results are the subject of this section. The results of both tests provide interesting although peripheral additional insight into the relationships contained in the data. Because these test results are peripheral and not primary data, the present section presents the test results in matrix form. The commentary about each test is in summary form and is only intended to point out major facets of interest.

One further clarification is needed. Only eight of the sixteen demographic, attitudinal, and behavioral attributes were included in these tests. The eight variables

TABLE 3-3

SUMMARY OF THE RESULTS OF THE ANALYSIS OF VARIANCE FOR BOTH PROFESSIONAL AND NONPROFESSIONAL INVESTORS

	Category	Value of the F Statistic		Significance of F	
		Nonprofessional	Professional	Nonprofessional	Professional
1.	Sex	16.48	N.A.	.0005	N.A.
2.	Education	2.92	3.02	.013	.034
3.	Professional investor status	21.06		.0005	
4.	Use of financial statements in job	38.03	8.46	.0005	.005
5.	Dollar value invested in common stocks	7.13	3.97	.0005	.002
6.	Source of most information about companies owned	4.64	N.A.	.0005	N.A.
7.	Frequency of consulting a broker or professional analyst	5.04	0.87	.0005	.501
8.	Amount of time spent reading the annual report	12.35	3.66	.0005	.008
9.	Frequency of looking at financial statements before investing in common stock	21.18	2.06	.0005	.078
10.	Perceived understanding of financial statements	50.00	6.60	.0005	.0005
11.	Number of sources used to gain understanding of financial statements	8.40	1.16	.0005	.317
12.	Perceived success as an investor in common stock	18.93	8.61	.0005	.0005

TABLE 3-4

SUMMARY OF THE ABILITY TO REJECT THE NULL HYPOTHESIS FOR EACH VARIABLE TESTED WITH THE MEAN TEST SCORE

Category Variable	Statistical Method Employed[a]	Results of the Test of the Null Hypothesis[b]	
		Nonprofessional	Professional
1. Age	PPM	R	A
2. Sex	AOV	R	
3. Education	AOV	R	R
4. Professional investor status	AOV	R	
5. Use of financial statements in job	AOV	R	R
6. Number of companies owned	PPM	R	R
7. Dollar value invested	AOV	R	R
8. Years since first acquiring stock	PPM	R	R
9. Major information source	AOV	R	
10. Frequency of consulting analyst or broker	AOV	R	A
11. Time reading annual report	AOV	R	R
12. Percent of time spent reading financial statements	PPM	R	
13. Frequency of looking at financial statements before investing	AOV	R	A
14. Perceived understanding of financial statements	AOV	R	R
15. Number of sources used to gain understanding	AOV	R	A
16. Perceived success as an investor	AOV	R	R

[a] PPM = Pearson Product Moment Correlation, and AOV = Analysis of Variance.

[b] R = Reject, and A = Accept.

are the discontinuous attributes with more than two categories. Further, the category scheme must have allowed classification of each respondent in one and only one category.

Pearson Chi Square Results

Chi square is a measure of the dependence or independence between two discontinuous variables. Table 3-5 presents in matrix form the X^2 statistic for each comparison. Immediately under each statistic and underlined is the approximate significance level which corresponds with each X^2 statistic. The significance level is the probability of obtaining the X^2 statistic reported when the two variables are in fact independent. In other words, this statistic is the probability of accepting two variables as being dependent when they are in truth independent.

Results for the nonprofessional investors are included in the column designated--N and the professional investors under--P. Certain professional investor results are designated--N.A. (Not Available). This last notation indicates that the expected cell frequencies in the contingency table did not allow the X^2 test to yield meaningful results because the expected frequency did not equal at least one.

The numbers in parentheses by each variable name are the number of categories contained in each variable.

TABLE 3-5

MATRIX OF PEARSON CHI SQUARE STATISTICS AND CORRESPONDING SIGNIFICANCE LEVELS FOR NONPROFESSIONAL AND PROFESSIONAL INVESTORS[a]

Attributes	Education (8)		Dollars Invested (6)		Major Information Source (6)		Analysts Consulting Frequency (6)		Time Reading Annual Reports (5)		Look at Statements Before Investing (5)		Understanding Perception (6)		Perceived Investment Success (5)	
	N	P	N	P	N	P	N	P	N	P	N	P	N	P	N	P
Education (8)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Dollars Invested (6)	84.6 .001	N.A.	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Major Information Source (6)	58.7 .01	N.A.	60.4 .001	44.7 .01	..	..	..	..	..	..	..	..	..	..	..	..
Analyst Consulting Frequency (6)	46.6 .05	N.A.	76.6 .001	75.9 .001	120.4 .001	68.8 .001	..	..	..	..	..	..	..	..	..	..
Time Reading Annual Report (5)	52.7 .005	N.A.	65.8 .001	32.2 .05	97.8 .001	26.8 .25	57.7 .001	53.5 .001	..	..	..	..	..	..	..	..
Look at Statements Before Investing (5)	39.21 .10	N.A.	50.6 .001	75.1 .001	58.6 .001	45.45 .001	60.3 .001	65.0 .001	140.1 .001	50.1 .001	..	..	..	..	..	..
Understanding Perception (6)	53.7 .10	N.A.	95.7 .001	N.A.	107.7 .001	N.A.	60.6 .001	N.A.	244.3 .001	N.A.	188.7 .001	N.A.	..	..	..	..
Perceived Investment Success (5)	25.4 .75	N.A.	76.0 .001	N.A.	55.9 .001	N.A.	37.1 .05	N.A.	45.9 .001	N.A.	85.0 .001	N.A.	110.3 .001	N.A.	..	..

[a]N.A. means figures were not available.

Examination of the table indicates that only three pairs of attributes cannot be accepted as dependent at the .05 level for the nonprofessional investors. They are:

1. Education and frequency of looking at statements before investing.
2. Education and perceived understanding of financial statements.
3. Education and perceived investment success.

For the professional investors, only one pair is not dependent at the .05 level. It is:

1. Major information source and time reading the annual report.

All other pairs of attributes are dependent beyond the .05 level using the X^2 test.

Goodman and Kruskal Indices of Association

The Goodman and Kruskal index of association is the percentage decrease in the probability of error in classifying an investor by one attribute brought about by knowing his classification in another attribute. The measure is an indication of the predictive association between the two attributes compared.

Table 3-6 presents the indices calculated for each of the twenty-eight combinations possible between the variables examined. The variables listed across the top of the table indicate the attribute whose classification is known.

TABLE 3-6

MATRIX OF THE GOODMAN AND KRUSKAL INDICES OF ASSOCIATION[a]

Variable Whose Classification Is Known / Variable Whose Classification Is Not Known	Education	Dollars Invested	Major Information Source	Analyst Consulting Frequency	Time Reading Annual Report	Look at Statements Before Investment	Understanding Perception	Perceived Investment Success
1. Education	100/100	5.0/N.A.	15.6/N.A.	7.0/N.A.	6.1/N.A.	0.6/N.A.	8.5/N.A.	0.0/N.A.
2. Dollars Invested	9.6/N.A.	100/100	7.4/7.6	10.5/25.0	10.2/5.0	14.1/25.4	13.1/N.A.	12.5/N.A.
3. Major Information Source	3.0/N.A.	5.1/24.5	100/100	8.7/42.1	8.7/12.5	1.9/23.4	7.5/N.A.	2.8/N.A.
4. Analyst Consulting Frequency	3.5/N.A.	3.1/25.7	5.9/22.3	100/100	6.1/13.4	7.3/17.9	7.3/N.A.	6.5/N.A.
5. Time Reading Annual Report	1.7/N.A.	2.0/15.6	3.9/3.7	0.0/22.2	100/100	2.1/24.0	5.2/N.A.	2.8/N.A.
6. Look at Statements Before Investing	5.1/N.A.	8.5/21.5	5.2/12.9	14.1/27.7	14.1/14.8	100/100	21.7/N.A.	13.0/N.A.
7. Understanding Perception	1.4/N.A.	0.0/N.A.	8.9/N.A.	1.4/N.A.	8.3/N.A.	8.1/N.A.	100/100	10.9/N.A.
8. Perceived Investment Success	0.0/N.A.	2.3/N.A.	1.1/N.A.	28.6/N.A.	0.0/N.A.	3.2/N.A.	0.5/N.A.	100/100

[a]N.A. means figures were not available.

The attributes listed down the table are those whose classification is being predicted.

The indices to the left of the slash (/) are those for the nonprofessional investor. Those indices to the right of the slash are those of the professional investor. Again, certain indices for the professional investors are noted N.A. when they are not available.

Finally, the diagonal row of indices, noted 100/100, is meaningless. These indices indicate the decrease in probability of error or predicting a classification within an attribute where the classification is already known. That is, if a classification is already known then the probability of error in predicting that classification is zero. Therefore, the probability of error is reduced 100 percent.

The mean decrease in the probability of error is 5.68 percent for the nonprofessional investor. This number is considerably smaller than the mean of 19.36 percent for the professional investor. However, since the index is a ratio and the professional investors had only about one-fifth the number of respondents to place in the divisor, then the difference in the means may be spuriously large. Further, the number of indices used to make up the professional mean index is much lower than that used to make up the nonprofessional mean index. This fact allows the incidence of unusually high indices in the professional

group to have more weight than they would in the nonprofessional group.

Only two of fifty-six predictions are aided by more than 20 percent in the nonprofessional group. These were:

1. Financial statement understanding perception predicting frequency of looking at statements before investing; and

2. Frequency of consulting a stockbroker or other professional analyst predicting perceived investment success.

On the other hand, thirteen of twenty predictions in the professional group were aided by more than 20 percent. These are too numerous to list. The reader is asked to consult the table for these relationships. However, one index deserves mention. Knowing a professional investor's classification by analyst consulting frequency decreases the probability of error in classifying him by major information source by 42.1 percent.

This concludes the presentation of the Pearson X^2 and Goodman and Kruskal index of association results. Admittedly, more could have been said about the results and relationship contained in the tables. However, all relationships important to the conclusions of this study were mentioned.

The following section presents a breakdown by possible response to all questions contained in the scale of financial statement knowledge.

Frequency of Response to the Questions in the Scale

This section reports the frequency of response to each of the five choices available to each question contained in the scale. Each question is listed in order of its presentation in the questionnaire. The frequency of response to each choice is reported as the percentage of total respondents answering the question. The answer considered correct is underlined. As before, the "N" designates the nonprofessional data and the "P" designates the professional data. The question and the corresponding percentages are:

N (%)	P (%)	Question
		1. The term "at cost" means:
5	4	A. The cost to replace the item if it had to be replaced.
73	94	B. The original cost of the item at date of purchase.
3	0	C. What it would cost you if you wanted to buy the item from the company.
11	6	D. None of the above.
18	1	E. I don't know.
		2. The term "straight line" refers to depreciation which is:
77	96	A. Expensed in equal installments over the expected useful life of the asset.
1	0	B. Expensed directly from the asset account to the expense account without going through any intermediary accounts.
1	1	C. Expenses according to paragraph 3:14 of the Uniform Commercial Code which discussed assets which decrease in value through use.
0	0	D. None of the above.
21	3	E. I don't know.

N (%)	P (%)	Question
		3. Using accelerated methods of depreciation means:
71	88	A. Depreciation charges are higher in the early life of the item and taper off in later years.
4	4	B. Depreciation charges begin low and increase toward the end of the item's useful years.
1	3	C. Depreciation is taken on a straight-line basis but the asset may be depreciated for an amount greater than its cost.
4	0	D. None of the above.
19	4	E. I don't know.
		4. Using accelerated depreciation for tax purposes has the advantage of:
3	7	A. Allowing the company to pay taxes early and, therefore, not be bothered with them later.
57	70	B. Allowing the company to delay the payment of taxes until later years.
1	2	C. Being the procedure favored by the Internal Revenue Service and, therefore, lowers the probability of the company's tax return being audited.
16	17	D. None of the above.
21	4	E. I don't know.
		5. Long-term debt includes:
4	2	A. Only debts whose contract terms are lengthy and usually require an attorney's advice to interpret.
48	67	B. Debts which must be paid on a date more than one year away.
18	17	C. Debts used exclusively to finance long-term projects.
5	6	D. None of the above.
25	9	E. I don't know.
		6. Which of these would be used to calculate consolidated working capital?
38	67	A. Current assets minus current liabilities.
10	9	B. Retained earnings minus dividends payable.
15	6	C. Cash plus short-term securities.
3	6	D. None of the above.
33	13	E. I don't know.

N (%)	P (%)	Question
		7. Total shareholders' equity means:
4	4	A. The total cash the company would bring if sold to another company.
64	83	B. The amount left after all company debts are subtracted from the total assets listed on the balance sheet.
2	2	C. The amount of cash the company has set aside to pay to common shareholders when the company goes out of business.
8	3	D. None of the above.
20	7	E. I don't know.
		8. Retained earnings means:
72	88	A. Company earnings which have been retained for use in business.
2	3	B. The amount of cash that is available for paying dividends.
5	3	C. Earnings the government has required the company to retain to protect the rights of shareholders and creditors.
2	2	D. None of the above.
18	3	E. I don't know.
		9. Increasing the par value of each share of stock from 16 2/3¢ to 25¢ should:
12	20	A. Increase the market price of each share.
1	0	B. Increase the company's total earnings.
64	74	C. Have no effect on the total earnings of the company and little or no effect on the market price of each share.
4	1	D. None of the above.
18	4	E. I don't know.
		10. "Earnings before extraordinary items" means:
64	73	A. The normal, ordinary, recurring earnings of the company.
1	1	B. Earnings of the company which are of no special significance to you as a stockholder.
4	0	C. Earnings that were forecast by the company's management at the beginning of the year.
8	13	D. None of the above.
23	12	E. I don't know.

N (%)	P (%)	Question
		11. To be "extraordinary," an item must be:
1	0	A. Unusually large or unusually small when compared to ordinary amounts shown on earnings statement
71	92	B. Caused by an event significantly different from the typical or customary business operations of the company.
5	2	C. Caused by an event requiring an unusually large amount of effort on the part of the business managers and, therefore, thought worthy of a separate category on the earnings statement.
1	0	D. None of the above.
21	6	E. I don't know.
		12. "Earnings before extraordinary items" are:
4	6	A. Always more than "net earnings."
62	67	B. May be more or less than "net earnings" depending on the extraordinary items.
6	12	C. Always less than "net earnings."
3	2	D. None of the above.
25	13	E. I don't know.
		13. The independent auditor's opinion testifies, in part, that the financial statements are:
9	10	A. Correct and contain no fraudulent items as defined by the Securities and Exchange Commission.
9	10	B. Numerically accurate but makes no claim about the occurrence of fraud.
64	77	C. Consistent with previous years and are in accordance with generally accepted accounting principles unless exceptions are noted.
2	0	D. None of the above.
16	3	E. I don't know.
		14. The independent auditor's opinion covers:
9	3	A. All parts of the annual report.
47	58	B. Only the formal financial statements within the annual report.
24	32	C. All comments in the annual report about company finances including the formal financial statements.
1	0	D. None of the above.
19	7	E. I don't know.

Two summary tables are presented to aid the reader in interpreting the previous data: Table 3-7 lists the questions by rank from highest to lowest index of difficulty. Again, the index of difficulty is the percentage of respondents who answered the question incorrectly. Table 3-7 indicates a marked similarity between the questions found most difficult for both the nonprofessional and professional groups.

TABLE 3-7

RANK ORDER OF QUESTIONS BY DIFFICULTY INDEX[a]

Rank for Nonprofessionals (Question No.)		Rank for Professionals (Question No.)
6	(Most Difficult)	14
14		12
5		6
4		5
12		4
13		10
10		9
9		13
7		7
11		3
3		8
8		11
1		1
2	(Least Difficult)	2

[a]Braces denote equal difficulty.

Table 3-8 presents the frequency of questions having a percentage of correct responses lying in the same range of percentages. For example, the professional investor group had three questions with 90 percent or more correct responses while the nonprofessional group had none in this range.

TABLE 3-8

FREQUENCY OF THE PERCENTAGE OF RESPONDENTS ANSWERING QUESTIONS ON THE SCALE CORRECTLY

Percentage of Correct Responses	Frequency of Questions with Responses in the Percentage Range	
	Nonprofessional	Professional
90-100	0	3
80-89	0	3
70-79	5	4
60-69	5	3
50-59	1	1
40-49	2	0
30-39	1	0
20-29	0	0
10-19	0	0
0-9	0	0

These tables conclude the presentation of the responses to each of the questions in the scale of financial statement understanding and also conclude the presentation of the numerical results of this study. These results make up the basis for the conclusions formed about the characteristics measured by this research. These conclusions plus the recommendations and suggestions for further research are the subject of the following chapter.

CHAPTER IV

SUMMARY, CONCLUSIONS, RECOMMENDATIONS, AND SUGGESTIONS FOR FURTHER RESEARCH

Summary of Results

The present section presents a summary of the results detailed in the previous chapter. The order of presentation is: scores on the financial statement knowledge scale; demographic, behavioral, and additional variables related to the scale scores; and individual question results. Within each section the results for both the nonprofessional and professional investors are presented and compared.

Summary of Scores on the Financial Statement Knowledge Scale

The mean score for nonprofessional investors on the scale of financial statement knowledge was 8.68 correct answers which is 62.0 percent of a perfect score of fourteen. The mean score for the professional investors was 10.94 or 78.2 percent correct. The standard deviation of the nonprofessional investors was 4.46 questions as compared with 2.82 questions for the professional investors. Both professional and nonprofessional investor's scores had a range from zero to fourteen correct. Further, the professional investors distribution was much more skewed toward higher scores than

the nonprofessional investors' distribution. Only 55.0 percent scored ten or more correct answers in the nonprofessional category compared with 68.4 percent in the professional category.

Demographic, Behavioral, and Attitudinal Tests

Positive correlations, significantly different from zero, were found between the financial statement knowledge scale score and each of the following variables: number of companies owned, years since first acquiring stock and percent of time spent reading financial statements included in the annual report. However, only the correlation between scale scores and the number of companies whose common stock is owned is positive and significantly different from zero for the professional investor. The remaining two relationships for professional investors have a coefficient not significantly different from zero.

The correlation between scale scores and age is negative and significantly different from zero for both nonprofessional and professional investors.

The average nonprofessional male investor has significantly greater knowledge of financial statement definitions and concepts than the average female nonprofessional investor. However, no judgment could be made about professional investor knowledge differences by sex category because not enough women were included in the professional investor sample.

Financial statement knowledge varied significantly with the level of education attained by the average nonprofessional and by the professional investor. For both categories, the significantly highest scores were made by respondents who finished a four-year college as their highest level of education.

The average professional investor has significantly greater knowledge of financial statements than the average nonprofessional investor.

In both nonprofessional and professional investor categories, those who use financial statements as a part of their job, on the average, have significantly greater knowledge of financial statements than those who do not use financial statements as a part of their job.

A nonprofessional investor's knowledge of financial statements varies with the dollar value he has invested in stock. On the average, the more he has invested, the greater his knowledge. A parallel relationship holds for the professional investors.

The average nonprofessional investor's knowledge of financial statements varies significantly with the major source used to gather information about the companies he owns. However, insufficient sample size prevented results about this relationship for the professional investors.

The nonprofessional investor's knowledge of financial statements varies with the frequency with which he consults a stockbroker or other professional analyst.

Interestingly, nonprofessional investors who never consult a professional analyst score significantly lower than those who consult a professional every two or three months. No significant differences in financial statement knowledge could be found between the consulting frequencies of the professional investors.

On the average, nonprofessional investors who read annual reports have a higher level of financial statement knowledge than those nonprofessional investors who do not read annual reports. However, there is no significant difference found in the average financial statement knowledge of the nonprofessional investors on the basis of time spent reading the annual report. The investor who reads the annual report five minutes or less did not exhibit a significantly different knowledge level than investors who read annual reports for any of the other time periods. No judgment could be made, however, about the relation between the average financial statement knowledge of the professional investor and the time he reads the annual report, due to insufficient sample size.

Nonprofessional investors who "never" look at financial statements before investing exhibit significantly less financial statement knowledge than those who do. Again, no significant difference could be found in the average financial statement knowledge of nonprofessional investors who do look at statements before investing. The nonprofessional

investor who "always" looks does not have significantly more knowledge than those who "rarely" look. Further, no significant difference was found between the average financial statement knowledge of professional investors in any of the frequencies of looking at financial statements before investing.

The average financial statement knowledge of the nonprofessional investor varies significantly with his perceived understanding of financial statements. More specifically, the greater the investor perceives his understanding to be, the more financial statement knowledge he exhibits. Again, no judgment could be made concerning perceived understanding and financial statement knowledge for the professional investor due to insufficient sample size.

Nonprofessional investors who gave no source of gaining financial statement understanding exhibited significantly less financial statement knowledge than those who listed at least one source. However, no significant difference was found in the average financial statement knowledge of those investors who gave one, or more than one, source of knowledge. Likewise, no significant difference was found in the average financial statement knowledge of professional investors who listed one, or more than one, source of knowledge. However, no professional investors indicated no sources.

The average financial statement knowledge of the nonprofessional investor varies with his perceived success as an investor. Those investors who considered themselves

as having "very successful" or "above average success" exhibited more financial statement knowledge than those investors who indicated "average success" or less. Similar results were found for the professional investor. Professional investors who considered themselves as having "very successful" or "above average success" exhibited significantly more financial statement knowledge than those who indicated "average success" or less.

Generally, the attributes tested for statistical independence proved to be not independent at a significant level for both the nonprofessional and professional investors. The groups of variables that exhibited pairwise independence for nonprofessionals were:

1. Education and frequency of looking at statements before investing.
2. Education and perceived understanding of financial statements.
3. Education and perceived investment success.

The groups of variables showing pairwise independence for the professionals were:

1. Major information source and time reading the annual report.

The average predictive association between the eight variables tested was low in the nonprofessional category. However, the predictive association in the professional category proved to be about four times higher than in the nonprofessional category.

Individual Question Results

Two questions caused both the nonprofessional and professional investors the greatest difficulty judged by the frequency of incorrect answers. First, the question concerning the coverage of the auditor's opinion ranked most difficult for the professional investors and second most difficult for the nonprofessional investors. Second the question on how to compute consolidated working capital proved most difficult for the nonprofessionals and third most difficult for the professionals.

The least difficult question for both nonprofessional and professional investors concerned the definition of straight-line depreciation. However, this definition was only slightly less difficult than the question concerning the definition of the term "at cost."

Conclusions

The conclusions drawn from the present research are based on three critical assumptions: First, the steps taken to assure the validity, reliability, and discrimination of the scale of financial statement knowledge were effective. That is, the scale used to measure financial statement knowledge is assumed to be valid, reliable, and discriminatory.

Second, to have sufficient elementary knowledge of financial statements, the investor must be able to answer 70 percent or more of the questions on the scale. That is,

the breaking point between having minimal knowledge and lacking minimal knowledge is assumed to be at ten of fourteen correct answers.

Third, the investor sample used in the present research is assumed to be representative of the general population of all common stock investors.

The first conclusion reached from the research results is that the average nonprofessional investor does not have sufficient knowledge of financial statements to employ them in an informed manner. The average nonprofessional could correctly answer only 62 percent of the questions in the scale. Further, only nonprofessional investors who fall in any one of certain categories exhibit, on the average, sufficient financial statement knowledge. Those categories are:

1. He uses financial statements in his job; or
2. He has over $100,000 invested in stock; or
3. He looks at financial statements before deciding whether to buy a company's common stock; or
4. He perceives himself as having above average or better understanding of financial statements; or
5. He perceives himself as having above average, or better, success while investing in common stocks.

On the other hand, professional investors have sufficient knowledge of financial statements. Professionals

averaged 78.2 percent correct answers. However, professional investors who are in certain categories did not exhibit, on the average, sufficient financial statement knowledge. Those categories are:

1. Has less than four years of college; or
2. Does not use financial statements in his job; or
3. Has less than $20,000 invested in common stocks; or
4. Perceives his understanding of financial statements as average or less; or
5. Perceives his success at investing in common stocks as average or less.

The second conclusion drawn from the research results is that accountants are not effectively communicating the results of economic events to the average nonprofessional investor. As previously argued in Chapter I, both the message sender and receiver must understand the message code before effective communication can be attained. One important receiver of the accountant's code, the average nonprofessional investor, does not understand the message's code. Therefore, effective communication with this audience is blocked.

The demographic, attitudinal, and behavioral characteristics examined in this research do not hold the clue to solving, or significantly aiding in, the accountant's communication problems. This conclusion is reached because: (1) the correlation coefficients do not point out sufficient common variance between financial statement knowledge and

the other variables examined to be of great social significance; (2) the differences in financial statement knowledge discovered between the demographic, attitudinal and behavioral question categories, though interesting, do not in themselves lead to areas where improvements are needed; (3) in general, the demographic, attitudinal and behavioral characteristics are too interdependent to allow isolation of meaningful answers; and, (4) generally, the predictive association between the characteristics is too small to be of any consequence.

The average nonprofessional investor follows rational behavior patterns. This conclusion is reached by noting: (1) the investor knows if he understands financial statements (personal rationality); (2) generally, the more money the investor has invested the more he knows of financial statements (economic rationality); and, (3) on the average, the investors with greater knowledge of financial statements read the annual report and those with less, or insufficient knowledge, do not (information rationality).

The financial terms and concepts best understood by the average nonprofessional and professional investor are those which are most clearly defined by the label placed on them by accountants. This conclusion is drawn from the fact that respondents in both nonprofessional and professional investor categories had the least trouble with terms such as "at cost," "straight-line depreciation," and "retained earnings." On the other hand, investors had the most trouble

with terms which do not clearly define the term or concept. Examples of terms which gave investors the most trouble are: "consolidated working capital," "long-term debt," and the concept of "extraordinary earnings."

The final, and perhaps most startling, conclusion is that the average professional and nonprofessional investor does not adequately understand the scope of the independent auditor's opinion. This conclusion is drawn from the fact that the question with the highest combined index of difficulty was the question on the scope of the audit opinion.

Recommendations

The accounting profession needs to improve its ability to communicate with the average nonprofessional investor. Further, the need for improved communication is considered important enough to require the recommendation of both short-run and long-run solutions.

First, in the short-run, the accounting profession should extend the scope of the independent auditors' opinion to cover a summary section of the most informative figures contained in the financial statements. Such a summary section would be very much like the "financial highlights" now presented in many annual reports and would probably contain many of the same figures.

This recommendation has the advantage of:

1. The average nonprofessional investor would be afforded the protection of the independent auditor's professional opinion whether or not he was aware of the coverage.
2. The recommendation does not require a simplification of the formal financial statements as now presented. Therefore, the detailed statements would be available to the readers who desire that information.
3. The summary would greatly improve the accountant's communication ability by reaching those readers with a bare minimum of financial statement knowledge.

The long-run recommendation put forth here is for further research to be carried out with regard to the accountant's communication tools, and for the results of this research to be incorporated into the accountant's language. Several areas appear open where beneficial research could be carried out. These areas are the subject of the following section.

Suggestions for Further Research

The results of the research presented here indicate to the present researcher five areas where further investigation appears warranted. These areas are as follows:

First, the most important area in need of research which will aid the accountant's ability to communicate is

the area of accounting terminology. Research to isolate terms which plainly describe the results of economic events is sorely needed.

Second, the scale created by the present research measures the nonprofessional investor's elementary knowledge of financial statements. As stated previously, effective communication requires the sender and receiver of the message to have sufficient knowledge of the communication code. Also, the sender of the message should have knowledge of the receiver's ability to decode the message. Therefore, a very beneficial research area is to determine how the creators' of financial statements perception of the nonprofessional investor's knowledge of financial statements differs from the nonprofessional investor's actual knowledge of financial statements.

Third, the results of any empirical research which involves sampling cannot be, and, should not be, fully relied upon until replication of the present research obtains similar results. Therefore, replications of this research appears justified to improve the confidence that can be placed in the results obtained here.

Fourth, the coverage of the independent auditor's opinion on the fairness and consistency of financial statements is not well understood by the average nonprofessional investor. Knowledge of the opinion's scope appears basic to the statement reader's ability to properly rely on the abilities of the independent auditor. Therefore, determining

how to better inform the financial statement reader of the coverage of the auditor's opinion is a needed area of research.

Finally, the accounting profession could greatly reduce its communication problems if the financial statements could be simplified without the loss of relevant content. Therefore, future research aimed at improving accounting's ability to measure economic reality and, at the same time, simplifying the presentation of the measurement's results would be beneficial to the profession and investing public as well.

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APPENDICES

APPENDIX A

THE INITIAL QUESTIONNAIRE

APPENDIX A

THE INITIAL QUESTIONNAIRE

INSTRUCTIONS

This questionnaire is in 2 parts.

Part one is designed to gather certain data about you to help in my generalizations. Please understand that this information will be kept in the strictest confidence. At no time will any specific information about you be revealed. I hope you will answer all of the questions but feel free to omit any questions which you feel are too personal.

PART ONE

1. Age?_____years

2. Sex? [ ]Male [ ]Female

3. What level of formal education have you completed?

   [ ]Grade School [ ]2-year College
   [ ]Jr. High School [ ]4-year College
   [ ]High School [ ]Master's Degree
   [ ]Trade School [ ]Doctoral Degree

4. Are you an officer or director of a corporation? [ ]Yes [ ]No

5. Do you use financial statements as a part of your work? [ ]Yes [ ]No

6. In how many companies do you own at least one share of common stock? _____

7. Between what amounts does the total dollar value of all your common stock fall?

   [ ]$1 to $500 [ ]$5001 to $10,000
   [ ]$501 to $2000 [ ]$10,001 to $25,000
   [ ]$2001 to $5000 [ ]over $25,000

8. How many years has it been since you acquired your first common stock?_____

9. Where do you get the most information about the companies whose common stock you own? (CHOOSE ONLY ONE)

   [ ]Stockbroker
   [ ]Newspapers and magazines
   [ ]The annual report of the company
   [ ]From friends
   [ ]From fellow employees
   [ ]Other (please specify)_____

   _____

10. How often do you consult with a stock-broker or professional stock analyst?

    [ ]more than once a week
    [ ]about once a week
    [ ]about once a month
    [ ]about once every 2 or 3 months
    [ ]about twice a year
    [ ]other (please specify)_____

    _____

11. About how much time on the average do you spend reading each annual report of the companies in which you own stock?

    [ ]None (PLEASE SKIP TO QUESTION 12)
    [ ]Less than 5 minutes
    [ ]5 to 15 minutes
    [ ]15 to 30 minutes
    [ ]More than 30 minutes

    11A. Approximately what percent of this time was spent reading the financial statements included in the annual report? (CIRCLE ONE)

    0 10 20 30 40 50 60 70 80 90 100%

12. Do you ever look at a company's financial statements before deciding whether or not to buy that company's common stock?

    [ ]No
    [ ]Yes--How often do you do this?

    [ ]Always [ ]Sometimes
    [ ]Usually [ ]Rarely

13. How well do you think you understand the information contained in the financial statements of a company's annual report?

    [ ]Very well
    [ ]Above average
    [ ]Average
    [ ]Below average
    [ ]Poor
    [ ]Not at all (SKIP TO QUESTION 14)

    13A. How did you acquire this understanding? (CHOOSE MORE THAN ONE IF NEEDED.)

    [ ]Experience through investing
    [ ]Formal schooling
    [ ]Self-taught from books or pamphlets
    [ ]Through broker or other professional
    [ ]Other (please specify)_____

    _____

14. Which of these terms best describes your success in investing in common stocks?

    [ ]Very successful
    [ ]Above average success
    [ ]Average success
    [ ]Below average success
    [ ]Poor success

(Please Continue to Next Page)

PART TWO

This part contains multiple choice questions about financial statements. Each set of questions begins with an example of the financial statement section that the questions in the set are about. Some of these questions may cover areas unfamiliar to you. If so, please mark the box labeled, "I don't know" but please, check only one box per question.

I. Current Assets:

Inventories:	
Raw Materials	$25,828,766
Work in Process	14,949,075
Finished Goods	24,989,251
	$65,767,092

Note to Financial Statements

Inventories: Inventories are valued at the lower of cost (principally first-in, first-out method) or market. Inventories at June 30, 1969 of approximately $3,650,000 were determined by the last-in, first-out method.

1. The note refers to "first-in, first-out" and "last-in, first-out" methods. These refer to methods of pricing inventories:
   [ ]A. On an original cost basis.
   [ ]B. At their current retail value.
   [ ]C. At the cost of replacing the inventory.
   [ ]D. None of the above.
   [ ]E. I don't know.

2. During periods of rising prices which inventory method will normally allow the company to show the highest earnings?
   [ ]A. Last-in, First-out.
   [ ]B. First-in, First-out.
   [ ]C. Neither. Both will show the same earnings.
   [ ]D. None of the above.
   [ ]E. I don't know.

3. The relationship between the amount of inventory shown on the financial statements and reported earnings, is that when year end inventories are high, next year's earnings are expected to be:
   [ ]A. High.
   [ ]B. Low.
   [ ]C. Not directly determinable from this year's level of inventories.
   [ ]D. None of the above.
   [ ]E. I don't know.

II. Property, Plant and Equipment--At Cost:

Land	$ 776,547
Building	4,903,445
Machinery and Equipment	16,778,871
Total	$22,458,863
Less: Accumulated Depreciation (Note 1)	7,483,731
Net Property, Plant and Equipment	$14,975,132

Note to Financial Statements

Note 1: Substantially all depreciation has been provided on a straight-line basis. For income tax purposes, wherever advantageous, accelerated methods are used. Appropriate provision has been made to give effect to the deferred income taxes which may be payable in future years as a result of this procedure.

(Please Continue to Next Page)

1. To be included in the Property, Plant, and Equipment category, an item must be:
   [ ]A. Fully owned or legally leased by the company.
   [ ]B. Employed by the company regardless of who legally owns the item.
   [ ]C. Owned by the company and not used as security for a company debt.
   [ ]D. None of the above.
   [ ]E. I don't know.

2. The term "At Cost" means:
   [ ]A. The cost to replace the item if it had to be replaced.
   [ ]B. The original cost of the item at date of purchase.
   [ ]C. What it would cost you if you wanted to buy the item from the company.
   [ ]D. None of the above.
   [ ]E. I don't know.

3. "Accumulated Depreciation" shows:
   [ ]A. The amount of cash that has been accumulated to replace Buildings, Machinery, and Equipment when they are worn out.
   [ ]B. The total decrease in the value of Buildings, Machinery, and Equipment due to age or through use.
   [ ]C. The portion of the total cost of the Buildings, Machinery, and Equipment which has been expensed against past and current revenue.
   [ ]D. None of the above.
   [ ]E. I don't know.

4. The term "straight line" refers to depreciation which is:
   [ ]A. Expensed in equal installments over the expected useful life of the asset.
   [ ]B. Expensed directly from the asset account to the expense account without going through any intermediary accounts.
   [ ]C. Expensed according to paragraph 3:14 of the Uniform Commercial Code which discusses assets which decrease in value through use.
   [ ]D. None of the above.
   [ ]E. I don't know.

5. Using accelerated methods of depreciation means:
   [ ]A. Depreciation charges are higher in the early life of the item and taper off in later years.
   [ ]B. Depreciation charges begin low and increase toward the end of the item's useful years.
   [ ]C. Depreciation is taken on a straight-line basis but the asset may be depreciated for an amount greater than its cost.
   [ ]D. None of the above.
   [ ]E. I don't know.

6. Using accelerated depreciation for tax purposes has the advantage of:
   [ ]A. Allowing the company to pay taxes early and, therefore, not be bothered with them later.
   [ ]B. Allowing the company to delay the payment of taxes until later years.
   [ ]C. Being the procedure favored by the Internal Revenue Service and, therefore, lowers the probability of the company's tax return being audited.
   [ ]D. None of the above.
   [ ]E. I don't know.

(Please Continue to Next Page)

III. Long-term debt:

4 5/8% notes (Note 3)	$5,156,000
2% mortgage loan, due monthly to 1985	2,143,000
6% notes, due $180,000 annually	1,390,000
4% subordinated notes, due 1971 to 1973	314,000
	$9,003,000

Note to Financial Statements

Note 3: Long-term Debt--The 4 5/8% note agreements provide, among other things, restrictions against the payment of cash dividends or purchases of the company's common stock if consolidated working capital would be reduced below $17,000,000. In addition to quarterly principal payments of $234,000, annual contingent prepayments are required in amounts equal to one-third of consolidated net income in excess of $9,000,000.

1. Long-term debt includes:
   [ ]A. Only debts whose contract terms are lengthy and usually require an attorney's advice to interpret.
   [ ]B. Debts which must be paid on a date more than one year away.
   [ ]C. Debts used exclusively to finance long-term projects.
   [ ]D. None of the above.
   [ ]E. I don't know.

2. Which of these would be used to calculate consolidated working capital?
   [ ]A. Current Assets minus Current Liabilities.
   [ ]B. Retained Earnings minus Dividends Payable.
   [ ]C. Cash plus Short-term Securities
   [ ]D. None of the above.
   [ ]E. I don't know.

IV. Shareholders' Equity:

Common Stock, par value 16 2/3¢ per share; authorized 30,000,000 shares; issued and outstanding at Dec. 31, 1969, 20,987,444 shares	$ 3,497,907
Capital in excess of par value	42,180,088
Retained earnings	170,690,363
Total Shareholders' Equity	$216,368,358

1. Total Shareholders' Equity means:
   [ ]A. The total cash the company would bring if sold to another company.
   [ ]B. The amount left after all company debts are subtracted from the total assets listed on the Balance Sheet.
   [ ]C. The amount of cash the company has set aside to pay to common shareholders when the company goes out of business.
   [ ]D. None of the above.
   [ ]E. I don't know.

2. Retained earnings means:
   [ ]A. Company earnings which have been retained for use in the business.
   [ ]B. The amount of cash that is available for paying dividends.
   [ ]C. Earnings the government has required the company to retain to protect the rights of shareholders and creditors.
   [ ]D. None of the above.
   [ ]E. I don't know.

(Please Continue to Next Page)

3. Increasing the par value of each share of stock from 16 2/3¢ to 25¢ should:
   [ ]A. Increase the market price of each share.
   [ ]B. Increase the company's total earnings.
   [ ]C. Have no effect on the total earnings of the company and little or no effect on the market price of each share.
   [ ]D. None of the above.
   [ ]E. I don't know.

4. Retained earnings tend to increase when:
   [ ]A. The company pays dividends.
   [ ]B. The company shows a loss.
   [ ]C. The company earns a profit.
   [ ]D. None of the above.
   [ ]E. I don't know.

V. Earnings before extraordinary items. $2,128,000
Extraordinary items, net of applicable income tax. 588,000
Net earnings $2,716,000

Per share-
Earnings before extraordinary items . . . .$.50
Extraordinary items, net of tax 14
Net earnings $.64

1. "Earnings before extraordinary items" means:
   [ ]A. The normal, ordinary, recurring earnings of the company.
   [ ]B. Earnings of the company which are of no special significance to you as a stockholder.
   [ ]C. Earnings that were forecast by the company's management at the beginning of the year.
   [ ]D. None of the above.
   [ ]E. I don't know.

2. To be "extraordinary", an item must be:
   [ ]A. Unusually large or unusually small when compared to ordinary amounts shown on the earnings statement.
   [ ]B. Caused by an event significantly different from the typical or customary business operations of the company.
   [ ]C. Caused by an event requiring an unusually large amount of effort on the part of the business managers and, therefore, thought worthy of a separate category on the earnings statement.
   [ ]D. None of the above.
   [ ]E. I don't know.

3. "Earnings before extraordinary items" are:
   [ ]A. Always more than "net earnings".
   [ ]B. May be more or less than "net earnings" depending on the extraordinary items.
   [ ]C. Always less than "net earnings".
   [ ]D. None of the above.
   [ ]E. I don't know.

(Please Continue to Next Page)

4. "Net Earnings" are:
   [ ]A. The excess cash the company earned over the cash paid out as expenses.
   [ ]B. The excess of revenues earned over expenses incurred regardless of whether the cash has been received or paid out.
   [ ]C. The net change in total Retained Earnings during the past year.
   [ ]D. None of the above.
   [ ]E. I don't know.

5. "Per Share--Net Earnings" means"
   [ ]A. The Net Earnings during the year for each share of common stock or common stock equivalent outstanding.
   [ ]B. The Net Earnings during the year for each share of common and preferred stock (if any preferred stock exists).
   [ ]C. The amount each share can expect to be paid as a dividend during the next year.
   [ ]D. None of the above.
   [ ]E. I don't know.

6. When predicting future Per Share-Net Earnings one should:
   [ ]A. Use only the financial statements because they are designed to contain all needed information.
   [ ]B. Not use the financial statements because they only describe the past.
   [ ]C. Consider the financial statements as a part of the information needed for prediction.
   [ ]D. None of the above.
   [ ]E. I don't know.

VI. The Auditor's Opinion (No Example Given)

1. The independent auditor's opinion testifies, in part, that the financial statements are:
   [ ]A. Correct and contain no fraudulent items as defined by the Securities and Exchange Commission.
   [ ]B. Numerically accurate but makes no claim about the occurrence of fraud.
   [ ]C. Consistent with previous years and are in accordance with generally accepted accounting principles unless exceptions are noted.
   [ ]D. None of the above.
   [ ]E. I don't know.

2. The independent auditor's opinion covers:
   [ ]A. All parts of the annual report.
   [ ]B. Only the formal financial statements within the annual report.
   [ ]C. All comments in the annual report about company finances including the formal financial statements.
   [ ]D. None of the above.
   [ ]E. I don't know.

Thank you, again, for your time. Please place this questionnaire in the return envelope I have supplied you and mail it at your earliest convenience.

APPENDIX B

THE FINAL QUESTIONNAIRE

APPENDIX B

THE FINAL QUESTIONNAIRE

INSTRUCTIONS

This questionnaire is in 2 parts.

Part one is designed to gather certain data about you to help in my generalizations. Please understand that this information will be kept in the strictest confidence. At **no time will** any specific information about you be revealed. I **hope** you will answer **all of the** questions **but feel free to omit** any questions which **you** feel are too personal.

PART ONE

1. Age?_____years

2. Sex? [ ]Male [ ]Female

3. What level of formal education have you completed?

   [ ]Grade School [ ]2-year College
   [ ]Jr. High School [ ]4-year College
   [ ]High School [ ]Master's Degree
   [ ]Trade School [ ]Doctoral Degree

4. Do you invest in stocks or bonds as a part of your job? [ ]Yes [ ]No

5. Do you use financial statements as a part of your work? [ ]Yes [ ]No

6. In how many companies do you own at least one share of common stock? _____

7. Between what amounts does the total dollar value of all your common stock fall?

   [ ]$1 to $2000 [ ]$20,001 to $50,000
   [ ]$2001 to $10,000 [ ]$50,001 to $100,000
   [ ]$10,001 to $20,000 [ ] over $100,000

8. How many years has it been since you acquired your first common stock?_____

9. Where do you get the most information about the companies whose common stock you own? (CHOOSE ONLY ONE)

   [ ]Stockbroker
   [ ]Newspapers and magazines
   [ ]The annual report of the company
   [ ]From friends or fellow employees
   [ ]An investment advisory service
   [ ]Other (please specify)_____
   _____

10. How often do you consult with a stockbroker or professional stock analyst?

    [ ]more than once a week
    [ ]about once a week
    [ ]about once a month
    [ ]about once every 2 or three months
    [ ]once a year or less
    [ ]never

11. About how much time on the average do you spend reading each annual report of the companies in which you own stock?

    [ ]None (PLEASE SKIP TO QUESTION 12)
    [ ]Less than 5 minutes
    [ ]5 to 15 minutes
    [ ]15 to 30 minutes
    [ ]More than 30 minutes

    11A. Approximately what percent of this time was spent reading the financial statements included in the annual report? (CIRCLE ONE)

    0 10 20 30 40 50 60 70 80 90 100%

12. Do you ever look at a company's financial statements before deciding whether or not to buy that company's common stock?

    [ ]No
    [ ]Yes--How often do you do this?

    [ ]Always [ ]Sometimes
    [ ]Usually [ ]Rarely

13. How well do you think you understand the information contained in the financial statements of a company's annual report?

    [ ]Very well
    [ ]Above average
    [ ]Average
    [ ]Below average
    [ ]Poor
    [ ]Not at all (SKIP TO QUESTION 14)

    13A. How did you acquire this understanding? (CHOOSE MORE THAN ONE IF NEEDED.)

    [ ]Experience through investing
    [ ]Formal schooling
    [ ]Self-taught from books or pamphlets
    [ ]Through broker or other professional
    [ ]Other (please specify)_____
    _____

14. Which of these terms best describes your success in investing in common stocks?

    [ ]Very successful
    [ ]Above average success
    [ ]Average success
    [ ]Below average success
    [ ]Poor success

(Please Continue to Next Page)

PART TWO

This part contains multiple choice questions about financial statements. Each set of questions begins with an example of the financial statement section that the questions in the set are about. Some of these questions may cover areas unfamiliar to you. If so, please mark the box labeled, "I don't know" but please, check only one box per question.

I. Property, Plant and Equipment--At Cost:

Land	$ 776,547
Building	4,903,445
Machinery and Equipment	16,778,871
Total	$22,458,863
Less: Accumulated Depreciation (Note 1)	7,483,731
Net Property, Plant and Equipment	$14,975,132

Note to Financial Statements

Note 1: Substantially all depreciation has been provided on a straight-line basis. For income tax purposes, wherever advantageous, accelerated methods are used. Appropriate provision has been made to give effect to the deferred income taxes which may be payable in future years as a result of this procedure.

1. The term "At Cost" means:
   - [ ]A. The cost to replace the item if it had to be replaced.
   - [ ]B. The original cost of the item at date of purchase.
   - [ ]C. What it would cost you if you wanted to buy the item from the company.
   - [ ]D. None of the above.
   - [ ]E. I don't know.

2. The term "straight line" refers to depreciation which is:
   - [ ]A. Expensed in equal installments over the expected useful life of the asset.
   - [ ]B. Expensed directly from the asset account to the expense account without going through any intermediary accounts.
   - [ ]C. Expensed according to paragraph 3:14 of the Uniform Commercial Code which discussed assets which decrease in value through use.
   - [ ]D. None of the above.
   - [ ]E. I don't know.

3. Using accelerated methods of depreciation means:
   - [ ]A. Depreciation charges are higher in the early life of the item and taper off in later years.
   - [ ]B. Depreciation charges begin low and increase toward the end of the item's useful years.
   - [ ]C. Depreciation is taken on a straight-line basis but the asset may be depreciated for an amount greater than its cost.
   - [ ]D. None of the above.
   - [ ]E. I don't know.

4. Using accelerated depreciation for tax purposes has the advantage of:
   - [ ]A. Allowing the company to pay taxes early and, therefore, not be bothered with them later.
   - [ ]B. Allowing the company to delay the payment of taxes until later years.
   - [ ]C. Being the procedure favored by the Internal Revenue Service and, therefore, lowers the probability of the company's tax return being audited.
   - [ ]D. None of the above.
   - [ ]E. I don't know.

(Please Continue to Next Page)

II. Long-term debt:

4 5/8% notes (Note 3)	$5,156,000
2% mortgage loan, due monthly to 1985	2,143,000
6% notes, due $180,000 annually	1,390,000
4% subordinated notes, due 1971 to 1973	314,000
	$9,003,000

Note to Financial Statements

Note 3: Long-term Debt--The 4 5/8% note agreements provide, among other things, restrictions against the payment of cash dividends or purchases of the company's common stock if consolidated working capital would be reduced below $17,000,000. In addition to quarterly principal payments of $234,000, annual contingent prepayments are required in amounts equal to one-third of consolidated net income in excess of $9,000,000.

1. Long-term debt includes:
   [ ]A. Only debts whose contract terms are lengthy and usually require an attorney's advice to interpret.
   [ ]B. Debts which must be paid on a date more than one year away.
   [ ]C. Debts used exclusively to finance long-term projects.
   [ ]D. None of the above.
   [ ]E. I don't know.

2. Which of these would be used to calculate consolidated working capital?
   [ ]A. Current Assets minus Current Liabilities.
   [ ]B. Retained Earnings minus Dividends Payable.
   [ ]C. Cash plus Short-term Securities
   [ ]D. None of the above.
   [ ]E. I don't know.

III. Shareholders' Equity:

Common Stock, par value 16 2/3¢ per share; authorized 30,000,000 shares; issued and outstanding at Dec. 31, 1969, 20,987,444 shares	$ 3,497,907
Capital in excess of par value	42,180,088
Retained earnings	170,690,363
Total Shareholders' Equity	$216,368,358

1. Total Shareholders' Equity means:
   [ ]A. The total cash the company would bring if sold to another company.
   [ ]B. The amount left after all company debts are subtracted from the total assets listed on the Balance Sheet.
   [ ]C. The amount of cash the company has set aside to pay to common shareholders when the company goes out of business.
   [ ]D. None of the above.
   [ ]E. I don't know.

2. Retained earnings means:
   [ ]A. Company earnings which have been retained for use in the business.
   [ ]B. The amount of cash that is available for paying dividends.
   [ ]C. Earnings the government has required the company to retain to protect the rights of shareholders and creditors.
   [ ]D. None of the above.
   [ ]E. I don't know.

3. Increasing the par value of each share of stock from 16 2/3¢ to 25¢ should:
   [ ]A. Increase the market price of each share.
   [ ]B. Increase the company's total earnings.
   [ ]C. Have no effect on the total earnings of the company and little or no effect on the market price of each share.
   [ ]D. None of the above.
   [ ]E. I don't know.

(Please Continue to Next Page)

IV. Earnings before extraordinary items. $2,128,000
Extraordinary items, net of applicable
income tax 588,000
Net Earnings $2,716,000

Per share-
Earnings before extraordinary items . . . .$.50
Extraordinary items, net of tax 14
Net Earnings $.64

1. "Earnings before extraordinary items" means:
[ ]A. The normal, ordinary, recurring earnings of the company.
[ ]B. Earnings of the company which are of no special significance to you as a stockholder.
[ ]C. Earnings that were forecast by the company's management at the beginning of the year.
[ ]D. None of the above.
[ ]E. I don't know.

2. To be "extraordinary", an item must be:
[ ]A. Unusually large or unusually small when compared to ordinary amounts shown on the earnings statement.
[ ]B. Caused by an event significantly different from the typical or customary business operations of the company.
[ ]C. Caused by an event requiring an unusually large amount of effort on the part of the business managers and, therefore, thought worthy of a separate category on the earnings statement.
[ ]D. None of the above.
[ ]E. I don't know.

3. "Earnings before extraordinary items" are:
[ ]A. Always more than "net earnings".
[ ]B. May be more or less than "net earnings" depending on the extraordinary items.
[ ]C. Always less than "net earnings".
[ ]D. None of the above.
[ ]E. I don't know.

V. The Auditor's Opinion (No Example Given)
1. The independent auditor's opinion testifies, in part, that the financial statements are:
[ ]A. Correct and contain no fraudulent items as defined by the Securities and Exchange Commission.
[ ]B. Numerically accurate but makes no claim about the occurrence of fraud.
[ ]C. Consistent with previous years and are in accordance with generally accepted accounting principles unless exceptions are noted.
[ ]D. None of the above.
[ ]E. I don't know.

2. The independent auditor's opinion covers"
[ ]A. All parts of the annual report.
[ ]B. Only the formal financial statements within the annual report.
[ ]C. All comments in the annual report about company finances including the formal financial statements.
[ ]D. None of the above.
[ ]E. I don't know.

Thank you, again, for your time. Please place this questionnaire in the return envelope I have supplied you and mail it at your earliest convenience.

APPENDIX C

LETTER SENT WITH FIRST MAILING

MICHIGAN STATE UNIVERSITY EAST LANSING · MICHIGAN 48823

GRADUATE SCHOOL OF BUSINESS ADMINISTRATION
DEPARTMENT OF ACCOUNTING & FINANCIAL ADMINISTRATION · EPPLEY CENTER

February 23, 1970

I am a graduate student at Michigan State University working on a Ph.D. degree in accounting. One of the requirements of this degree is to complete a research project for my Ph.D. thesis. Enclosed in this envelope is a questionnaire which I am using as the basis for my research project. The project is designed to obtain a measure of financial statement knowledge currently held by a wide variety of investors. To do this, I am asking a small sample of persons from a large cross-section of individuals to answer my questions. You are a member of my sample, and I need your help.

Please assist me by completing the questionnaire enclosed with this letter. The questionnaire is in two parts, but it is short and easy to answer. I have supplied a stamped, addressed, return envelope to make it easier for you to mail the questionnaire to me when you have completed it.

I am not trying to sell anything. Your response is vital to my research and my ability to graduate hinges on receiving a response from you.

I greatly appreciate your time and effort.

Yours very truly,

G. Michael Crooch
Ph.D. Candidate

APPENDIX D

LETTER SENT WITH SECOND MAILING

MICHIGAN STATE UNIVERSITY EAST LANSING · MICHIGAN 48823

GRADUATE SCHOOL OF BUSINESS ADMINISTRATION
DEPARTMENT OF ACCOUNTING & FINANCIAL ADMINISTRATION · EPPLEY CENTER

March 9, 1970

Two weeks ago I mailed the enclosed questionnaire to you and several other stockholders requesting that it be returned to me so that I may complete my Ph.D. thesis. Since that time many of the questionnaires have been returned. However, some questionnaire recipients have not yet responded.

If you are among those who have not yet responded I would greatly appreciate it if you would take a few minutes to complete the questionnaire and drop it in the mail. If you have already mailed the questionnaire please ignore this second request and accept my thanks for your cooperation.

As I said in my first letter, my graduation depends on a response from all persons in my sample. Let me emphasize that this is an academic research effort and your response to the questionnaire will be kept in the strictest confidence. After I receive your response I will not contact you again.

I greatly appreciate your help.

Yours very truly,

G. Michael Crooch
Ph.D. Candidate

APPENDIX E

LETTER SENT WITH FOLLOW-UP

MICHIGAN STATE UNIVERSITY EAST LANSING · MICHIGAN 48823

GRADUATE SCHOOL OF BUSINESS ADMINISTRATION
DEPARTMENT OF ACCOUNTING & FINANCIAL ADMINISTRATION · EPPLEY CENTER

May 5, 1970

Dear Sir:

Within the last four weeks I have mailed two copies of my questionnaire on investor understanding of financial statements to you and several other potential respondents. I am happy to say the response to these requests was very good. However, approximately one-third of the questionnaires have not been returned. Since I would like to receive the highest possible response rate (the higher the response rate the more valid my study), I have decided to phone each person in my sample. I realize that this means I will talk to those who have responded as well as those who have not. However, I feel the potential for improvement in the validity of my research findings to be worth this extra effort. I hope that this is not too inconvenient for you.

I will be phoning you on or immediately after Monday, May 10th, to see if you will answer my questions. If you are among those who have not responded, our conversation will be greatly aided if you would keep the enclosed questionnaire handy so you can refer to it as we talk.

Thank you for your time. I am looking forward to a brief conversation with each of you soon.

Yours very truly,

G. Michael Crooch

Enclosure

APPENDIX F

FREQUENCY OF RESPONSE BY AGE, NUMBER OF COMPANIES OWNED, AND YEARS SINCE FIRST ACQUIRING STOCK FOR ALL RESPONDENTS

TABLE A

FREQUENCY OF RESPONSE AND AVERAGE SCORE ON THE FINANCIAL STATEMENT KNOWLEDGE SCALE BY AGE FOR ALL RESPONDENTS

Age	Frequency	Mean Scale Score	Age	Frequency	Mean Scale Score
30	3	8.33	57	18	10.38
32	1	13.00	58	27	7.74
34	2	14.00	59	17	9.00
35	9	13.33	60	27	11.66
36	13	10.46	61	14	10.57
37	9	12.00	62	11	7.54
38	3	11.66	63	12	7.83
39	11	10.63	64	9	9.66
40	8	9.75	65	22	9.40
41	8	10.75	66	11	10.18
42	12	9.41	67	9	9.11
43	20	5.35	68	6	8.16
44	12	8.16	69	3	9.00
45	6	10.33	70	11	4.90
46	14	10.42	71	4	9.50
47	18	9.00	72	2	9.00
48	17	10.58	73	2	12.00
49	12	8.41	74	5	7.40
50	19	9.57	75	4	10.75
51	12	9.91	76	2	6.50
52	17	10.17	77	4	3.75
53	11	9.36	78	1	0.00
54	30	9.76	79	1	2.00
55	14	8.85	81	1	9.00
56	37	6.75	82	1	9.00

TABLE B

FREQUENCY OF RESPONSE AND AVERAGE SCORE ON THE FINANCIAL STATEMENT KNOWLEDGE SCALE BY NUMBER OF COMPANIES OWNED FOR ALL RESPONDENTS

Number of Companies	Frequency	Mean Scale Score
1	94	6.64
2	59	8.52
3	42	8.73
4	37	10.18
5	37	10.43
6	38	10.92
7	20	6.90
8	35	11.34
9	5	9.20
10	37	10.78
11	13	5.30
12	17	9.82
13	1	3.00
14	6	12.16
15	14	9.07
16	2	11.00
17	3	7.33
18	2	10.00
20	18	9.44
21	9	2.44
23	2	13.00
24	1	6.00
25	19	12.15
27	2	12.00
29	1	11.00
30	5	10.20
33	1	0.00
35	2	13.50
38	1	9.00
40	9	11.88
50	5	11.40
60	1	13.00
99	2	12.50

TABLE C

FREQUENCY OF RESPONSE AND AVERAGE SCORE ON THE FINANCIAL STATEMENT KNOWLEDGE SCALE BY NUMBER OF YEARS SINCE FIRST ACQUIRING STOCK FOR ALL RESPONDENTS

Number of Years Since First Acquiring Stock	Frequency	Mean Scale Score	Number of Years Since First Acquiring Stock	Frequency	Mean Scale Score
1	7	7.00	25	62	9.53
2	10	7.60	26	9	4.66
3	8	9.12	27	2	12.50
4	26	4.65	28	4	8.75
5	25	9.00	29	2	12.50
6	10	8.50	30	15	10.86
7	3	8.33	32	3	8.33
8	22	8.63	33	2	11.50
9	6	11.16	34	2	11.00
10	66	8.40	35	10	11.70
11	6	9.33	36	1	0.00
12	15	7.86	37	1	11.00
13	8	10.12	38	4	11.25
14	18	11.27	39	2	7.00
15	49	10.22	40	26	10.34
16	3	12.66	41	2	10.00
17	6	9.16	43	2	8.00
18	9	10.88	44	2	11.50
19	5	8.20	47	1	8.00
20	57	8.87	50	15	9.73
21	1	11.00	51	2	7.50
22	1	11.00	57	1	12.00
23	4	8.50	60	1	4.00
24	9	8.77	65	1	13.00