THE DEVELOPMENT OF A MODEL TO ASSESS THE ORGANIZATIONAL VALUE OF MANAGEMENT TRAINING AND DEVELOPMENT PROGRAMS: AN EMPIRICAL ANALYSIS OF EIGHTEEN VARIABLES

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PREFACE

This investigation is concerned with the development of an assessment model to determine the organizational value of management training and development programs. The model is developed using 18 variables to identify quantitative and non-quantitative organizational values obtained from these training programs. Five different analytical methodologies are used to establish an efficient assessment model.

The continuous effort, guidance, and support of Dr. Earl J. Ferguson, major adviser, for this research, is greatly appreciated. Appreciation is also expressed to other members of the committee, Dr. Thomas B. Auer, Dr. J. R. Norton, and Dr. James E. Shamblin, for the valuable guidance and suggestions made during this research.

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CHAPTER I

OVERVIEW AND PROBLEM IDENTIFICATION

Introduction

During the past few decades vast sums of money, time, and other resources have been spent by both the public and private sectors of the United States in management training and development programs. Training of all levels of employees in the United States has been gaining momentum since the days of Frederick Taylor, Father of Scientific Management. World War II and the following post-war periods have seen greatly expanded training and development efforts by industry and government. Patrick Sullivan's dissertation (54) "An Analysis of Management Training Program Evaluation Practices in American Industry," completed in 1970, identifies the offering of management training courses in American industrial concerns as a post-World War II development, where the growth has been explosive. He indicates that several billion dollars and millions of man hours are expended annually on management training.

Training needs are being accelerated by the growing complexity of technology; the rapid expansion of knowledge and scientific discoveries; increasing size, complexity and diversity of organizations and their activities; the expansion of organizational environments from local to regional, national, and international; the ever-increasing intertwining influence of federal, state, and local governments, unions and concerned groups into the private sector and the private sector into these

organizations; better educated employees with ever-rising expectations and improving life styles, ad infinitum.

Problem Identification

There is a growing awareness of the need for more efficient use of governmental resources in providing the varied types of public services necessary to a dynamic growing society. This is particularly true of state governments where increased tax revenue is extremely difficult to obtain from citizens and legislators who feel that more resources will only lead to continued under-application of those resources to overall state governmental objectives.

One of the most critical and valuable resources in state agencies is its manpower, which in many cases is too underdeveloped to fully handle the functions necessary for effective and efficient operation of state government. Private industry has long used formal training and development programs to insure that competent personnel will be available to meet current and future demands for managerial skills. Until recently, however, state governments and agencies have given little attention to the potential to be realized from human resource development. There are several reasons for this, the primary one being the lack of real accountability for the use or misuse of resources expended in providing public services. In the past, with a monopolistic environment and a captive customer, the citizen, the competitive effect that the market place imposes on the private sector typically did not directly impact on state governments. If more revenues were needed, they were obtained from the citizens through additional taxation.

It is now becoming much more difficult to obtain revenues to

provide additional or expanded services. Before additional taxation is imposed, customers or consumers of the services and taxpayers feel that services should be provided using the same criteria and concepts that governs the operation of firms competing in the marketplace. They feel the same managerial and business skills that make for a successful private sector must be applied to the handling of governmental resources in providing the necessary public services.

Some state governments and agencies have recognized the need for human resource development and have undertaken a systematic approach to needs identification and the education, training, and development of managerial personnel to meet present and future needs.

In 1967, the Governor of the State of Tennessee issued a State Employee Training Policy committing the State Government to a philosophy providing the highest quality of necessary services to the people of the State in the most efficient and economical manner (21). To do this would require the availability of competent personnel at all levels to carry out the changing and complex functions brought about by current and future conditions.

The State of Tennessee, having recognized this problem, in cooperation with The University of Tennessee, has undertaken a systematic approach to the managerial, technical, and specialized training necessary to meet present and future governmental needs. The State has committed itself to the development of its best resource, the human one. Those working in or who have potential for managerial and other positions will continually be developed to provide the best route for overall optimization of the use of resources under the control of state government. A primary goal is to develop and retain career managers

and others who will have the expertise to properly perform their function and the capacity to move into more responsible positions.

One of the key programs evolving from this systematic effort was the Public Service Management Institute (PSMI), a program geared toward management/executive education, training, and development. The Public Service Management Institute program was designed to include the top five levels of state management, composed of some 1500 potential participants, and be the basic course for future state managers as well as provide the background for further specialized courses.

Need for the Study

The Public Service Management Institute, a basic 120-hour program, has been implemented on a large scale to provide basic education and training of present and future managers. Approximately 250 of the estimated 1500 potential candidates have enrolled in the Public Service Management Institute program.

It is timely to evaluate the Public Service Management Institute program to determine its organizational value. This will be accomplished through a review of participant application of concepts, techniques, or skills acquired as a result of Public Service Management Institute experiences, organizational resource savings, increased salaries and taxes paid, job satisfaction indexes, and other factors which may help identify the organizational value of the Public Service Management Institute.

A review of the literature shows most evaluations of management development programs tend to evalute opinions or attitudes only without also pursuing the economic value from such programs. Sullivan's (54)

research indicates that although billions of dollars are spent annually, no completely satisfactory method exists by which to determine if a favorable return is being realized and that this evaluation problem has existed for years. His dissertation included an in-depth analysis of the training literature to develop an understanding of evaluation theory, principles, and techniques; analysis of numerous case examples of attempted management training program evaluations to develop an understanding of what is possible in practice; and a field survey to secure direct information concerning actual evaluation practice in industry. His conclusions, as of 1970, were (54):

(a) The ultimate objectives of management training is improved dollar performance, but the direct relationship between training and improved dollar performance is difficult to measure because many factors other than training influence dollar performance of the firm.

(b) A thorough management training evaluation should be broad in scope and make use of multiple measures.

(c) Management training evaluation in industry tends to be superficial and subjective.

(d) Evaluation attempts in industry are narrow in scope and limited in methodology with a substantial gap between evaluation theory and practice.

(e) The top criterion used in management training evaluation is change of performance on the job, which is too narrow.

(f) Some of the main reasons for the poor state of training evaluation are: responsible officials lack the know-how; training officers must evaluate their own programs; and

the difficulty in gaining the interest, involvement, and support of top management.

(g) Training officials are dissatisfied with their evaluation efforts and their ability to determine return on investment in training.

Other studies cite similar conclusions as to the state of the art in management training and development evaluation.

This study combines both the economic value and participant job oriented attitudes into one research instrument which will determine the organizational value placed on the Public Service Management Institute program. An interesting concept seems to be evolving through human resource accounting techniques now being developed by Bowers (37) and Likert (38), whereby they will attempt to place quantitative values on such organizational functions as group processes, satisfaction and performance, thus tying changes in these and other features to productivity.

The literature shows nothing comparable to the scope of this study in either government or industry, although some studies in this general area have been made.

The Bureau of Training, U. S. Civil Service Commission, published in 1968, a 93-page document entitled, "A Follow Up Study of the Three Week Residential Seminar in PPBS," in which they attempted to evaluate the impact of the program (57). Ten basic questions, the answers to which would be crucial for deciding the continuation of the course, were asked in their survey. The results indicated satisfaction with the program; that the seminar generally succeeded in giving participants an understanding of the theoretical concepts underlying planning -

programming - budgeting; that there was a widespread attitude change by former participants concerning outputs, cost, alternatives, and objectives; that tools and techniques had been put to use. This was an after-the-fact questionnaire survey which manually tabulated and ranked percent of responses by category. Nothing approaching scientific methodology or sophistication was used in questionnaire design and evaluation; however, the Chi-square method was used to test the statistical significance of differences found between averaged responses from different groups. Most data was shown as manually tabulated average response by category.

The preceding discussion identifies the problem and need for this type research. A more comprehensive investigation into the state of the art for the evaluation of management training and development programs is included in Chapter II.

The research design, mathematical model, and hypotheses to be tested, and other evaluative methodology are explained in Chapter III.

CHAPTER II

REVIEW OF THE LITERATURE

Background

Training and development is as old as man's first primitive family groupings. Early man was concerned with survival which, in all probability, required specialization in hunting, food gathering, defense, care of children, and eventually those activities necessary for more normal societies to evolve. As families merged into more complex organizations, greater varieties of specialization became necessary for the efficiency and effectiveness of the society.

In an early writing, Plato, in Book II of The Republic, develops the idea of specialization which later proves to be the essence of industrial engineering and productive efficiency (49). Plato discusses specialization, pointing out that cities come into existence because man is not self-sufficient while having many basic survival needs. Different persons of differing needs and abilities are brought together in one dwelling place as partners and helpers. Needs for food, housing, clothing create the demand for farmers, builders, weavers, shoemakers, toolmakers, merchants, traders, etc. Plato explores the idea that one man can work better at one craft or trade than many. More things of one type can be produced or services performed when one man works at the thing which suits his nature or for which he is trained. As cities expand in complexity, buying and selling goods and services expand from

local to regional and national markets, thus greater diversities of skills and knowledge are required. As technologies improve, populations expand, supplies and demands for goods and services increase, more coordinative or mangerial talent becomes necessary (49).

Adam Smith, in his Inquiry into the Nature and Causes of the Wealth of Nations, further explores the division of labour and specialization, as does Charles Babbage in his book, On the Economy of Machinery and Manufactures (49).

These early writings provide the basic philosophy and concepts for the industrial revolution and the evolving industrial nations of the world. One of the underlying themes through these writings is the concept of specialization, and training and development of human resources to efficiently and effectively use other resources to achieve production, goods and services, objectives.

Frederick Taylor, Henry Metcalf, Henry Fayole and other pioneers were greatly concerned with all aspects, efficiency and effectiveness, of organizational endeavors whether manufacturing, distribution or service oriented. Taylor in his book, Scientific Management, defines scientific management by stating:

> It may in essence be said in the present state of industry to involve a complete mental revolution, both on the part of the management and of the men. It is a complete change in the mental attitude of both sides toward their respective duties and toward their opponents. That is what constitutes Scientific Management (49, p. 12).

Taylor felt that there were things that could best be done by management and other things by the worker. He stated four Principles of Scientific Management which includes management's responsibility for proper methods, procedures, job and work design, the scientific selection and development of employees, the bringing of the scientifically selected

worker and the science together, and finally the deliberate division of work into what management must do and what the worker must do (49).

Although Taylor and the early pioneers were more concerned with manufacturing type enterprises than service or governmental, their concepts have proven valid for all types of organizations. The United States has long been a world leader in productive efficiency and effectiveness due to the application of these and similar principles. They strongly believed in proper selection, training, and development of human resources to facilitate optimal achievement of organizational objectives.

Barnard (3, p. 4), in his Functions of the Executive, defines formal organization as "that kind of cooperation among men that is conscious, deliberate, purposeful". He identifies the executive process as:

> ... even when narrowed to the aspect of effectiveness of organization and the technologies of organization activity, is one of integration of the whole, of finding the effective balance between the local and the broad considerations, between the general and specific requirements (3, p. 238).

From this, one can infer that the executive, manager, or coordinator is one who must possess skills above that of the technician or worker and that these skills can be obtained through experience, education, and development.

Barnard (3, p. 240) further identifies an organization as:

> ... a system of cooperative human activities the functions of which are (a) the creation, (b) the transformation, and (c) the exchange of utilities. It is able to accomplish these functions by creating a cooperative system, of which the organization is both a nucleus and a subsidiary system, which has physical systems, personal systems, and social systems ... accordingly, from this viewpoint of the creation, transformation and exchange of utilities, the cooperative system

> embrances four different kinds of economies distinguished as (a) material economy, (b) social economy, (c) the individual economies, and (d) the organizational economies.

Barnard discusses the need for each of these economies and the resultant organizational equilibrium where satisfactory exchange of utilities between all contributors results in continuation and growth of the organization. He further states that:

> There is no science of organization or of cooperative systems ... however, it is well to be quite clear as to the significance of a science in its relation to the arts. It is the function of the arts to accomplish concrete ends, effect results, produce situations, that would not come about without deliberate effort to secure them. The arts must be mastered and applied by those who deal in the concrete and for the future. The function of the science on the other hand is to explain the phenomena, the events, the situations of the past (5, pp. 290-291).

Management, then, is an art. It must accomplish concrete ends, effect results, produce situations that would not come about without deliberate effort to secure them. For the manager to perform in the necessary manner requires know-how, behavioral knowledge, technological experience and such that can be acquired through training and development. Barnard (3, p. 296) feels that

> the expansion of cooperation and the development of the individual are mutually dependent realities, and that a due proportion or balance between them is a necessary condition of human welfare.

The development of the individual thus is the key to successful cooperative, organizational efforts. Formal development programs attempt to facilitate individual development.

Management Development Today

Peter Drucker (20, pp. 3-4) has these comments on management:

> The emergence of management as an essential, a distinct and a leading institution is a pivotal event in social history.

> Rarely, if ever, has a new basic institution, a new leading group, emerged as fast as had management since the turn of this century. Rarely in human history has a new institution proven indispensable so quickly; and even less often has a new institution arrived with so little opposition, so little disturbance, so little controversy.

Management is the basic integrating process that permits continual organized efforts. This need arises out of the scarcity of resources to satisfy human wants. The success of man's striving for a better lifestyle depends heavily on one's ability to develop and apply the skills of management. These managerial skills are universal processes required for all types of organizations and organized efforts particularly for purposive, complex business and governmental operations.

Current statistics indicate there are more than 83,000,000 people in the work force. These people operate machines, package goods, program computers, perform services and such for a population of over 208,000,000 people. None of these individuals were born possessing the abilities, skills, knowledge, experience or attitudes necessary to perform the functions required to manage an organization, or produce the goods and services used by an ever-increasing population. To perform these functions successfully requires a great deal of individual development (42).

Training and development has progressed in meaning far beyond the early emphasis on "drill" motor skill development and concentration on lower skill occupation to the inculcation of elaborate administrative skills, development of a complex technical knowledge and the development of attitudes toward intricate and controversial social issues (42).

In 1971, Campbell (11) completed a review of personnel training and development literature for the previous five-year period. He found that

> ... by and large, the training and development literature is voluminous, non-empirical, nontheoretical, poorly written, and dull (11, p. 565)*

He indicates that the literature is "faddish to an extreme", centering around the introduction of new techniques which follow a pattern of developing a large group of advocates who describe a few successful applications, which in turn, ~~sparks~~ additional advocates to use and modify the technique. A few empirical studies may be made to indicate the method's feasibility which, in turn, brings on the inevitable backlash of criticism and attempt to discredit the method, all of which generally takes place in the absence of data (11). Campbell also finds cyclical articles (prototype papers) that appear in the literature at regular intervals admonishing people to evaluate the training effort, insure that training is adequately planned and systematic, and that training must have the support of top management. He estimates that there are 5 to 10 of these basic types which say the same things repeatedly, in almost the same language (11).

In his article, Campbell (11) identifies and discusses the primary historical foundation of training in organization, the "learning principles" as espoused by such textbook authors as Blum and Naylor, Bass and Vaughn, and in the periodicals by Hallestein and McCord. He also discusses Gagne's paper which points out the secondary importance of principles in training and the suggestion that other considerations are much more powerful. Gagne's paper generally states that the basic principles of training design should consist of: (a) identifying

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*This 28-page publication is a funded research report on training and development practices and evaluation methodologies as reported in the literature for the previous five-year period.

the task components that make up the desired performance (b) the incorporation of these tasks into the training program and (c) the arranging of the learning of these components into the optimal sequence for transfer to total performance (11). This approach places the emphasis on what is to be learned and what the substantive content of training or development experience should be. Unfortunately, Gagne's concepts have stimulated very little interest or activity among people interested in organizational training and development (11).

Campbell's (11) article discusses literature related to attitude and motivation theory in some detail indicating there is a lack of knowledge concerning the link between attitude change and behavior. He finds that the effects of reinforcement on learning may be mediated by a process of goal setting, that is, unless the learner changes his goals in the training situation, reinforcement such as knowledge of results, money, or recognition may have no effect. The literature suggests that adopting specific goals rather than a "do your best" approach results in a greater effort and perhaps better response acquisition. The studies cited relate mostly to manual skills, however, the important point was made that performance is enhanced because in the process of setting a goal the individual learns what he is supposed to do, bringing order to a previously ambiguous situation.

In addition, literature relating to behavior modification, individual differences and general systems theory, self-paced instruction, computer aided instruction, and other new techniques is discussed, indicating varying degrees of success. Systems theory has a good deal

to offer the training practitioner as well as suggesting fertile areas for research.

Evaluation Methodology

Belasco (5) indicates that the essential question is not "Should we evaluate?, but rather, How and by whom should the evaluation be conducted?" Evaluation actually takes place, formally or informally, most often on a haphazard basis whether one likes it or not. Too often evaluation efforts are a last ditch effort for program or organizational survival undertaken by training directors because of pressure from the top to justify resources expended in such programs. For those who lose the battle, the lessons are clear, have systematic methods built into the program capable of providing evaluation results in the best organizational defense success in dollars and cents. Few programs have this although it is also a potent weapon for obtaining financial support for additional programs. Belasco enumerates the benefits of evaluation for management: (a) to pinpoint needs, (b) as a diagnostic tool for organizational analysis, (c) to report comparative effectiveness of different change techniques and instructors, (d) to record the results of change, (e) to suggest methods to improve the effectiveness of change efforts.

Rizzo (50) suggests that there are strong indications that the right to question the effectiveness of training and development is seldom exercised. Voluminous training is being conducted but evaluation seems conspicuous by its absence. Some organizations expect proof that development pays, while others feel that development is intrinsically good, thus, justifying their investment.

The question, "What does evaluation involve?" requires a look at some of the antecedents to a development program as well as the efforts themselves. Rizzo (50, p. 82) suggests the evaluation of training programs as follows:

> Typically the organization recognizes the need for development: problems may become apparent; planning could reveal gaps to be filled or goals to be obtained; research or analysis might lay bare some glaring weaknesses; and so on. Whatever the source, a commitment to development is made. The organization may set out to systematically determine specific aspects of its needs in relation to its goals. From this the program takes shape. Goals are defined; desired changes are specified; groups to be trained are identified. Training methods are selected. Plans regarding timing, coordination and expenditure are made. Consideration is given to methods and criteria to be used in the evaluation of the development effort.

This is a typical development setting where needs and goals are to be met through systematic efforts to bring about change. Program evaluation requires the definition and measurement of criteria to be used in evaluation and the experimental design. The purpose of a good design is to be able to demonstrate changes and to reasonably attribute these changes to the development effort (50).

Ferguson (22) suggests the use of Kirkpatrick's model for training research. This model suggests four measurements: (1) participant reaction, or how well they liked the program; (2) learning, or the extent to which the contents were assimilated; (3) behavior, or the changes in job behavior; and (4) results, or the changes in organizational variables such as costs, productivity, and turnover. In reality, the article only dealt with participant reaction.

Catalanello and Kirkpatrick (14) surveyed 154 firms to determine the extent to which organizations that offer human relations training programs approach evaluation from each of the Kirkpatrick's four

previously mentioned vantage points. They found that 77% of the responding organizations assessed their programs in terms of trainee reaction; 50% attempted to measure learning; 54% studied changes in on-the-job behavior; and 45% examined results. The authors concluded that the evaluation state of the art is still in its infancy.

Belasco and Trice (6) evaluated the training impact on 258 supervisors from all organizational levels of large organizations in upstate New York using a Soloman-four group evaluation design. Their results show significant increase in knowledge, but little significant difference in attitude or ability to take constructive action based on the six two-hour session program. What they did find was (6):

(1) The changes associated with training alone are small.

(2) Training serves many unintended ceremonial functions.

(3) The administration of questionnaires before training "opens up" the supervisor and makes him more receptive to the training material.

(4) Testing is a potent change agent independent of training.

(5) One way to improve the probability of change associated with training is through the selection of individuals for training on the basis of the match between their predispositions and the demands of training.

Follow-up interviews indicate the secondary importance, from the supervisor's point of view, of training. Of primary importance to the supervisor was the opportunity to share problems with others in similar situations, the fact that the organization cared enough about their problems to offer the training, the personal recognition and attention, and the reinforcements of their supervisory role and the importance of their jobs (6).

In Campbell's study (11), Weiss and Rein challenge the usefulness of the experimental and quasi-experimental approach in complex field research, management training results, on the grounds that it is difficult to select satisfactory criteria, the situation is essentially uncontrolled, treatments are not standardized, and most experimental designs are too limited in the information they can produce. As alternatives, they suggest process-oriented qualitative research, historical research, and case analysis.

Campbell et al. (12) summarize much of the management development research performed during the 1950's and 1960's in the following table.

TABLE I

CLASSIFICATION OF MANAGEMENT DEVELOPMENT RESEARCH STUDIES BY CONTENT AREA, TYPE OF CRITERIA, AND DEGREE OF EXPERIMENTAL CONTROL

	External Criteria		Internal Criteria		
	Some Controls	Few Controls	Some Controls	Few Controls	Total
General Management Programs	2	1	8	5	16
General Human Relations Programs	-	3	10	6	19
Problem Solving and Decision Making	-	1	3	-	4
T-Groups and Laboratory Education	6	3	8	9	26
Specialty Programs	5	-	3	-	8
TOTAL	13	8	32	20	73

Campbell et al. (12) indicates that internal criteria are outcome measures linked directly to the training content and assessed during or immediately after the learning experience. Attitude measures, achievement tests, in-basket performance, and opinion questionnaires are examples. External criteria was designed to assess behavior changes in the organizational role. "Some" control means the inclusion of a control or comparison group. "Few" controls are defined as no control group but a pre- and post-measure for the trained group.

As can be seen from the table, the majority of studies used internal criterion measures; however, in over 20 years of research, only 21 studies used external criteria of behavior changes. Only 13 of these 21 were what could be loosely described as controlled studies and 9 of the 13 controlled studies produced statistically significant differences on a major criterion variable. Campbell et al. (12) suggest from this that management development is not a flourishing research area. The authors conclude from their review of 20 years of research that:

1. Approximately 80 percent of the 35 studies in General Management and Human Relations Categories produced significant results, but over one-half of them used one particular kind of criterion measure, namely, an attitude measure of "employee centeredness" or "consideration" which is an overly narrow research view of management development.
2. There has been more research on T-group training and laboratory education than any other specific area. There is evidence that T-groups produce behavior changes in the work role for about 20-25 percent of all participants.

3. Only a very few studies have been made of attempts to teach problem solving and decision making skills and the results have been largely negative.
4. Studies comparing the relative effectiveness of two or more methods for achieving the same goal, or evaluating treatment interaction with individual differences are too few to make any generalizations. Empirical research deals with only a very few of many possible methods.
5. In terms of methodological characteristics, there is an almost exclusive reliance on statistical significance as a sign of changes to be interpreted. Almost no studies try to link internal criterion changes with external criterion changes. No studies attempted to deal specifically with the effect of organizational structure or climate on training activities.

General Research in Management Training

Robert House (28) performed a study to find out student reaction to a leader-centered versus student centered methods of training in a 4-week, 160-hour management development program. The results show no clear superiority of either method for purposes of gaining participants' enthusiasm or holding their attention.

Vera Kohn (35) reports on a study designed to develop and test the validity of a research instrument measuring (a) participants' feelings about management development programs, (b) explore the relationship between feelings about selected aspects of the learning situation and satisfaction at outcome, (c) determine whether "correlates"

of satisfaction vary with format of the program. This research was carried out at two of the American Management Association workshop seminars, one based on the discussion method, the other on the lecture method. Some two thousand participants, 1000 in each group; were given questionnaires at the end of each session. This data was analyzed using multiple regression analysis. Data analysis shows that the most important contributors to satisfaction at outcome were (35):

(1) subject matter that has practical value (both meeting types)

(2) balance of backgrounds (experience, organizational level, company size, type of business) to assure meaningful communication among the learners (workshop seminar only)

(3) opportunity for learning participation (orientation seminar only)

The research indicates that "correlates" of satisfaction were found to vary with program format.

✓ Kohn and Parker (36) found significant attitude changes toward various aspects of the managerial role due to management development programs. Moffie and Calhoun (44) found that trainees considered a training course in problem solving and decision making, given three levels of management - 50 managers in a 20-hour course, worthwhile and applicable to their work, although the program did not result in significant improvement in scores on test devices used nor did observational data reveal any substantial change.

✓ Baum and Sorensen (4) report on the feasibility of using distribution of influence as a measure of change brought about by supervisory training. Partial results indicate total influence of the department was seen as increasing as a result of the training, subordinates were

perceived as gaining influence, participants viewed their own influence as constant while subordinates perceived it as decreasing.

Blake and Mouton (7) report on their study relating to beliefs about supervisory practices as held by managers and union members. After a one-week Managerial Grid Seminar, a forced choice questionnaire - given before and after - showed significant differences in beliefs between management and union personnel as to what constitutes sound supervision, both union and management attitudes changed toward increase endorsement of a style of supervision emphasizing production, and management's attitude changed more than the union members.

House and Tosi (29) report on an experiment designed to test the importance of climate to the effectiveness of a management development program and to determine the relationship between pre-training characteristics and change resulting from the program. Scaled questionnaires were administered prior to and up to 18 months after training to experimental and control groups. The findings showed that the training did not result in greater gross changes in the trained group than in the untrained group, suggesting that while compatible climate is a necessary condition, it is not a sufficient condition for the success of a management development effort. Significant differences were noted between the trained and untrained groups with respect to pre-training characteristics. Data indicated that the persons most likely to change their perceptions and behavior are those satisfied with their positions, feel relatively secure in their jobs, and perceive themselves as having a relatively high amount of authority. They conclude that compatible climate plus participant characteristics constitute a "sufficient" condition for change.

Baum and Sorensen (4) measured degrees of change in the distribution of influence between supervisors and clerical employees, as conceived by the participants, before and after attending a supervisory human relations program, and the consequences on the effectiveness of the organization. Their investigation was predicated on the work of Likert, Tannenbaum and others who investigated the role of influence in effective organization. Questionnaires were distributed to 14 supervisors participating in the program and to their superiors and subordinates before and three months after the program. The degree of influence was indicated by checking one of five statements ranging from "little or no influence" to "a very great deal of influence". Before and after data was plotted graphically reflecting changes in influence patterns. The authors, from observation of graphical data, concluded that there were changes in influence patterns for individuals and the organization.

Bolar (8) reviewed various research studies conducted by such authors as Miles, Argyris, Boyd and Ellis, Clark and Culberson, Stogdill and Coors, Buchanan and Brunsletter, and Schein and Bennis with the conclusion that there is reliability in and justification for using opinion as a base of evaluation. The opinions of the trainee, his peers, his subordinates, his superiors, and other observations by trainees, researchers, or trainers are all sources of information in terms of change the training has accomplished. The reliability of these opinions has been investigated by Andrews in the Ohio State Harvester study and found to be limited by the assumptions made about human relations both during training and after (8). The Harvester study casts doubt on the adequacy of a questionnaire taken immediately at the close

of a training program, on the validity of trying to decide for participants what the principles of sound human relations are and on the illusory effect of worthwhile acceptance. Opinions and observations are limited to the extent there are limitations in the experimental design, conditions which seek to regulate any variety of bias.

Livingston (41) cites Likert's concept of human resouce accounting as a breakthrough in tying training to improve human resources to capital investment or something to be depreciated over long periods of time. His argument is that training costs do not apply to any one profit period but are distributed over the period of time that the training is expected to influence corporate income. Under this concept, greater funds can be allocated to a specific training activity to achieve greatly increased effectiveness without jeopardizing that year's profits and dividends to the stockholder.

An article by Alves and Hardy (1) describes an attempt to evaluate supervisory training in Los Angeles County via a survey questionnaire. Survey data was converted to percentages and these used for comparison among such variables as understanding, atmosphere, placement satisfaction, and dissatisfaction. Little approaching scientific methodology other than for an experimental and control group was used for the study. The group having had the training appear to have more knowledge pertaining to training topics than the group which did not participate in training.

Jack (32), in an award-winning (Research Committee of Federation) article, reports on the results of a two-week seminar for upper-level management. Survey data was gathered by questionnaires from several groups of managers from 10 to 25 months after the groups had

participated. The purpose was to elicit feelings and attitudes of the managers and to compare those of participants and non-participants. Respondents were asked to consider a list of three major factors affecting his position in the three areas of (a) Responsibility, (b) Communication, (c) Authority; and in a three-year change comparison of these to identify: Increase, No Change, or Decrease. Also included were questions framed within Maslow's Security, Social, Esteem, Autonomy, and Self-Actualization categories. Maslow's categories were responded to as need fulfillment, need satisfaction, need importance, and need fulfillment change. This study reproduced the same general order of ranking of needs produced by Haire, Ghiselli and Porter, which used identical methodology, in a study of 464 United States managers. The authors' conclusions are that management attitudes are not changed by "crash" executive development programs. They suggest that firms planning to embark on such programs would be well advised to survey the motivational needs of their employees before making their decisions.

Kirkpatrick (33), 1969 American Society Personnel Administration Research award winner, reports on the results of a "Developing Supervisory Skills" institute given approximately 20 times per year in various parts of Wisconsin by the University of Wisconsin Extension. His study covers 43 participants. His conclusions, while not supported by strong mathematically based methodology, reflect highly favorable reactions by participants as well as positively changed job behavior in all categories. Data was gathered by questionnaires and personal interview.

Dissertation Research in Management Training

Wilson Trickett's dissertation (56), "An Empirical Investigation of the Effectiveness of Executive Development Program as Perceived by Participating Marketing and Sales Executives," completed in 1967, evaluates the perceived benefits from the Graduate School of Sales Management and Marketing (GSSMM), sponsored by Sales and Marketing Executives International, headquartered in New York, New York.

The hypotheses tested in this research were (a) participation in an executive development program results in identifiable benefits as perceived by the participating executives, (b) academically-oriented executive development programs have differentiable advantages over company-oriented development programs as perceived by participants, (c) benefits of executive development programs as perceived by participating executives are enduring.

Questionnaires were collected from 74 current participants, 84 selected responses to a refined questionnaire mailed to sales executives in randomly selected companies and a follow-up mail out to the initial program participants (received 59 responses of 74 participants).

Benefits reported by the executive participants include improvements in marketing and management techniques, decision-making ability, human-relations skills, and increased self-confidence. Data showed the executives were moving toward their career goals and that they attributed credit for their forward mobility to their participating in the program. Academic programs were chosen over company programs.

The research found all three hypotheses to be substantiated and tenable and pointed up certain characteristics apparent in all of the more successful programs. The most noteworthy are (56):

(1) The participating executives had not only the desire to develop but also the capacity for development.

(2) The best qualified instructors were university faculty who communicated their knowledge from a background of business or business-consulting experience.

(3) The curriculum was tailored to the executives daily needs, utilizing the best learning techniques, and involved the executives in an interchange of ideas with both faculty and other participating executives.

Bernard Deutzer's dissertation (18) "Measuring the Effectiveness of a Selected Management Development Program", completed in 1967, investigated the hypotheses that:

(1) the immediate manager of the executive will not observe a significant change in leadership behavior,

(2) the immediate manager of the participating executive will perceive no significant change in the pattern of managerial functions exhibited by the executive.

(3) the executive himself will perceive no significant change in the exercise of major functional responsibilities than before participating in the executive development program,

(4) the executive himself will perceive no significant change in his leadership behavior,

(5) the subordinates of the executives will exhibit no significant changes in indices such as sales call activities, production income as a result of the executives participation in the management development activity.

The subjects of this experiment were two different groups of newly

appointed district sales managers who attended and completed a management development seminar of a major all-line insurance company and a control group who did not attend. All groups were given questionnaires at identical intervals (before for experimental groups and 4 and 12 weeks after the program). Questionnaires were also given to the immediate supervisors of each manager in the two groups. At the same time, interval subordinate salesmen (insurance agents) were evaluated as to production, sales, and the participating executives on incentive income.

The results show no significant difference between the two groups in management, production, income and sales patterns; however, there was a significant change in leadership behavior.

Summary

Available literature indicates evaluation methodology applicable to management training to be in its' infancy. As indicated by Campbell (11), most research in non-empirical, the literature voluminous and dull. Sullivan (54) found that no completely satisfactory method exists by which to determine if a favorable return is being made on training and that this problem has existed for years. Various types of evaluative methodology has been applied to training programs; however, there appears to be little in the way of guidelines for additional research.

The work done to the present time does not assess in any meaningful way the value of management training and development.

CHAPTER III

RESEARCH DESIGN

The purpose of the present research is the development of an assessment model for the evaluation of management training and development programs. This research will be conducted using the Public Service Management Institute of the State of Tennessee as the data base.

Relationships between the dependent variable, Organizational Value of the Public Service Management Institute, a management training and development program, and independent variables as well as demographic data will be investigated.

The dependent variable for this research, Organizational Value of the Public Service Management Institute, a management training and development program, is specifically defined by non-quantative and quantitative questions relating to this topic area. Included in the non-quantitative area are questions relating to the benefits of the training program to top, middle, and lower management and management trainees, help in improving job performance, desire to attend and enthusiasm about the program, motivation to seek additional training as a result of the program, and program quality.

Included in the quantitative area are questions relating to economic estimates of savings due to improved use of individual resources as a result of training, individual economic savings to the State due to the training, estimated economic savings per participant due to the

training, estimated dollar savings by other participants due to training, overall savings and benefits and savings to the State due to training, dollar amounts participants would pay for their subordinates to take this training or pay out of their own pocket for the training, the amount training directors should spend on the program, the commercial cost of a similar program, and similar economic oriented questions. All non-quantitative and quantitative organizational value dependent variable questions are to be found in Appendix A.

The organizational value of the management training and development program is thus defined in both non-economic and economic terms by specific questions assigned to the dependent variable. Those major topic areas that strongly relate to or reflect the sensitivity of organizational value of the program are identified, in this research model, by 17 independent variables. Each of these independent variables is specifically identified by several specific questions relating to the variable topic area. These independent variables and related questions are to be found in Appendix A.

The intensity of organizational value of training and development and the sensitivity of this value to 17 independent variables can thus be evaluated to determine their relationships, direction of response, and contribution.

The research design chosen for this study includes the use of accepted statistical and mathematical methodology from the social psychology and related sciences to evaluate data obtained from a comprehensive field survey of Public Service Management Institute participants.

Data to be obtained through the use of a questionnaire includes

economic, demographic, job satisfaction, and other information that is pertinent to the measurement of the organizational value (economic, attitudinal) of the program.

The questionnaire, of Likert (40) scale design, will be evaluated using the coefficient Alpha or a special case of coefficient Alpha method to maximize variable reliability (21). Bohrnstedt (9) recommends this Kuder-Richardson (1937) method as being the best approach for the computation of a coefficient of equivalence, however, the coefficient Alpha, while more complex, also provides more comprehensive information (17). This approach, called internal consistency, examines the co-variance among all of the items and determines the internal reliability and consistency of all questions involved.

The coefficient Alpha or its special case, the Kuder-Richardson method, implemented via a computer program and a computer, identifies all questions, gives the mean, standard deviation, item test reliability, and variable test reliability as well as other diagnostic information. The computer analysis of data will be made a number of times to identify low reliability items and maximize variable reliability.

As stated earlier, an item reliability formula, with the aid of a computer, will test item reliability (consistency of responses) for each individual participant. For example, Achievement is one of the independent variables to be used to test the hypotheses that the Public Service Management Institute has organizational value. With proper questionnaire design, two, three, or more questions can be used to reflect the consistency of responses by each individual participant as related to Achievement.

Several questions have been formulated for each variable. If

necessary, iterations, computer runs, will be made to select those questions that give high reliability. Thus, item reliability will be calculated and then variable reliability.

For the purpose of determining characteristics of particular subgroups, factor analysis will be used to establish item correlations and factor loadings. In essence, factor analysis will be used to examine relationships between variables and correlations between variables and the rotated factors. A computer program will be used to calculate a correlation matrix and determine which variables load on various factors.

Stepwise regression analysis will be used to test the linear model (19). The mathematical model $X_0 = A + b_1X_1$ ----------b_nX_n will be examined in a stepwise fashion to determine which independent variables account for the model variance at a significance level of .01 or higher.

This method will also test the hypothesis that as independent variables increase the dependent variable also increases. For example, as Job Achievement, an independent variable, goes up, the organizational value of the Public Service Management Institute, the dependent variable, goes up or as Program Content value goes up, organizational value goes up.

A one way analysis of variance will be performed to determine the relationship between various demographic categories and the 18 variables used to establish organizational value for the Public Service Management Institute.

A very current piece of research using similar methodology has been conducted in the area of leadership (47).

The Rational for This Analytical Methodology

There are numerous reasons for conducting empirical research into management training using various diagnostic techniques, however, the following are germain to this research effort.

(1) A review of the literature indicates this methodology has not been previously used for evaluation of training and development programs. This research will pioneer new applications of evaluation techniques.

(2) It is a scientific methodology, made up of proven techniques from psychological and sociological research.

(3) It forces an explicit operational definition of each variable and tests the hypothesis that there is an organizational value to the Public Service Management Institute. It analyzes the relationships between all variables.

Research Model

The structure of the basic model to be empirically examined in this study defines a function, f(x), which represents Organizational Value of the Public Service Management Institute, dependent upon 17 independent linear parameters. An additional group of demographic questions are included to permit analysis along demographic lines.

The general model is:

$$X_0 = A + b_1X_1 + b_2X_2 + b_3X_3 \text{ --------- } + b_nX_n = A + \sum_{m=1}^{n} b_mX_m$$

where:

	X_0	= Organizational Value of the Public Service Management Institute
Content	X_1	= Management Process and Principles
	X_2	= Personnel Management (human relations)
	X_3	= Managerial Tools and Techniques
Format	X_4	= Lecture Method
	X_5	= Simulation
	X_6	= Case Analysis
	X_7	= Group Discussion
Satisfiers Dis-satisfiers	X_8	= Achievement
	X_9	= Recognition
	X_{10}	= Work Itself
	X_{11}	= Responsibility
	X_{12}	= Advancement
	X_{13}	= Salary
	X_{14}	= Security
Other	X_{15}	= Taxes Paid
	X_{16}	= Productivity
	X_{17}	= Program Cost

Demographic Data to be Obtained

(1) Period Since Program Completion

(2) Length of State Employment

(3) Job Organizational Level

(4) Formal Education Level

(5) Age

(6) Salary Immediately Prior to Public Service Management Institute

(7) Salary Now

(8) Number of People Directly Supervised

(9) Number of People Indirectly Supervised

(10) Budgetary Responsibility

Table II summarizes the dependent and independent variables and the demographic data to be obtained.

Hypotheses

The following is a listing of the hypotheses to be tested:

Content

H_1 The organizational value of the Public Service Management Institute will vary directly with a change in the perceived value of management process and principles training.

H_2 The organizational value of the Public Service Management Institute will vary directly with a change in the perceived value of personnel, human relations, training.

H_3 The organizational value of the Public Service Management Institute will vary directly with a change in the perceived value of managerial tools and techniques training.

Format

H_4 The organizational value of the Public Service Management Institute will vary directly with a change in the perceived value of the lecture method.

TABLE II

DEPENDENT AND INDEPENDENT VARIABLES
AND DEMOGRAPHIC DATA

Dependent Variable	Independent Variables
Organizational Value of the Public Service Management Institute	Management Process and Principles
	Personnel Management (human relations)
	Managerial Tools and Techniques
Demographic Data	Lecture Method
Period Since Program Completion	Simulation
Length of State Employment	Case Analysis
Job Organizational Level	Group Discussion
Formal Education	Achievement
Age	Recognition
Salary Immediately Prior to Public Service Management Institute	Work Itself
	Responsibility
Salary Now	Advancement
Employees Directly Supervised	Salary
Employees Indirectly Supervised	Security
Budgetary Responsibility	Taxes Paid
	Productivity
	Program Cost

H_5 The organizational value of the Public Service Management Institute will vary directly with a change in the perceived value of simulation exercises.

H_6 The organizational value of the Public Service Management Institute will vary directly with a change in the perceived value of the cases used in the Public Service Management Institute training.

H_7 The organizational value of the Public Service Management Institute will vary directly with a change in the perceived value of group discussions.

Satisfiers and Dis-satisfiers

H_8 The organizational value of the Public Service Management Institute will vary directly with a change in the perceived achievement due to the Public Service Management Institute.

H_9 The organizational value of the Public Service Management Institute will vary directly with a change in the perceived recognition due to the Public Service Management Institute.

H_{10} The organizational value of the Public Service Management Institute will vary directly with a change in the perceived value of Public Service Management Institute applications to the work itself.

H_{11} The organizational value of the Public Service Management Institute will vary directly with a change in the perceived value of Public Service Management Institute influence on increased responsibility.

H_{12} The organizational value of the Public Service Management Institute will vary directly with a change in the perceived value of Public Service Management Institute influence on advancement.

H_{13} The organizational value of the Public Service Management Institute will vary directly with a change in the perceived salary increases influenced by the Public Service Management Institute.

H_{14} The organizational value of the Public Service Management Institute will vary directly with a change in perceived increase in job security due to Public Service Management Institute training.

Other

H_{15} The organizational value of the Public Service Management Institute will vary directly with a change in the perceived increase in taxes paid due to Public Service Management Institute.

H_{16} The organizational value of the Public Service Management Institute will vary directly with a change in the perceived productivity increases influenced by the Public Service Management Institute.

H_{17} The organizational value of the Public Service Management Institute will vary directly with a change in the estimated program cost.

Excerpts From the Research Instrument

The items used to measure the variables were generated for or based on earlier research into job satisfaction and continuing education (26) (46). All were assembled specifically for this research.

Examples of the items used to measure each variable are listed below:

A. Dependent Variable: Organizational Value

Questions relating to the dependent variable, Organizational Value of the Public Service Management Institute (PSMI)

Non-Quantitative Organizational Value

1. I wanted to attend PSMI.
2. I am enthusiastic about the PSMI training.
3. PSMI training would benefit top management.

.
.
.

Quantitative Organizational Value

12. PSMI helped me to improve my use of resources by at least:

    $0 10,000 20,000 30,000 40,000 or more

13. These savings will continue for a period of (years):

    0 1 3 5 7 or more

14. PSMI helped me save the State at least:

    $0 50,000 100,000 150,000 200,000 or more

.
.
.

B. Independent Variable

X_1 = Management Process and Principles

29. PSMI increased my knowledge of planning, organizing, and controlling.

30. I now make more positive applications of planning, organizing, and controlling techniques.

31. PSMI improved my understanding of goal setting and goal achievements.

.
.
.

X_2 = Personnel Management (human relations)

36. Since PSMI, I have a better understanding of human relations.

37. PSMI improved my human relations skills.

.
.
.
.

All 18 variables and their related questions are shown in Appendix A.

Summary of Objectives

(1) The overall objective of this research is the development of an assessment model for management training and development programs. The research specifically wanted to evaluate a model made up of one dependent and 17 independent variables to determine how well this model measured the variance in response to organizational value questions and

which variables were the most sensitive in accounting for the total model variance. This model is to be tested using the Public Service Management Institute of the State of Tennessee as the data base.

(2) In addition the researcher wanted to:

a. Test 17 hypotheses and their relationship to organizational value of the Public Service Management Institute.

b. Perform an item and variable reliability analysis on the research questionnaire to eliminate those items that do not contribute to maximization of variable reliability, the ultimate objective being a highly refined research instrument.

c. Factor analyze the variables to determine loading patterns.

d. Perform an analysis of variance on the demographic questions versus the 18 model variables and item responses to determine group differences.

e. Analyze each item response via a distribution statistics program to determine the response distribution on certain questions relating to program value as well as content, methodology, and certain types of job satisfaction indices.

CHAPTER IV

RESULTS OF THE STUDY

Although preliminary information indicated that 250 people had participated in the Public Service Management Institute, careful analysis showed that only 170 participants actually completed all required phases of the program. Consequently, the research survey instrument was mailed only to those participants who had successfully completed the Public Service Management Institute.

One hundred and nineteen survey questionnaires were returned, however, only 83 were answered in complete detail and suitable for analysis. The 83 usable instruments represent 70% of those returned and 49% of the total mailed.

Item and Variable Reliabilities

Initially, two computer runs were made using the Kuder-Richardson item analysis program. This analysis gave good reliabilities on all but one variable, however, it did not provide adequate distribution statistics to reflect respondents' choices on questions and data for future in-depth evaluation of respondents' feelings toward the training.

The Kuder-Richardson program reflects the item number, mean, sigma item test reliability, and variable test reliability.

While this is adequate for the problem at hand, it was felt that additional information may be useful for future analysis. Consequently,

another item analysis program was obtained from the George Peabody College Computer Library which provides not only the basic output of the Kuder-Richardson program but, in addition, a summary of variable reliabilities, item reliabilities, and respondent choice distribution in percent.

Reliability refers to consistency in measurement. The reliability coefficient tells what proportion of the test variance is non-error variance (16). The reliability coefficient is enhanced by increasing the length of the test, a requirement well met by the research instrument. According to Kuder-Richardson (33, p. 95),

> ... the reliability coefficient is of interest because it gives, by the simple assumption that a test score has two components, a true score and variable error, an indirect estimate of the random error variance present in an obtained test score variance. No matter how computed, the reliability coefficient is only an estimate of the percentage of the total variance that may be described as true variance, or variance not due to error.

Cyril Hoyt (29, p. 113) describes the reliability coefficient as:

> ... a test of the ratio of the variance of the 'true scores' to the variance of the obtained scores, or in other words, gives the percentage of the obtained variance that may be spoken of as 'true' variance or not due to the unreliability of the test.

Five interactions of reliability analysis were performed to obtain the highest variable reliability. The successive runs of the item analysis program allowed the deletion of low reliability items leaving those that contribute most significantly to variable reliability. A total of 42 items were eliminated from the 18 variables. The questions eliminated are identified under their original model question in Appendix A.

These 42 items contribute very little to the reliability of the variables or measure of the organizational value of the Public Service Management Institute. Either the items were all answered alike, high

or low, or the distribution was not appropriate for reliability calculations.

The reliabilities, as calculated using the coefficient Alpha, George Peabody Computer Center program, are generally very good for all variables. The two that are lowest, but highly acceptable, are the "Responsibility" variable with a 0.5759 reliability coefficient and the "Program Cost" variable with a 0.7184 reliability coefficient.

The final items selected for data analysis are listed by number in Table III under the appropriate variable. The reliability scores (Alpha) are given for each item and variable. Appendix A contains all variables and the related questions.

One-Way Analysis of Variance

A one-way analysis of variance was made on each of the demographic questions and all 18 model variables. Each of the demographic questions were divided into five categories to permit detailed analysis.

The demographic questions relate to the following topic areas:

(1) Time since taking the program

(2) Length of time with State

(3) Job organizational level

(4) Level of formal education

(5) Age

(6) Number of subordinates directly supervised

(7) Number of subordinates indirectly supervised

(8) Direct budgetary responsibility

(9) Salary - test for significant difference for before and after only.

TABLE III

RETAINED QUESTIONS AND THEIR RELIABILITIES AS OBTAINED FROM ITEM RELIABILITY ANALYSIS

Variable	Print Out Item Number	Survey Question Number	Original Model Question Number	Appendix A Question Number[2]	Item Test Reliability R (Scale)
1[1]	18	53	2	1	.89
	49	121	8	2	.48
	51	126	10	3	.52
	61	150	12	4	.81
	62	151	13	5	.83
	63	152	14	6	.71
	64	153	15	7	.79
	65	154	16	8	.74
	66	155	17	9	.79
	67	156	18	10	.62
	68	157	19	11	.60
	69	158	20	12	.70
	70	159	21	13	.74
	71	160	22	14	.54
	72	163	24	15	.62
	Total Variable Reliability = .9051 (Alpha)				
2	3	7	29	1	.78
	12	35	33	2	.75
	19	55	34	6	.47
	28	76	32	4	.67
	42	104	31	5	.74
	47	116	30	3	.75
	58	142	35	7	.79
	Total Variable Reliability = .8331 (Alpha)				
3	1	2	36	1	.64
	22	63	37	2	.54
	6	21	40	5	.64
	8	30	53	10	.65
	11	34	38	3	.75
	13	37	52	13	.57
	16	48	50	12	.73
	27	75	47	11	.66
	37	95	44	9	.55
	39	98	41	6	.62
	40	100	39	4	.71
	52	129	42	7	.43

TABLE III (Continued)

Variable	Print Out Item Number	Survey Question Number	Original Model Question Number	Appendix A Question Number[2]	Item Test Reliability R (Scale)
	54	132	46	14	.65
	59	148	43	8	.69
	Total Variable Reliability = .8618 (Alpha)				
4	2	5	58	4	.66
	4	9	60	5	.64
	32	82	63	3	.74
	36	93	61	6	.61
	43	110	56	2	.49
	45	114	57	7	.74
	48	117	54	1	.52
	Total Variable Reliability = .7390 (Alpha)				
5	9	31	65	1	.81
	25	68	68	3	.85
	29	77	70	5	.58
	30	79	69	4	.77
	44	112	71	6	.50
	53	131	66	2	.53
	Total Variable Reliability = .7682 (Alpha)				
6	7	24	77	1	.62
	21	62	78	5	.75
	24	67	73	4	.62
	41	101	74	2	.60
	50	122	75	3	.74
	60	149	79	6	.78
	Total Variable Reliability = .7493 (Alpha)				
7	10	32	82	3	.72
	23	66	85	4	.74
	34	87	80	1	.86
	38	96	81	2	.82
	Total Variable Reliability = .7919 (Alpha)				
8	5	20	90	3	.71
	15	45	87	1	.81
	17	51	92	5	.89
	26	69	93	6	.70

TABLE III (Continued)

Variable	Print Out Item Number	Survey Question Number	Original Model Question Number	Appendix A Question Number[2]	Item Test Reliability R (Scale)
9	14	44	100	7	.75
	20	59	98	5	.72
	31	81	95	2	.66
	46	115	96	3	.63
	55	135	97	4	.68
	56	137	94	1	.72
	57	141	99	6	.72
	Total Variable Reliability = .8018 (Alpha)				
10	1	4	104	3	.62
	2	6	107	5	.77
	4	16	101	1	.69
	7	26	108	6	.73
	14	54	102	2	.79
	32	103	105	4	.66
	Total Variability Reliability = .7940 (Alpha)				
11	3	13	124	11	.62
	8	27	126	13	.62
	13	50	109	1	.58
	18	71	123	10	.63
	19	72	120	8	.56
	21	74	121	9	.65
	28	94	112	3	.67
	29	97	125	12	.52
	30	99	113	4	.60
	34	111	118	7	.74
	36	118	115	6	.79
	39	124	110	2	.69
	40	126	114	5	.66
	Total Variable Reliability = .8763 (Alpha)				
12	12	49	129	3	.75
	16	60	127	1	.67
	26	91	128	2	.63
	35	113	131	5	.43
	37	119	130	4	.61
	Total Variable Reliability = .5957 (Alpha)				

TABLE III (Continued)

Variable	Print Out Item Number	Survey Question Number	Original Model Question Number	Appendix A Question Number[2]	Item Test Reliability R (Scale)
13	9	33	135	4	.43
	15	56	136	5	.65
	25	85	132	1	.78
	41	128	134	3	.64
	49	146	137	6	.79
	50	147	133	2	.80
	Total Variable Reliability = .7676 (Alpha)				
14	10	38	138	1	.79
	23	83	143	6	.79
	27	92	141	4	.81
	44	138	139	2	.65
	45	139	142	5	.85
	46	140	140	3	.84
	Total Variable Reliability = .8735 (Alpha)				
15	6	23	144	1	.85
	31	102	147	4	.76
	42	130	146	3	.70
	47	143	145	2	.74
	Total Variable Reliability = .7588 (Alpha)				
16	5	18	150	3	.77
	11	41	151	4	.78
	24	84	148	1	.79
	48	145	149	2	.82
	Total Variable Reliability = .7937 (Alpha)				
17	17	70	162	6	.77
	20	73	158	4	.81
	22	80	160	5	.78
	33	106	152	1	.83
	38	123	154	2	.77
	43	133	155	3	.79
	Total Variable Reliability = .8743 (Alpha)				

TABLE III (Continued)

Variable	Print Out Item Number	Survey Question Number	Original Model Question Number	Appendix A Question Number[2]	Item Test Reliability R (Scale)
18	51	166	165	1	.92
	52	167	166	2	.86
	Total Variable Reliability = .7184 (Alpha)				

[1]Item Number is the Item Analysis Code for each question. These numbers come from computer printout "Items for Test 1 through 9," Appendix B. Items 10-18 are included in the full computer printout.

[2]Item numbers for questions for variables 1-18, Appendix A.

The following discussion relates to those demographic question categories and variables for which response was significantly different at the .05 level or higher. The results are listed in the same numerical sequence shown above.

(1) No significant difference.

(2) Length of time with State

The first demographic question under which there is a significant difference is "years with the State". There is significant difference between those who have two or more years with the State and those who have one year on Variable 2, Management Processes and Principles. The two-year or more service groups rate the value of this variable significantly higher than the one-year group. Those with 7 to 11 years of service rate it higher (highest group mean value) than the other four groupings.

(3) Job Organizational Level

The next significant difference between groups occurs under Job Organizational Level, Variable 1, Organizational Value of the Public Service Management Institute. Organizational level II (second highest) and III rate the value of the Public Service Management Institute program much higher than do levels IV and V (lowest). This is an indication that higher levels, with more responsibility, perceive a greater value for the program than do organizational levels IV and V (lowest). The values placed on the Public Service Management Institute follow the organizational levels with II evaluating the Public Service Management Institute highest, III next

highest, IV next and V last. There was a significant difference between levels II and levels III, IV, and V in the evaluation of Variable 3, Personnel Management. Level II rated this category more highly than the lower levels.

(4) Level of Formal Education

This question provides the best categorical discrimination of the nine used for analysis.

There was no respondents who had less than a high school education. The mean respondent had a college degree. The respondent categories used for this demographic analysis of variance are: (1) high school graduate, (2) some college, (3) college graduate, (4) graduate degree. Under Variables 1, Value of the Public Service Management Institute, the high school graduate level rated the program lowest and those with some college highest. Those with a college degree or graduate degree rated the program the same but significantly higher than the high school group. From this data, it is apparent that those who perceive the highest value for the program are those with some college. College graduates or above value the program slightly less than the "some college" group.

Under Variable 2, Management Process, the high school group again placed the lowest value on the training and the "some college" group the highest. The college graduate or graduate degree category are the same and significantly higher than the high school group.

The following Table IV summarizes the rankings of those

variables which have a significant difference between group ratings.

TABLE IV

SUMMARY OF EDUCATIONAL LEVEL GROUP DIFFERENCES AS SHOWN BY ANALYSIS OF VARIANCE

Variable	High School	Some College	College Degree	Graduate Degree
1. Organizational Value of Public Service Management Institute	4	1	2	3
2. Management Process and Principles	4	1	2	3
3. Personnel Management	4	1	2	3
4. Managerial Tools and Techniques	4	1	3	2
8. Group Discussion	4	1	2	3
9. Achievement	4	1	3	2
11. Work Itself	4	1	2	3
12. Responsibility	4	1	2	3
17. Productivity	4	1	2	3

The group placing the highest value on each variable is indicated by 1, next highest 2, etc. with 4 being the lowest.

(5) Age

There is a significant difference between age groups as

to the value of the Variable 6, Simulation. The 52 and older group ranks it highest, the 30 and under next highest and with the 31 to 37 age group the lowest.

(6) No significant difference.

(7) The Number of Subordinates Indirectly Supervised

The group indirectly supervising between 50 and 100 employees place the highest value on Variable 16, Taxes Paid. This indicates a level III or IV manager who feels he is paying more taxes because of the Public Service Management Institute.

(8) Direct Budgetary Responsibility

Those respondents directly responsible for budgets in the $300,001 to $1,000,000 range place the highest value on Variable 1, Organizational Value of PSMI, with those responsible for over $1,000,000 the next highest. Those responsible for no budget place the lowest organizational value on the Public Service Management Institute.

On Variable 18, Program Cost, those with no budget place the highest program cost value on the Public Service Management, with the $1,000,000 or above next. Those with budgets of $1.00 to $100,000 place the lowest cost value on the program.

(9) Salary

The test of significance for salary differences of the total group before and after reflect a very positive difference. The average participant has gained more than $1,000

since attending the Public Service Management Institute while only being out of the program 16.5 months.

These data reflect those groups that perceive a significant difference in the value of those variables identified. This information may be of value in selecting future Public Service Management Institute participants. Appendix C contains excerpts of analysis of variance printouts.

Results of Factor Analysis

Factor analysis was performed on the 18 variables in an attempt to find new, more fundamental quantities (the factors) underlying the original variables.

The intercorrelations among these 18 variables were analyzed using the International Business Machines "Facto" factor analysis method. The rotated factor matrix yields three factors on which some variables loaded. The variables loading on Factor 1 are listed in Table V.

The organizational value of the Public Service Management Institute, the three-week course content, one learning technique-simulation and variables relating to achievement, work itself, and responsibility, and productivity all show positive loadings ranging from 0.62 to 0.88 on Factor 1.

These items reflect high value for the program, the content of the program and Hertzberg-type job satisfiers - motivators - embodied in achievement, work itself, responsibility. Productivity loads heavily and positively with these variables.

Items loading on Factor 2 are shown in Table VI.

The items recognition and advancement are highly related to salary,

TABLE V

FACTOR 1 LOADINGS

Factor 1: Program Value, Content, Motivation, and Productivity

Variable	Description	Loading
1	Organizational Value of Public Service Management Institute	.68
2	Management Processes and Principles	.80
3	Personnel Management (human relations)	.83
4	Managerial Tools and Techniques	.70
6	Simulation	.62
9	Achievement	.85
11	Work Itself	.88
12	Responsibility	.65
17	Productivity	.86

security and taxes. All are positively loaded in the same direction indicating strong relationships between recognition and advancement and such items as salary, security, and taxes.

TABLE VI

FACTOR 2 LOADINGS

Factor 2: Motivation, Security, Salary, and Taxes

Variable	Description	Loading
10	Recognition	0.71
13	Advancement	.81
14	Salary	.88
15	Security	.72
16	Taxes	.67

Items loading on Factor 3 are shown in Table VII below.

The items used to measure various teaching strategies have high positive and negative loadings. The lecture method, with a positive loading of .68, is associated with simulation (-.56), case analysis (-.43), and group discussion (-.56). These loadings identify Factor 3 as Teaching Strategies.

The three factors identified and the variables that loaded on each factor are summarized in Table VIII.

TABLE VIII

FACTOR 3 LOADINGS

Factor 3: Teaching Strategies

Variable	Description	Loading
5	Lecture Method	.68
6	Simulation	-.56
7	Case Analysis	-.43
8	Group Discussion	-.56

These factors provide interesting information in the overall evaluation of the Organizational Value of the Public Service Management Institute, as indicated under Factor 1, 2, and 3 discussions. Appendix D contains excerpts from the Factor Analysis Printouts.

Results of Multiple Regression Analysis

To test the 17 hypotheses of Chapter III, a least squares multiple regression analysis was run with organizational value as the dependent variable. The George Peabody College RO1, Regression Analysis With Generation and/or Transformation of Variables was used for the stepwise regression analysis.

Eighteen variables were used in the regression model. These are summarized in Table IX.

The full model, all variables, was processed through 127 iterations to obtain a maximum R of 0.7711 and an R^2 of 0.5946. This R^2 indicates

TABLE VIII

SUMMARY OF FACTOR LOADINGS

Variable	Factor			Factors Loaded by Each Variable
	1	2	3	1
1	X			1
2	X			1
3	X			1
4	X			1
5			X	1
6	X		X	2
7			X	1
8			X	1
9	X			1
10		X		1
11				
12	X			1
13		X		1
14		X		1
15		X		1
16		X		1
17	X			1

TABLE IX

VARIABLES FOR REGRESSION ANALYSIS

Variable #	Variable Name
1	Organizational Value of Public Service Management Institute
2	Management Processes
3	Personnel Management
4	Managerial Tools
5	Lecture Method
6	Simulation
7	Case Analysis
8	Group Discussion
9	Achievement
10	Recognition
11	Work Itself
12	Responsibility
13	Advancement
14	Salary
15	Security
16	Taxes Paid
17	Productivity
18	Program Cost

that the whole model accounts for or explains 59.46% of the total variance. The regression model tested one at a time from the largest variable Beta Weight, to the lowest, in stepwise fashion, to determine which variables account for the total variance in the model. Seventeen individual variable models were subjected to calculations to determine how much of the total variance was accounted for by each variable.

Upon completion of the individual variable variance comparison to total model variance, those variables accounting for the most variance were combined together in stepwise fashion until the combination accounting for the maximum model variance was found.

The final regression analysis obtained by rerunning each variable in sequential combinations shows that 10 variables account for the majority of the variance. These variables and their Beta weights are shown in Table X.

A test of significance for all variables was made to see if there was a significant difference from the whole model and then tested to see if they are significantly different from 0. All variables were significantly different from the whole model but not significantly different from 0.

The F ratio test for the final model tested against 0 was found to have an F ratio of 11.933 with a significance beyond 0.0001.

Those variables not staying in the regression model are:

Management Process

Simulation

Case Analysis

Recognition

Advancement

TABLE X

FINAL MODEL VARIABLES AS DETERMINED BY STEPWISE REGRESSION ANALYSIS

Criterion = Variable 1, Economic Organizational Value

Full Model: $R = 0.7711$ and $R^2 = 0.5946$

Final Stepwise Model: $R = 0.7499$ and $R^2 = 0.5623$

Variable (remaining)	Description	Beta Weight
11	Work Itself	0.4241
12	Responsibility	0.2887
8	Group Discussion	0.1586
18	Program Cost	0.1184
5	Lecture Method	0.1055
4	Managerial Tools	0.0691
3	Personnel Management	0.0644
16	Taxes Paid	0.0619
9	Achievement	0.0480
15	Security	-0.0564

Regression Constant = -56.9836

Salary

Productivity

The general interpretation of these results is that those variables remaining in the regression model account for essentially all of the total variance and would, in themselves, measure dependent and independent variable relationships or organizational value of the Public Service Management Institute to essentially the same degree as the entire model.

As a result of the regression analysis on this study, the optimal model appears as follows:

$$X(1) = -56.98 + 0.42\ X(11) + 0.29\ X(12) + 0.16\ X(8) + 0.12\ X(18) + 0.11\ X(5) + 0.07\ X(4) + 0.06\ X(3) + 0.06\ X(16) + 0.05\ X(9) - 0.06\ X(15).$$

This relates X(1), Organizational Value of the Public Service Management Institute positively with Work Itself, Responsibility, Group Discussion, Program Cost, Lecture Method, Managerial Tools, Personnel Management, Taxes Paid, Achievement, and negatively to Job Security.

This stepwise multiple regression analysis identified those variables to which the dependent variable is most sensitive. The ten remaining variables explain 95% or more of the total explained variance in organizational value. In essence, these ten variables perform essentially the same job of measuring and explaining as do the original 17 variables, thus presenting a strong case for the use of ten refined independent variables instead of 17.

Testing of Hypotheses

To support the 17 hypotheses presented in Chapter III, correlation data are presented in Table XI.

The level of significance at the .05 level for a sample size of 83 is 0.217 correlation and significance level .01 is 0.283 correlation. From the data in Table XI, it is apparent that all but four variables are significant at the .01 level. Those not significant at the .01 level are:

Lecture Method	-0.004
Case Analysis	0.238
Taxes Paid	0.250
Program Cost	0.072

From those correlation coefficients that are significant at the .01 level (a 99% probability that there is a definite relationship between the dependent variable organizational value of the Public Service Management Institute and the independent variables), one can conclude that the following hypotheses, though statistically small in some cases, were supported:

H_1 The organizational value of the Public Service Management Institute will vary directly with a change in the perceived value of management process and principles training.

H_2 The organizational value of the Public Service Management Institute will vary directly with a change in the perceived value of Personnel Management (human relations) training.

H_3 The organizational value of the Public Service Management Institute will vary directly with a change in the perceived value of managerial tools and techniques training.

TABLE XI

DEPENDENT AND INDEPENDENT VARIABLE CORRELATIONS

Variable Description	Correlations
Organizational value	1.00
Management Process	0.427
Personnel Management	.628
Managerials Tools	.560
Lecture Method	-0.004
Simulation	0.467
Case Analysis	0.238
Group Discussion	0.417
Achievement	0.618
Recognition	0.313
Work Itself	0.590
Responsibility	0.470
Advancement	0.372
Salary	0.301
Security	0.409
Taxes Paid	0.250
Productivity	0.605
Program Cost	0.072

H_5 The organizational value of the Public Service Management Institute will vary directly with a change in the perceived value of simulation exercises.

H_7 The organizational value of the Public Service Management Institute will vary directly with a change in the perceived value of group discussions.

H_8 The organizational value of the Public Service Management Institute will vary directly with a change in the perceived achievement due to the Public Service Management Institute.

H_9 The organizational value of the Public Service Management Institute will vary directly with a change in the perceived recognition due to the Public Service Management Institute.

H_{10} The organizational value of the Public Service Management Institute will vary directly with a change in the perceived value of Public Service Management Institute applications to the work itself.

H_{11} The organizational value of the Public Service Management Institute will vary directly with a change in the perceived value of Public Service Management Institute influence on increased responsibility.

H_{12} The organizational value of the Public Service Management Institute will vary directly with a change in the perceived value of Public Service Management Institute influence on advancement.

H_{13} The organizational value of the Public Service Management Institute will vary directly with a change in perceived salary

increases influenced by the Public Service Management Institute.

H_{14} The organizational value of the Public Service Management Institute will vary directly with a change in the perceived increase in job security due to Public Service Management Institute training.

H_{16} The organizational value of the Public Service Management Institute will vary directly with a change in perceived productivity increases influenced by the Public Service Management Institute.

Each of the 13 variable categories are positively correlated with organizational value of the Public Service Management Institute indicating that there is significant value to the program as reflected by these hypotheses.

A review of the mean scores clearly indicate a good number of the participants placed a high value on the program.

The regression model clearly indicates the ability to reduce the research instrument to some 80 or so questions. The regression model provides a way to optimize the research instrument. In terms of the prediction of criterion scores, the final regression model optimizes that condition, however, to eliminate the non-contributory variables and their questions may cause loss of valuable raw data for different types of analysis. This may indicate that the use of regression analysis, although optimizing the regression model, may not optimize information obtainable in terms of overall program evaluation. Appendix D contains the stepwise regression computer printouts.

Distribution Statistics

To determine how the respondent data was actually distributed, all 167 questions of the 18 variables were analyzed using the George Peabody College, DO1, Distribution Statistics Program. This program sums all responses by question, calculates the mean response, reflects the minimum and maximum values, calculates the unbiased variance, Sigma, standard deviation, skewness and related probability, kurtosis and related probability, and prints a distribution histogram for each question. The question, "I wanted to attend PSMI", was answered "Agree" to "Strongly Agree" with a mean score of 4.16 indicating the great majority (96%) of the respondents wanted to attend and were not forced to do so. This confirms one of the original premises of having a voluntary attendance program. This is further confirmed by the response to the question, "My superior sent me to PSMI because he wanted me out of the office", where 96% disagree or strongly disagreed.

Table XII summarizes all responses, mean value and distribution for the dependent variable, organizational value of the Public Service Management Institute.

These and other variable questions were plotted in histogram form by the "distribution statistics" program, however, the printout is 183 pages long, therefore, only portions of these histograms have been used for discussion purposes. Appendix E contains a detailed summary of the distribution statistical analysis. Example histogram printouts are included for illustration purposes only. Information extracted and drawn in histogram form are shown in Figures 1 through 11.

TABLE XII

DISTRIBUTION STATISTICS FOR DEPENDENT VARIABLE X_0, ORGANIZATIONAL VALUE OF PUBLIC SERVICE MANAGEMENT INSTITUTE

Variable Question X_0	Code	Question Mean	Number of Respondents by Category 5	4	3	2	1
Non-Quantitative							
1	108	4.168	19	60	3	1	0
2	53	4.096	20	53	8	2	0
3	58	4.361	35	44	3	1	0
4	25	4.180	22	56	3	2	
5	134	4.000	8	68	6	1	0
6	64	4.048	14	63	2	4	0
7	61 R	4.024	19	52	4	7	1
8	121 R	4.614	34	47	2	0	0
9	10	3.771	12	48	16	6	1
10	126	3.554	6	48	15	14	0
11	17	4.000	9	63	10	1	0
Quantitative							
12	150	1.771	6	2	3	28	44
13	151	2.361	19	2	13	5	44
14	152	1.614	4	1	5	22	51
15	153	2.180	18	2	6	8	49
16	154	1.915	3	1	4	53	22
17	155	3.000	27	5	16	11	24
18	156	1.265	1	1	2	11	68
19	157	1.506	5	4	4	2	68
20	158	2.120	4	2	9	53	15
21	159	2.530	9	9	14	36	15
22	160	2.168	4	5	14	38	22
23	161	2.566	4	11	18	45	5
24	162	1.277	0	2	3	11	67
25	163	1.518	1	0	5	29	48
26	164	3.060	19	7	23	28	6
27	165	2.361	16	7	5	18	37
28	19	1.421	18	43	19	3	0

R = Reverse Scored: Responses to questions 7 and 8 have been reversed to reflect the proper score response.

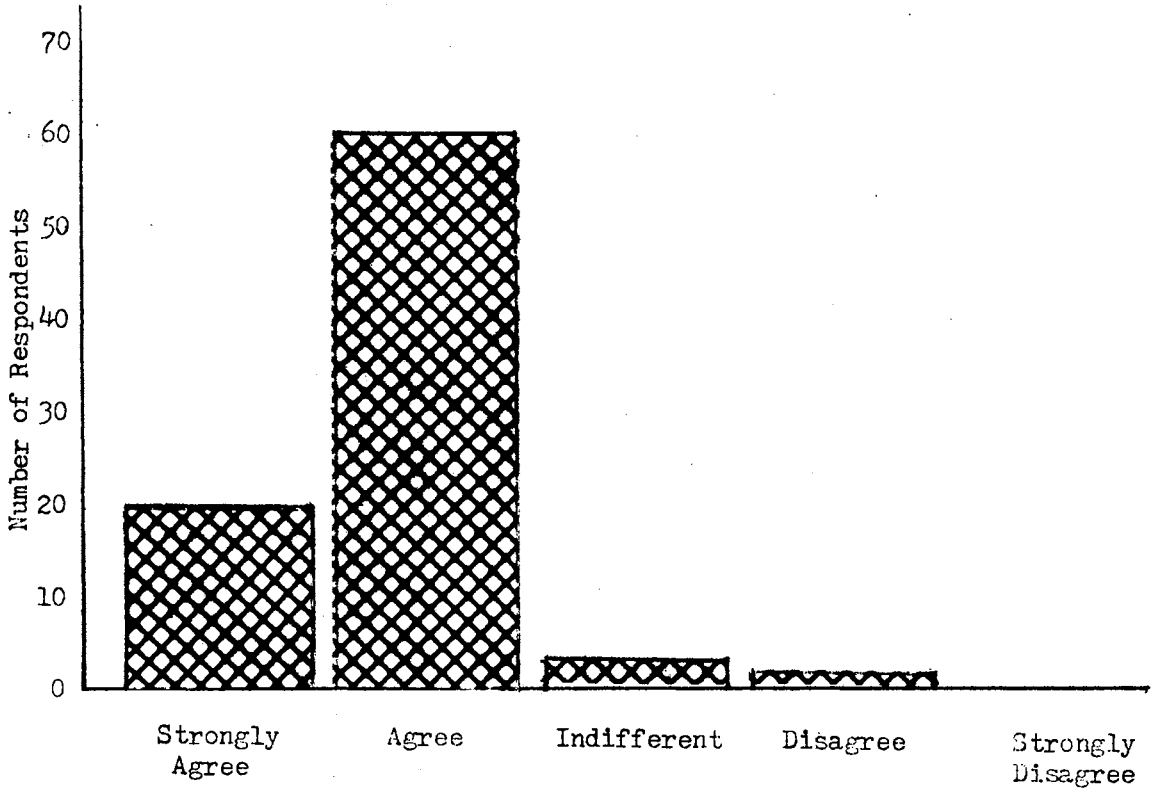


Figure 1. Response to Question: I Wanted to Attend PSMI

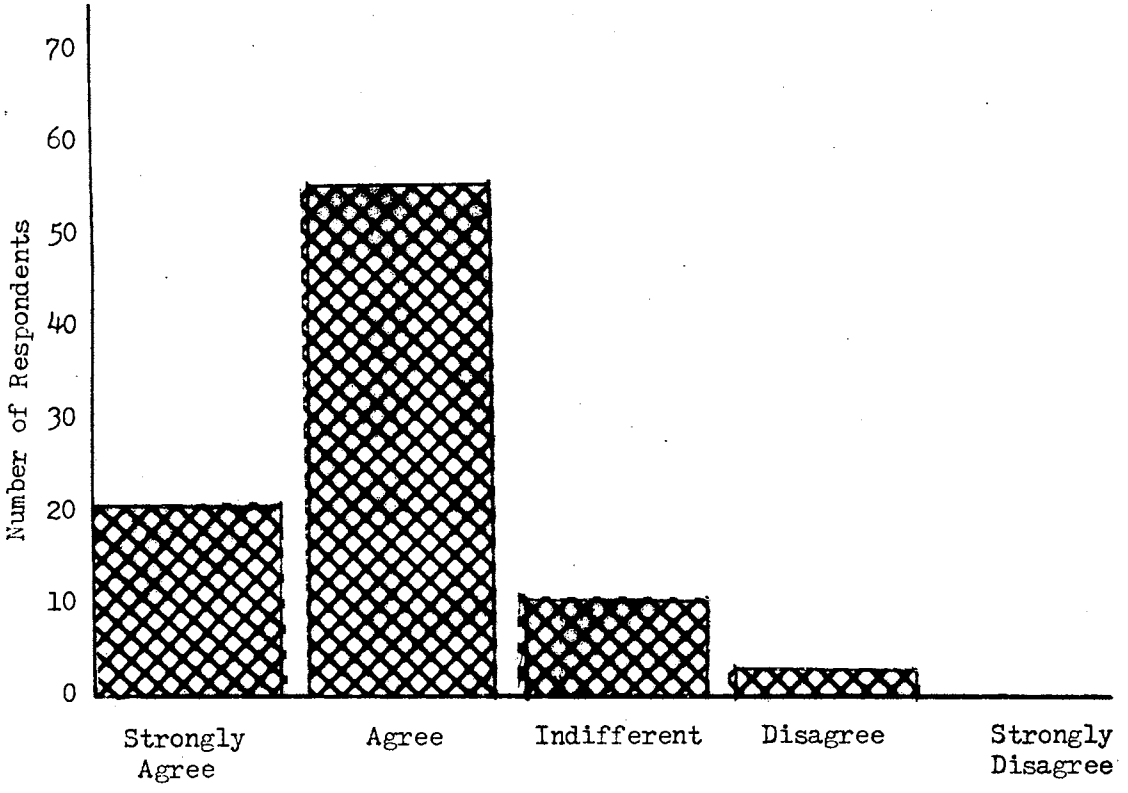


Figure 2. Response to Question: I Am Enthusiastic About PSMI Training

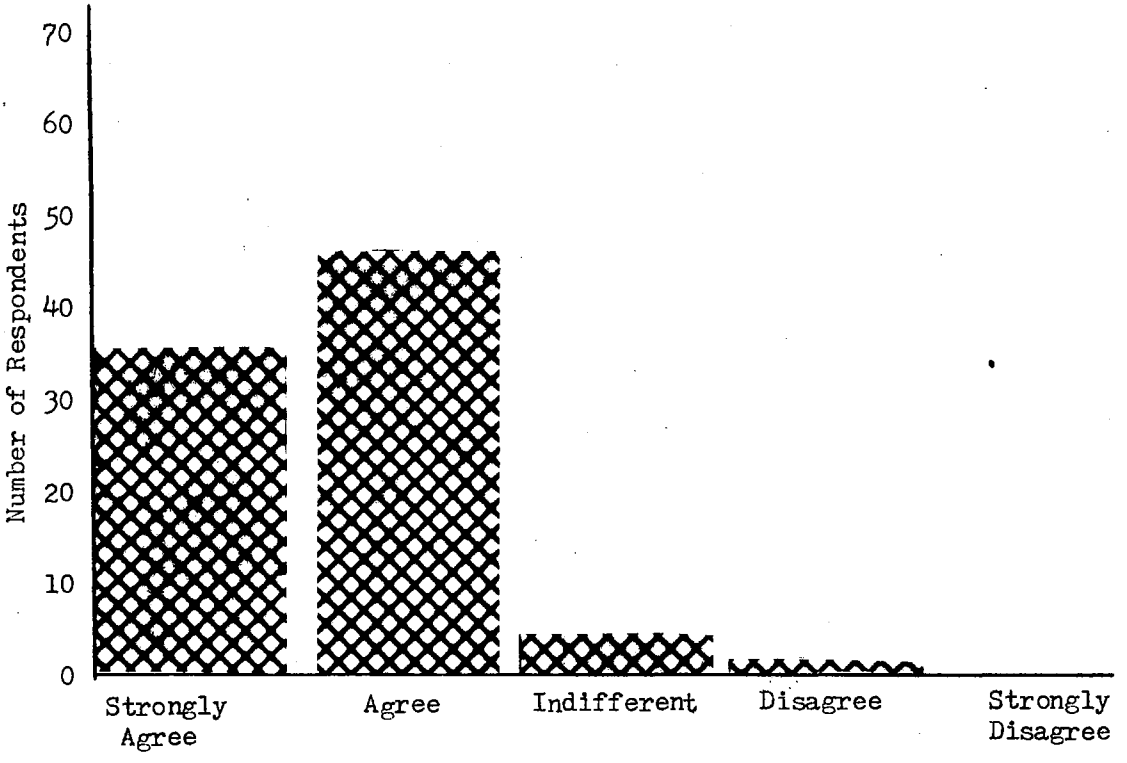


Figure 3. Response to Question: PSMI Training Would Benefit Top Management

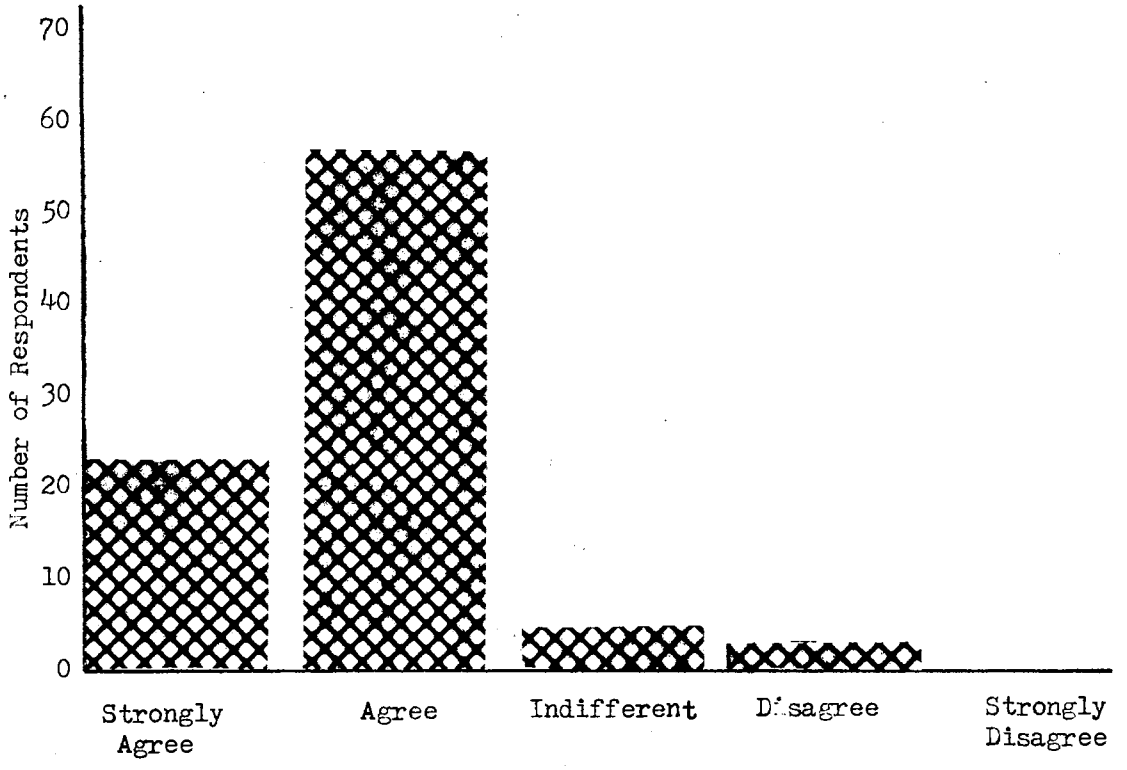


Figure 4. Response to Question: PSMI Training Would Benefit Middle Management

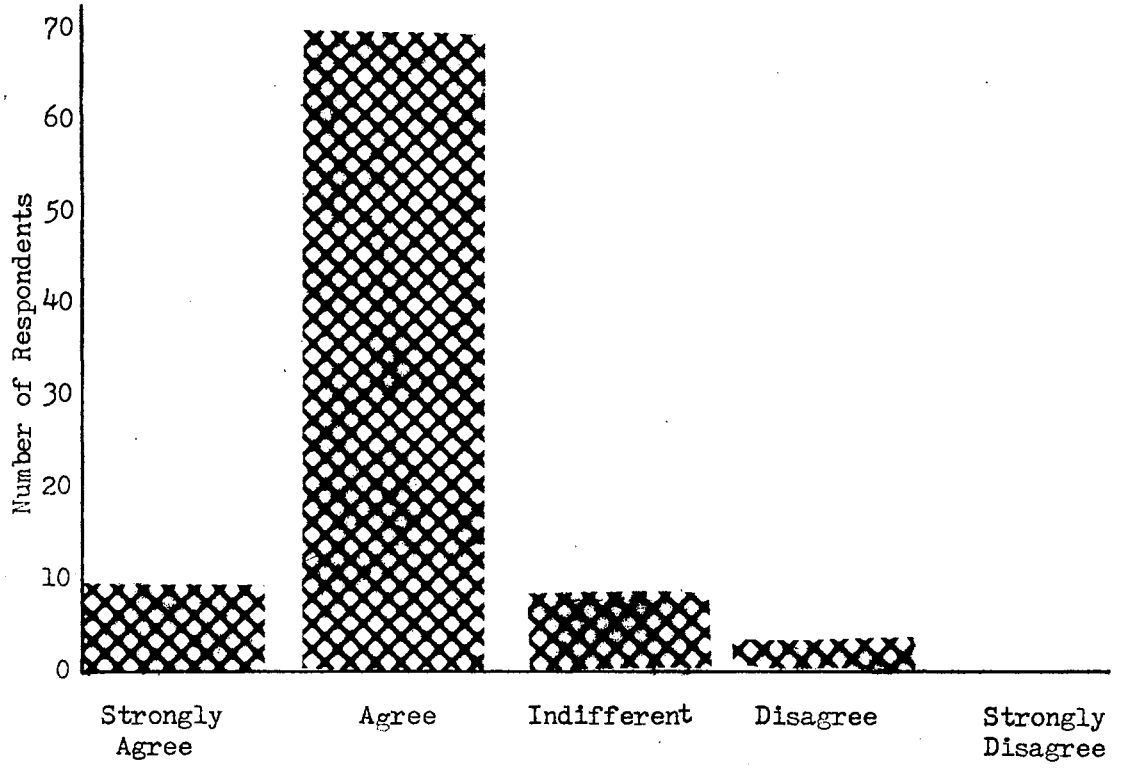


Figure 5. Response to Question: PSMI Training Would Benefit Lower Management

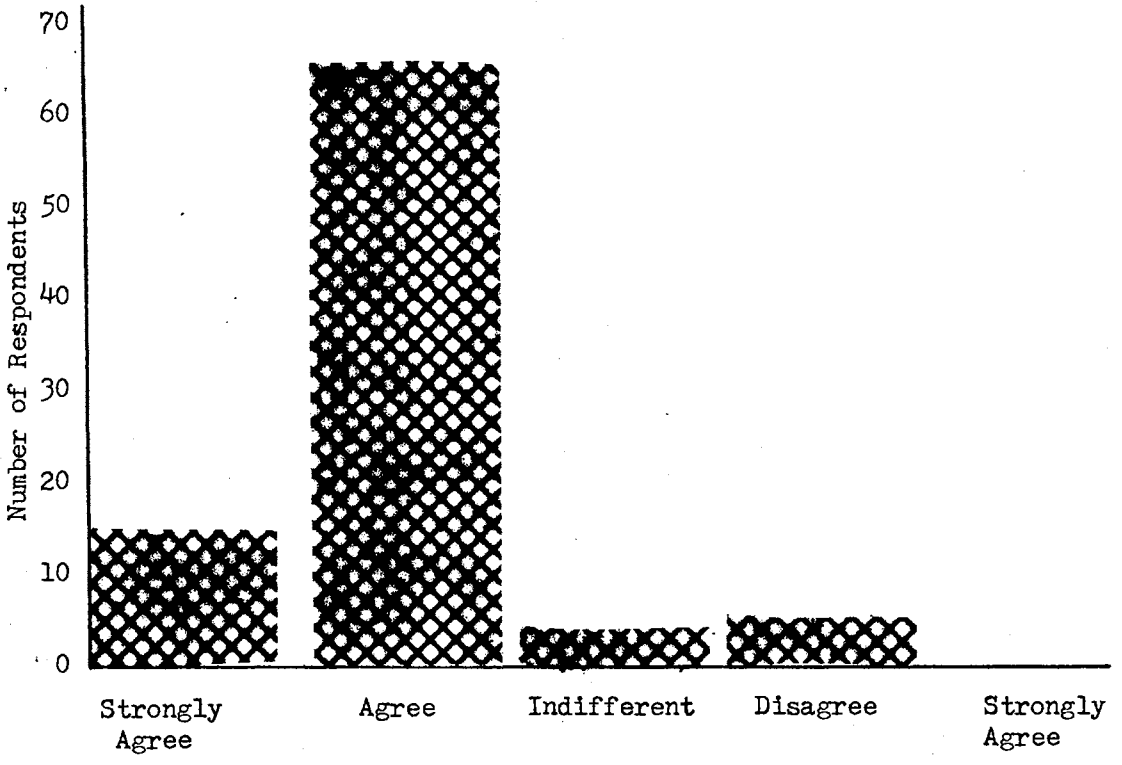


Figure 6. Response to Question: PSMI Training Would Help Management Trainees

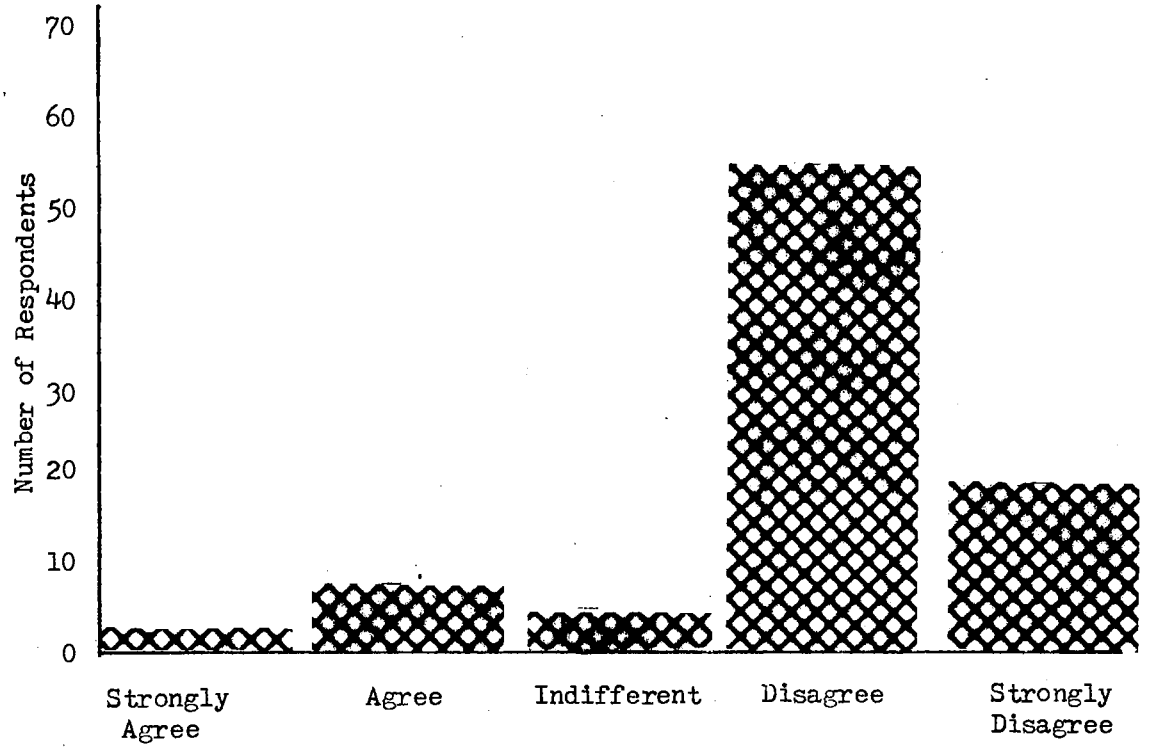


Figure 7. Response to Question: PSMI Did Not Help Me in My Job

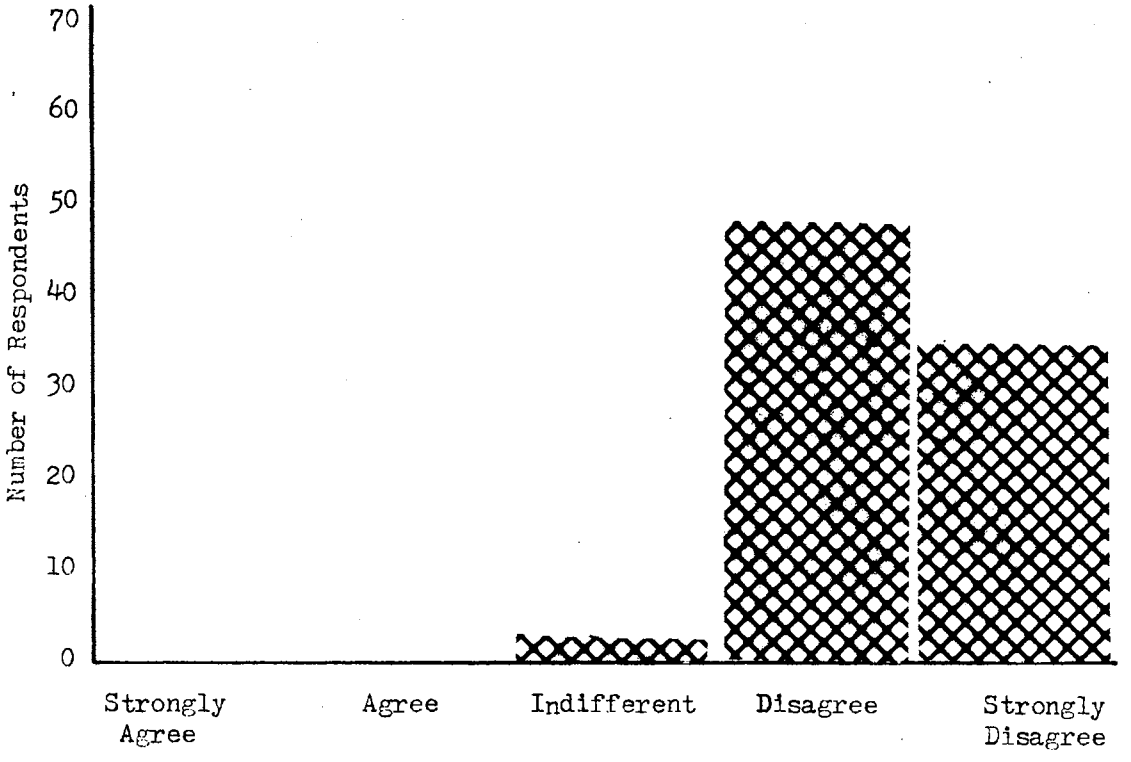


Figure 8. Response to Question: PSMI is a Waste of Time and Money

Figure 9. Response to Question: This Program Motivated Me to Seek Additional Training

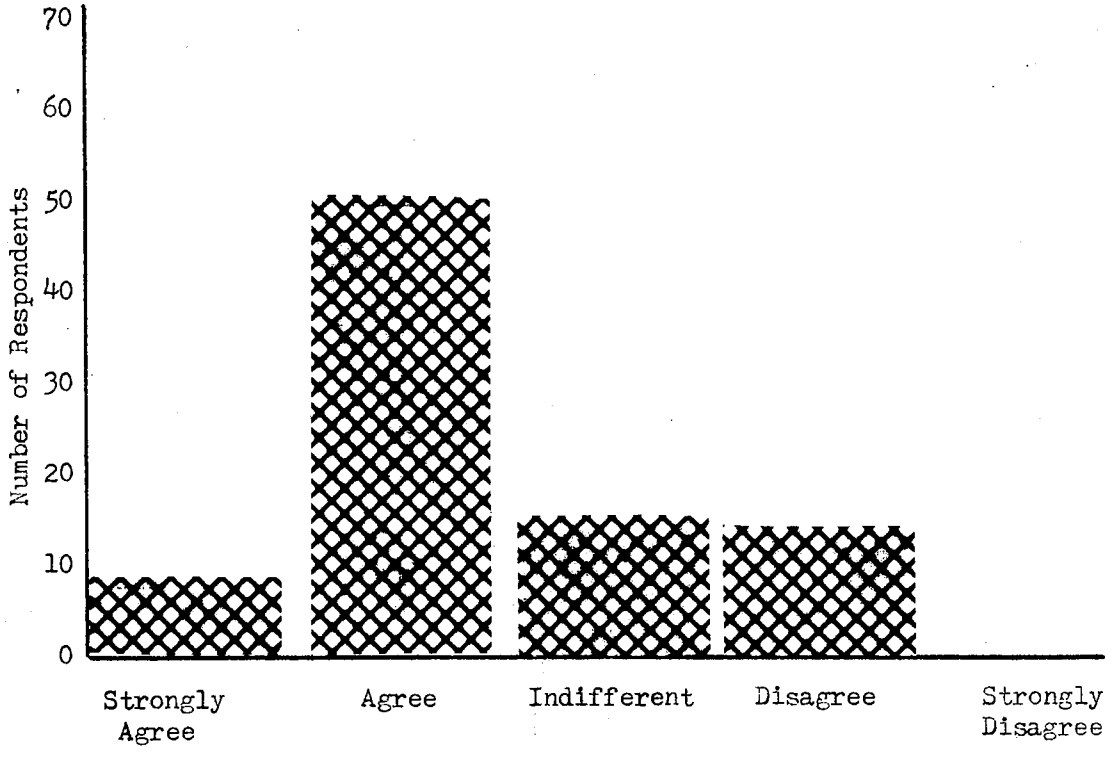


Figure 10. Response to Question: This Program Encouraged Me to Attend University Credit Courses

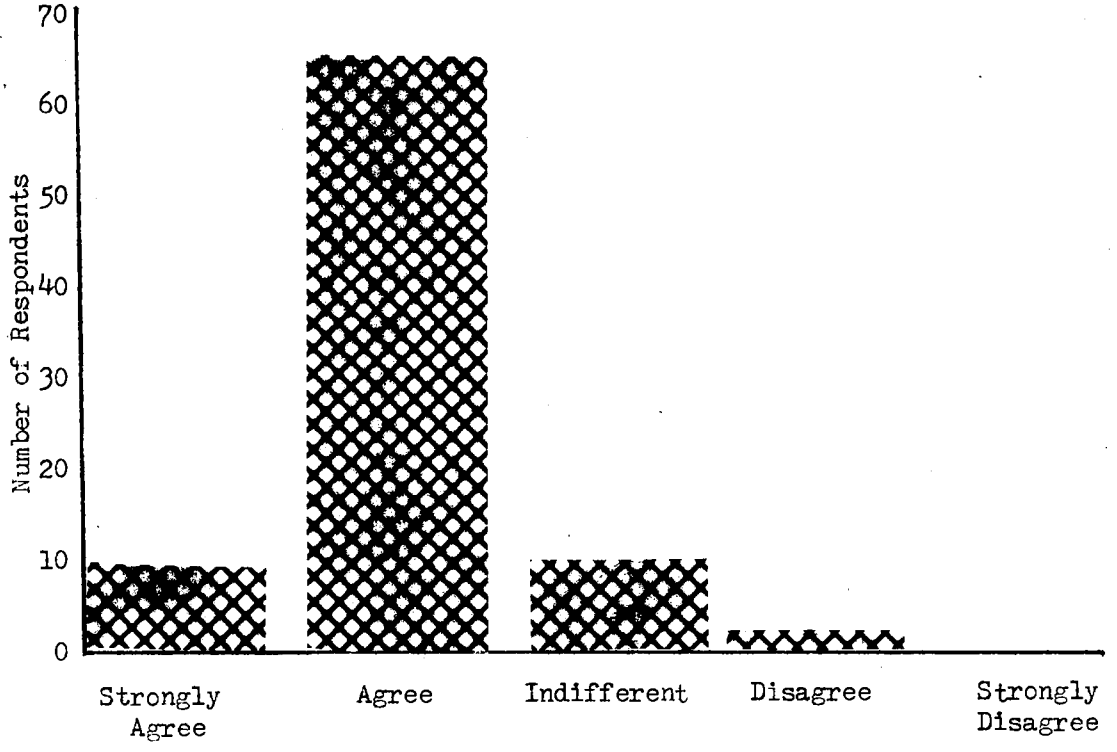


Figure 11. Response to Question: This Was the Best Management Training Program I Have Attended

Summary of Demographic Data

The demographic data provides an interesting profile for the typical Public Service Management Institute participant. The respondents' average time since completing the program is one year, four and one-half months. The average respondent State service is over 12 years. The average respondent's organizational level is IV; he holds a college degree, is 42 years old, and earns $13,000 per year. The respondent directly supervises over five subordinates and indirectly supervises over 30 subordinates and has direct annual budgetary responsibility of over $301,807. The average respondent has realized a salary increase of $1,084.44 or 9.1% during the 16.5 month average time since completing the program.

A more comprehensive analysis of all groupings of demographic data versus the responses to the 18 variables on related questions is made under the One-Way Analysis of Variance section of this chapter.

Table XIII summarizes the mean demographic response and the average respondent level by category.

Economic Payback From Public Service Management Institute Training

The quantitative questions relating to individual and group dollar payback and Public Service Management Institute cost indicate, very strongly, the economic value of such a program. As reflected in Table XIV, the perceived improved use of individual resources and resulting dollar savings are $13,415 for each individual in the sample used and $1,113,478 for the total group of 83 respondents. The actual training cost, including one-half salary, is $567 per individual or $47,061 for

TABLE XIII

SUMMARY OF DEMOGRAPHIC DATA FOR SURVEY RESPONDENTS

Demographic Questions	Variable Mean	Average Respondent Level
Time since taking program (months)	2.746	16.48 months
Length of state empl. (years)	3.265	12.325 years
Job organizational level on a scale of highest I.....lowest V	4.060	IV
Education Level	3.939	College Degree
Age of Respondent	2.831	42 years
Annual Salary Immediately Prior to PSMI	1.674	$11,915.56
Annual Salary now[1]	2.373	$13,000.00
No. of Subordinates directly supervised	2.554	5.3
No. of Subordinates indirectly supervised	2.24	30.1
Direct annual budgetary responsibility	2.469	$301,807.22

[1]This figure reflects an average of $1084.44 or 9.1% increase in salaries for the respondents. Note average time since completing PSMI is 16.48 months.

TABLE XIV

SUMMARY DATA AND PROJECTIONS FROM QUANTITATIVE ORGANIZATIONAL VALUE QUESTIONS

Topic Area	Total Savings $ Estimates by 83 Respondents	Total Savings Projected $ Estimates for 1500 Potential Trainees	Estimated Savings for 83 Respondents			Estimated Total Savings for 1500 Potential Management Trainees		
			Actual Cost	$ Savings Above Cost	% Savings Above Cost	Cost	$ Savings Above Cost	% Savings Above Cost
PSMI helped me to improve my use of resources by at least (average life 1.74 years)[7]:	$ 13,415[1] 1,113,478[2]	20,123,100	567[3] 47,061[4]	12,848 1,066,417	2266% 2266	850,000	19,272,600	2266%
PSMI helped me save the state at least (average life 1.36 years)[7]:	41,752[1] 3,465,416[2]	62,628,000	567 47,061	41,185 3,418,355	7263 7263	850,000	61,777,500	7263
For each participant the state has benefited by at least (average life of 3 years)[7]:	27,450[1] 2,278,350[2]	41,175,000	567 47,061	26,883 2,231,298	4741 4741	850,000	40,324,500	4741
I know of another person who made resource savings as a result of PSMI of approximately (average life of .506 years)[7]:	1,341[1] 111,303[2]	2,010,000	567 47,061	774 64,242	136 136	850,000	1,159,500	136
PSMI improved the use of state resources by at least	575,301[1]	10,395,689	47,061	528,239	1123			

TABLE XIV (Continued)

Topic Area	$ Estimates by 83 Respondents	Projected $ Estimates for 1500 Potential Management Trainees	Actual Cost Excluding Salary	Actual Cost Including One-Half Salary
I believe this training program will benefit the state by at least:	$ 453,012[1]	$ 8,185,926		
For each of my subordinates to take this training, I would pay out of my own budget (excluding salary):	253[1] 21,000[2]	379,680	$ 223 18,525	$ 567[3] 47,061[4]
If I were director of training, I would be willing to spend, per trainee, excluding salary, this amount for PSMI:	313[1] 26,000[2]	469,820	223 18,525	567[3] 47,061[4]
If release time were granted, I would pay out of my own pocket to take this training:	103[1] 8,600[2]		223 18,525	567[3] 47,061[4]

TABLE XIV (Continued)

Topic Area	Estimated Training Costs by Respondents	Projected $ Estimates for 1500 Potential Management Trainees	Actual Training Cost	Actual Training Cost for 1500 Trainees (based on current data)
To buy a program of similar quality and content from a private firm would cost per trainee:	$ 512[1]	$ 768,075	223[5]	$ 334,800 (excluding salary)
I think the total actual cost, incldung salary, of the three week program for 20 people was:	10,903[1]		567[3] 11,340[6]	850,500 (including one-half salary)
I think the actual total PSMI cost per management trainee was (including salary):	1,534[1]		567[3]	

[1]Average estimate for each of 83 respondents.

[2]Total estimate by all respondents.

[3]Cost per respondent including one-half salary.

[4]Cost for 83 respondents including one-half salary.

[5]Individual participant cost excluding salary.

[6]Total cost for 20 participants including one-half salary.

[7]The average savings life span was determined from the estimated years duration of the savings.

NOTE: All quantative data obtained from survey questions III-36 through III-53, Appendix G

the group of 83 respondents, yielding a 2266%, or almost a 23 to 1, payback after cost. On a potential 1500 trainee basis, this would yield a projected savings of $19,272,600.

The question relating to how much the Public Service Management Institute helped the individual save the State, gave a mean savings of $41,750 per respondent and $3,465,416 for the group. This indicates an after cost payback of 7263% or almost 73 to 1 per individual and the total group. The projected savings, after cost, for 1500 potential trainees is $61,777,500.

The question relating to knowing another person who made resource savings due to the Public Service Management Institute yields a $1341 mean individual response and $111,303 for the group. In this category, the projected savings above cost is 136% for the group and $1,159,500 above the $850,000 cost for 1500 potential trainees. The dollar response to this question was expected to be very low since most respondents are scattered State wide isolating them from the activities of other participants. The fact that there was good positive response to this category indicates discussion and feedback concerning savings among the Public Service Management Institute participants.

The mean response to the question asking about overall improved use of State resources was $575,301 reflecting a payback of $528,239 or 1123%. This is lower than the first two questions relating to personal savings to the State, however, the respondents were not aware of what others were doing and thus used their own experience as a very conservative base.

The question relating to the amount each respondent would pay out of his own budget for the program, excluding salary, yielded a mean

response of $253 which is higher than the actual cost of $223 by some $30. This could indicate a knowledge of budgetary training costs as well as the fact that the group would pay more. These costs were not included in the early departmental budget.

In contrast, the respondents felt that the director of training should be willing to spend $313 as opposed to the $223 actual cost. This indicates the State Training Department could spend an additional $90 per individual Public Service Management Institute trainee and remain within the mean group dollar expenditure.

The response to the question of individual trainees paying for the Public Service Management Institute program out of their own pocket shows that they would spend a mean of $103 of their own money for the program. This indicates a reasonable value placed on the worth of the program since other research indicates employees only attend programs in proportion to the degree of financial support provided by their firms (46).

A strong indicator of program value is reflected by the response to the question of buying a program of similar quality and content from a private firm. A mean response of $512 to buy a program of similar quality and content versus the actual cost of $223 indicates that the respondents feel the program would cost $288 or 229% more per trainee from an outside source. The actual cost from the American Management Association would be closer to $1000 per trainee. An informal conversation with a friend working in the central personnel department of a large national blue-chip firm indicated they had budgeted over $500,000 for a less comprehensive program to be given to 630 lower, middle, and upper management personnel. This cost, not including salaries, of $794

for the national firm as opposed to $223 per Public Service Management Institute trainee reflects an extremely low cost for the State of Tennessee. If anything, State expenditures may be on the low side indicating additional expenditures may be in order to update program content, materials, and instructor remuneration.

Additional economic data are shown in Figures 12 through 26. Several interesting histograms reflect response to economic payback type questions of 20 to 1 up to 73 to 1 over program cost. Other figures relate to estimated versus actual expenditures, how much should be spent and so on.

Of particular interest are Figures 23 and 24. Figure 23 reflects a 63% greater salary increase than estimated for the Public Service Management Institute participant. The actual participant salary increase was 47% more than the average State employee for the same period. Figure 24 reflects an estimated by participant increase of only 1.73% above the normal while the actual mean salary increase was 9.1%. The actual average State employee salary increase during the period was 6.2% as compared to the 9.1% for program participants. This indicates a 47% greater salary increase for the trainee.

A great deal of additional information is available in the computer printouts obtained from the data analysis. Excerpts from five of these computer printouts are located in Appendixes B through F of this document. Most of the remaining data will be used in the review and, where necessary, revision of the Public Service Management Institute program content and instructional format, and methodology. The total information gleaned from this analysis will be used to facilitate higher

program quality, availability, and participation. It is apparent that the State of Tennessee has a great deal to gain from increased program availability and participation by those eligible.

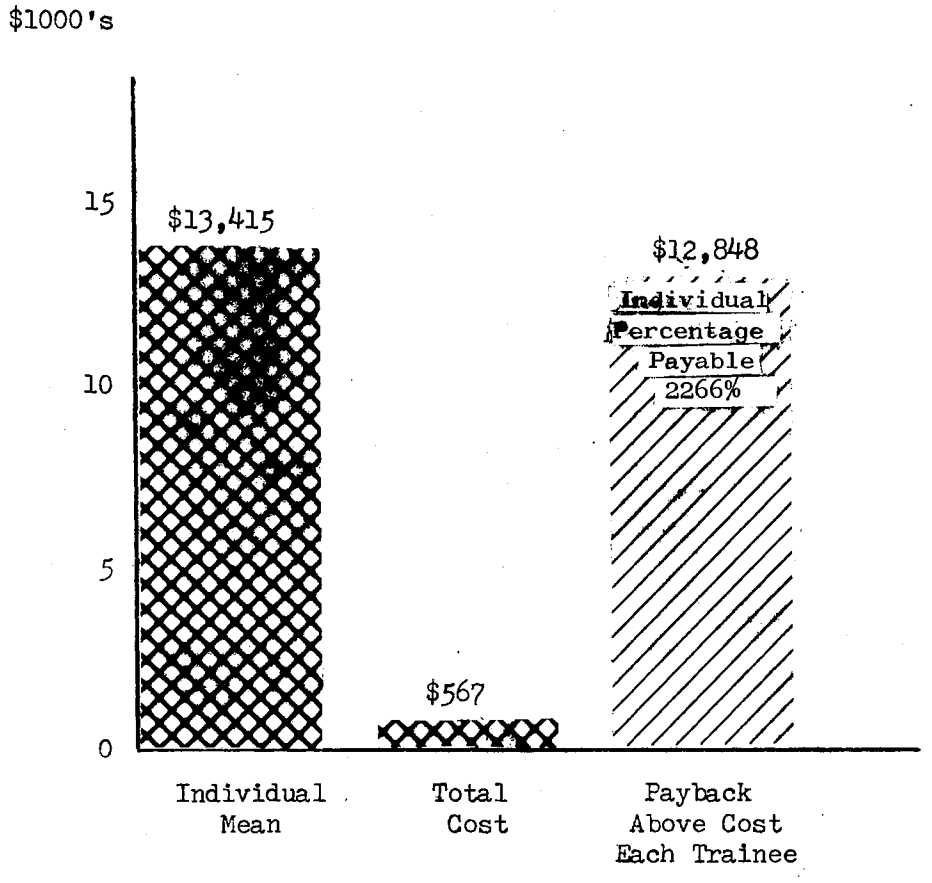


Figure 12. Estimated Total Resource Savings Due to the PSMI for Which the Individual is Responsible. These Savings Cover a Span of 1.74 Years. Survey Questions III-36 and 37, Appendix G

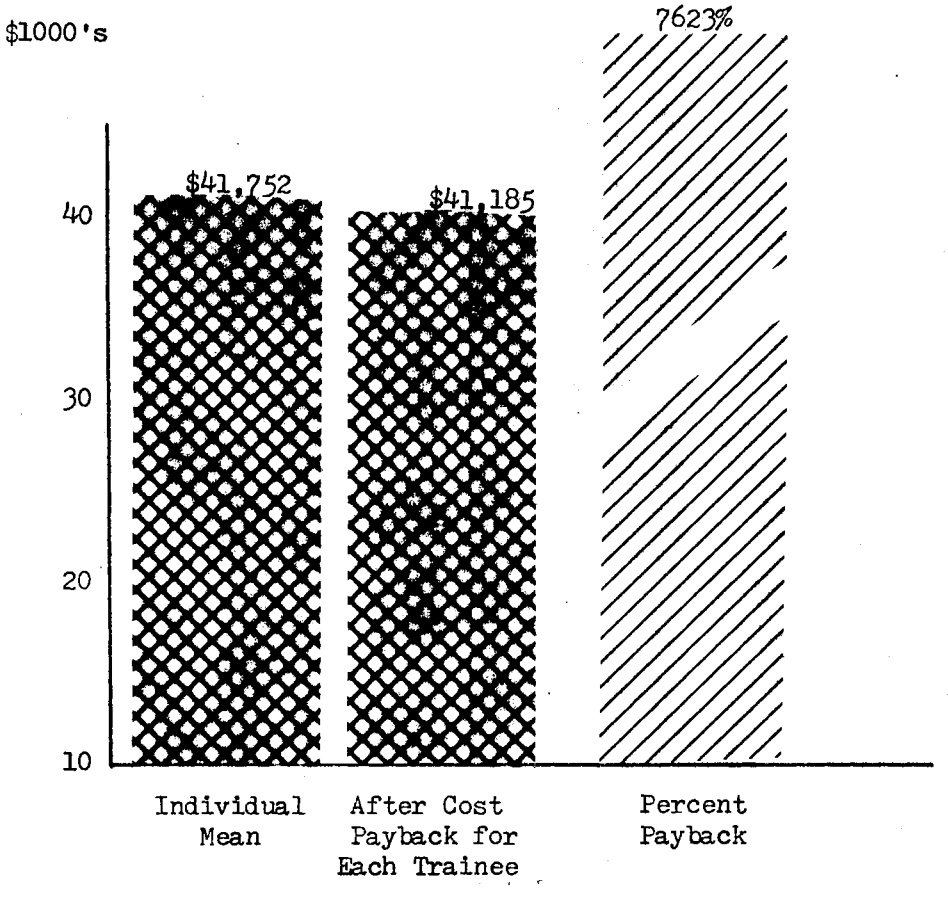


Figure 13. Estimated Total Individual Savings to the State Due to the PSMI. These Savings Cover a Span of 1.36 Years. Survey Questions III-38 and 39, Appendix G

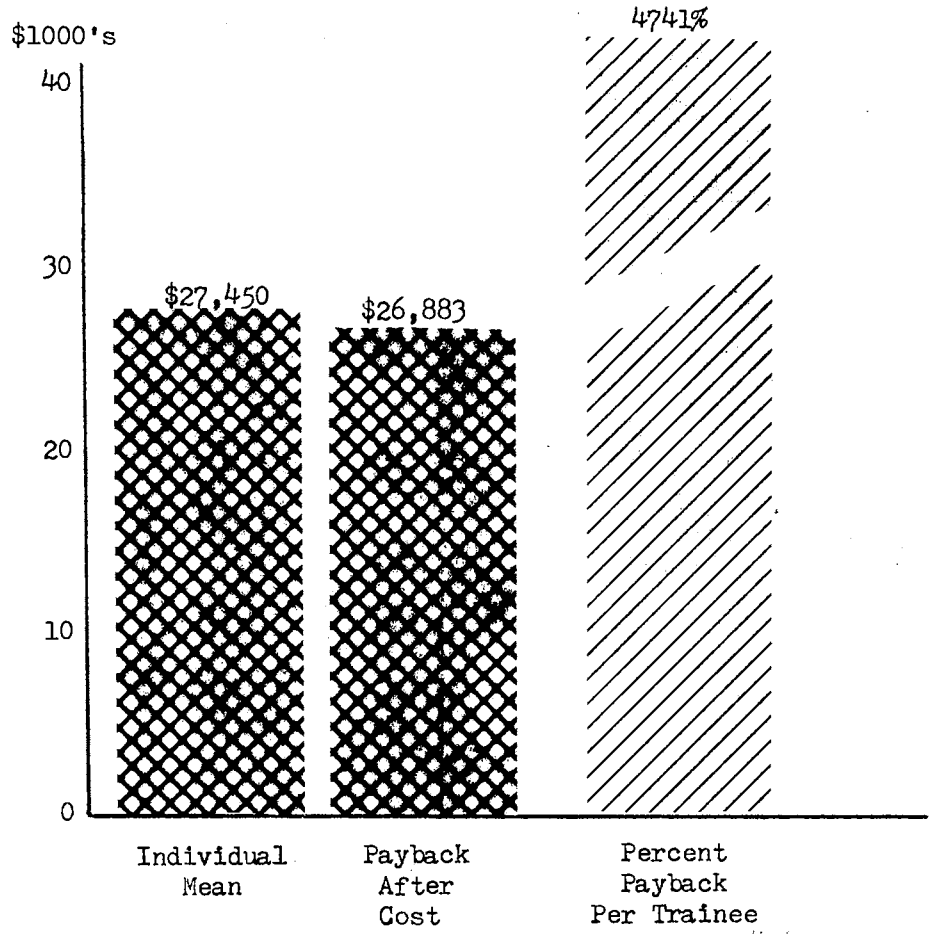


Figure 14. Estimated Dollar Benefits to the State of Tennessee Per Individual PSMI Participant. These Savings Cover a Period of Three Years. Survey Questions III-40 and 41, Appendix G

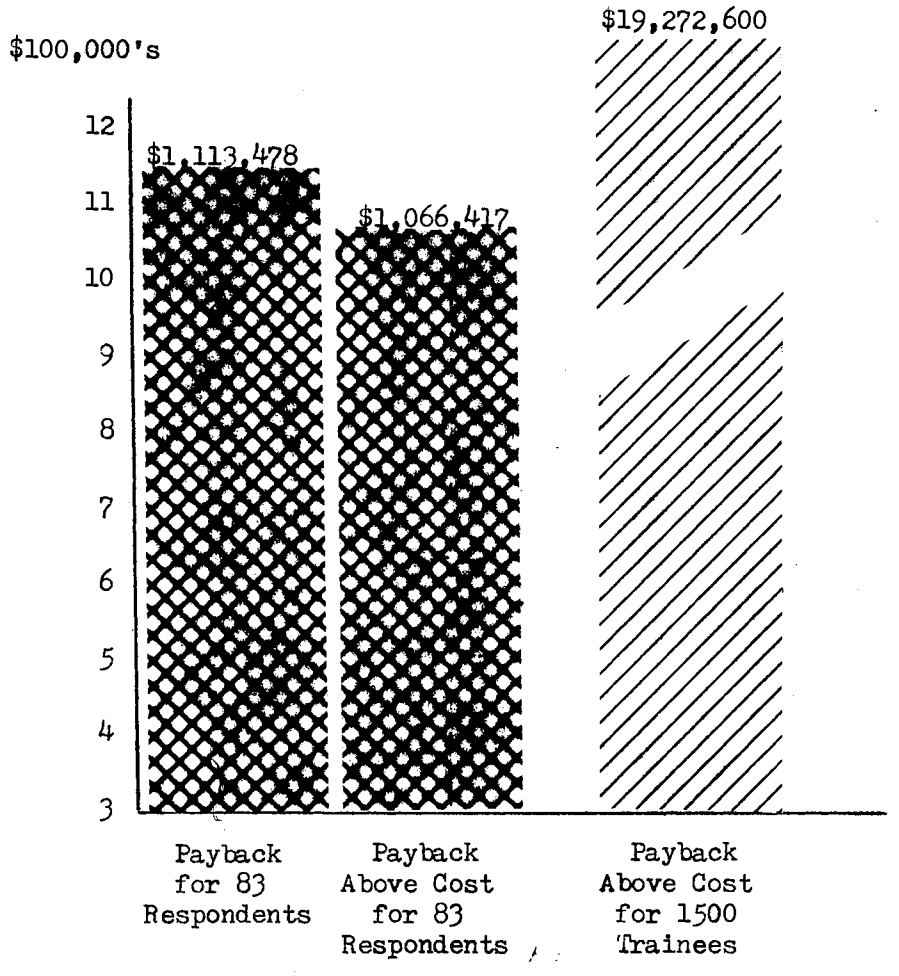


Figure 15. Summary of Estimated Total Individual Resource Savings to the State Due to PSMI. Survey Questions III-36 and 37, Appendix G

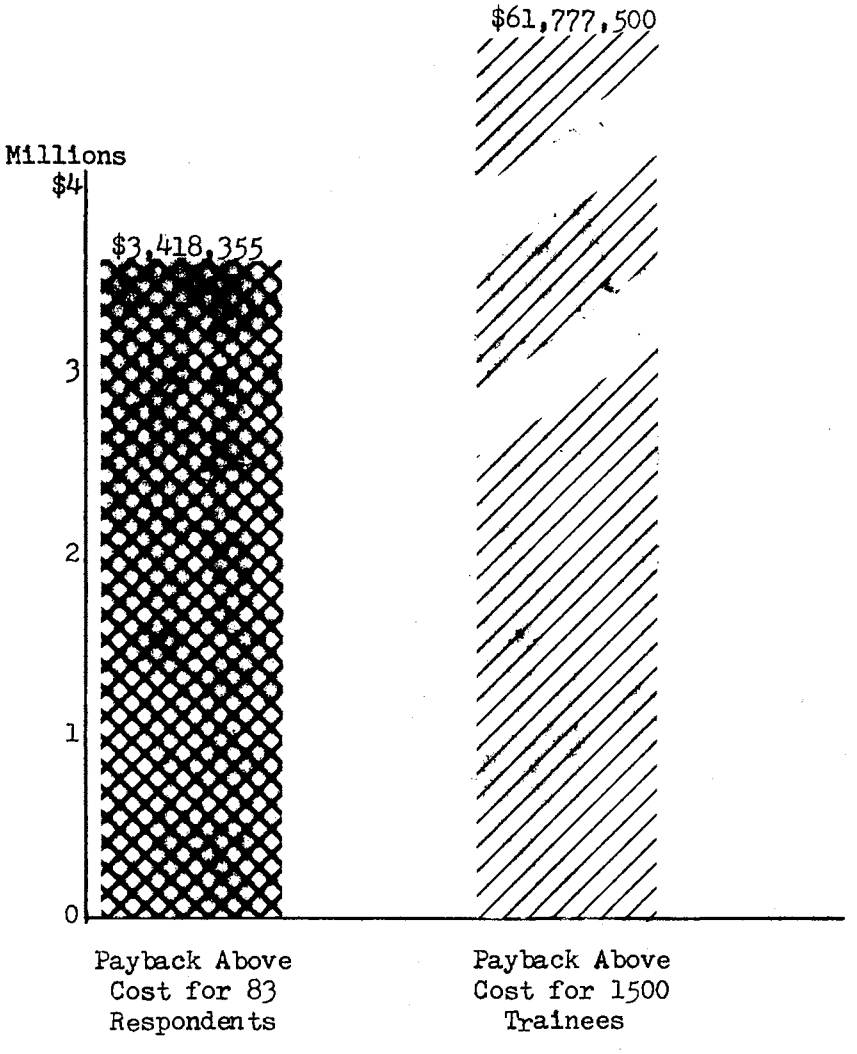


Figure 16. Summary of Estimated Savings After Cost to the State Due to the PSMI. Survey Questions III-38 and 39, Appendix G

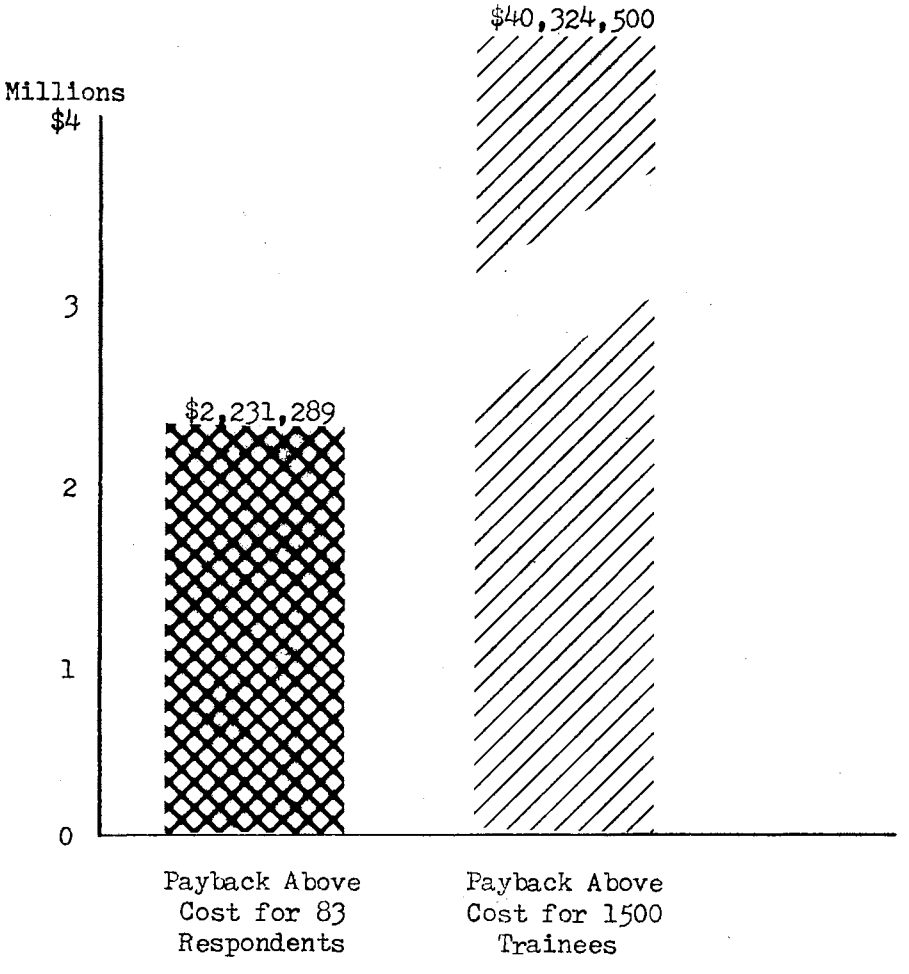


Figure 17. Summary of Estimated Savings After Cost to the State Due to the PSMI. Survey Questions III-40 and 41, Appendix G

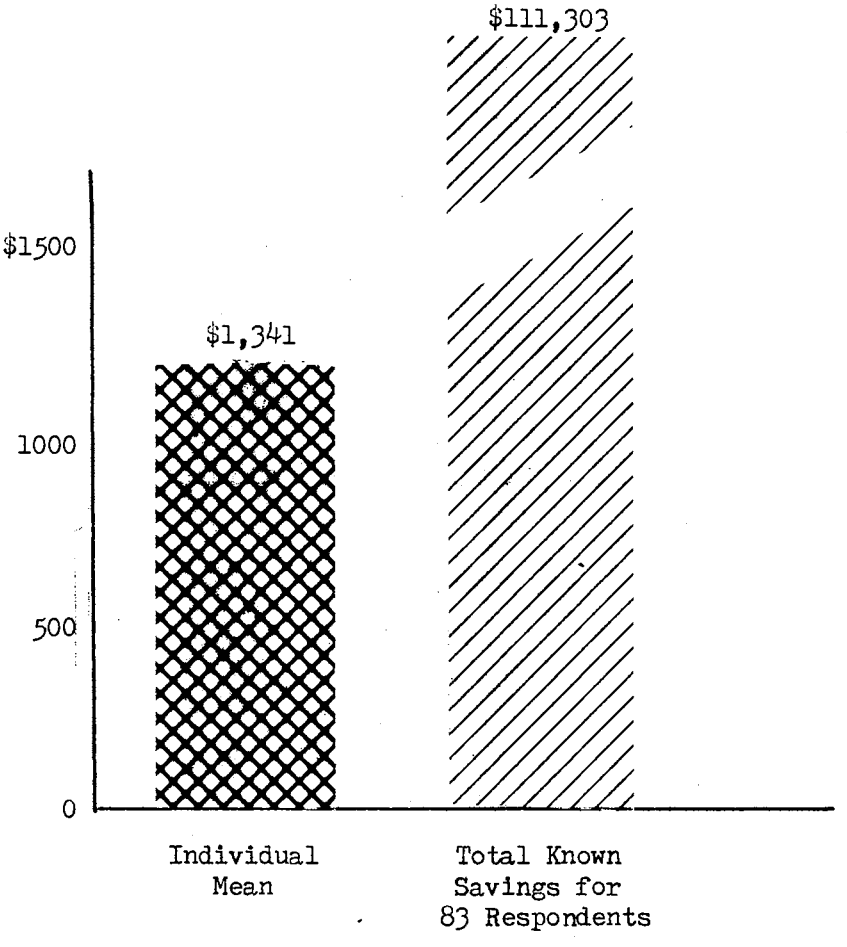


Figure 18. Savings Made by Others Due to the PSMI That are Known About by the Respondent. Survey Questions III-42 and 43, Appendix G

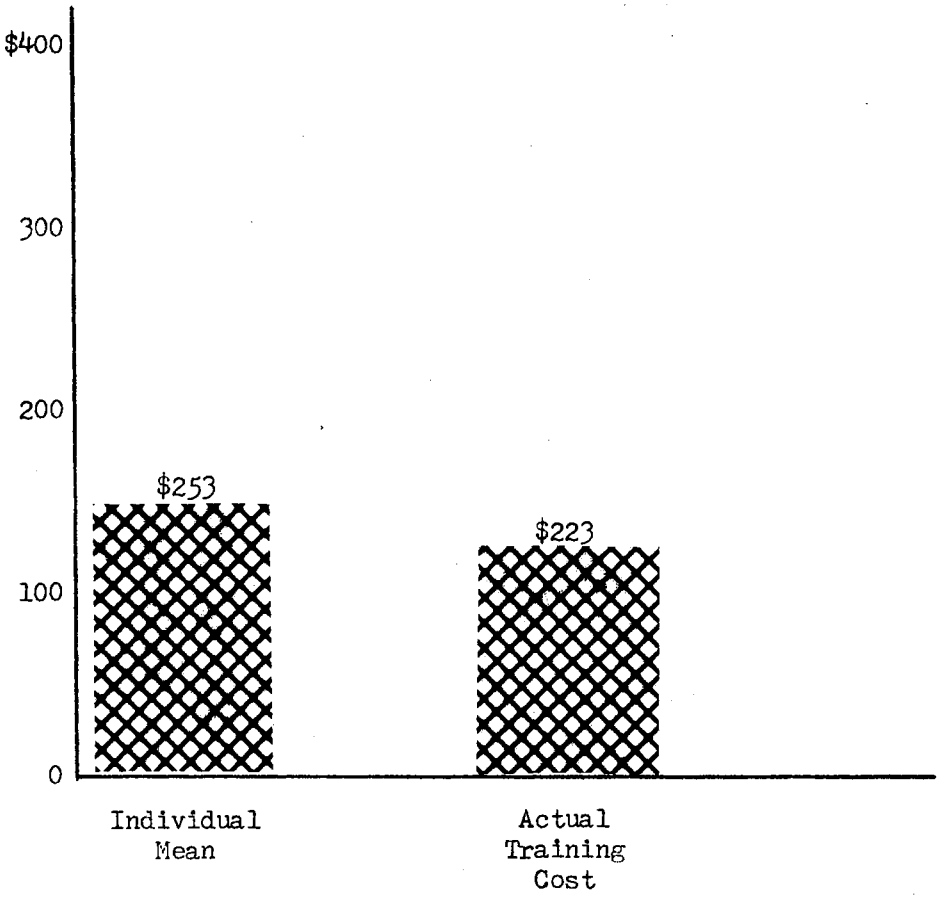


Figure 19. The Amount the Average Participant Would Pay Out of His Own Budget for a Subordinate to Take the PSMI. Survey Question III-46, Appendix G

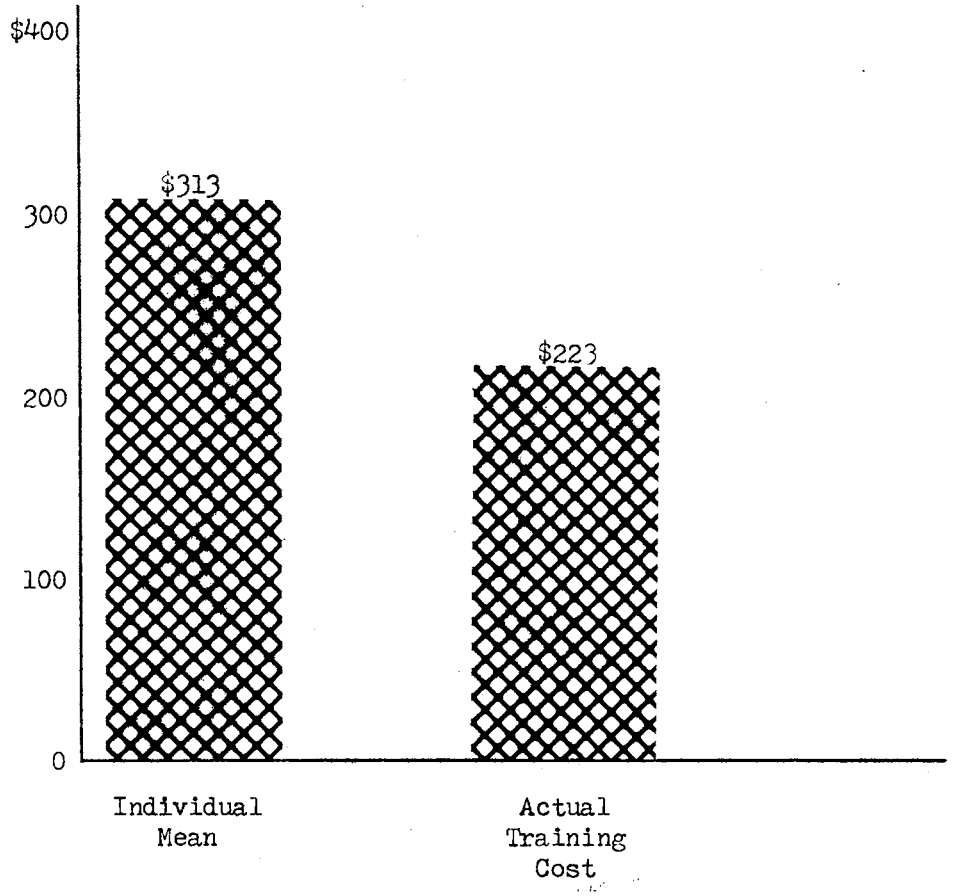


Figure 20. The Amount the Average Participant Would Spend Per PSMI Trainee, Excluding Salary, If He Were Director of Training. Survey Question III-47, Appendix G

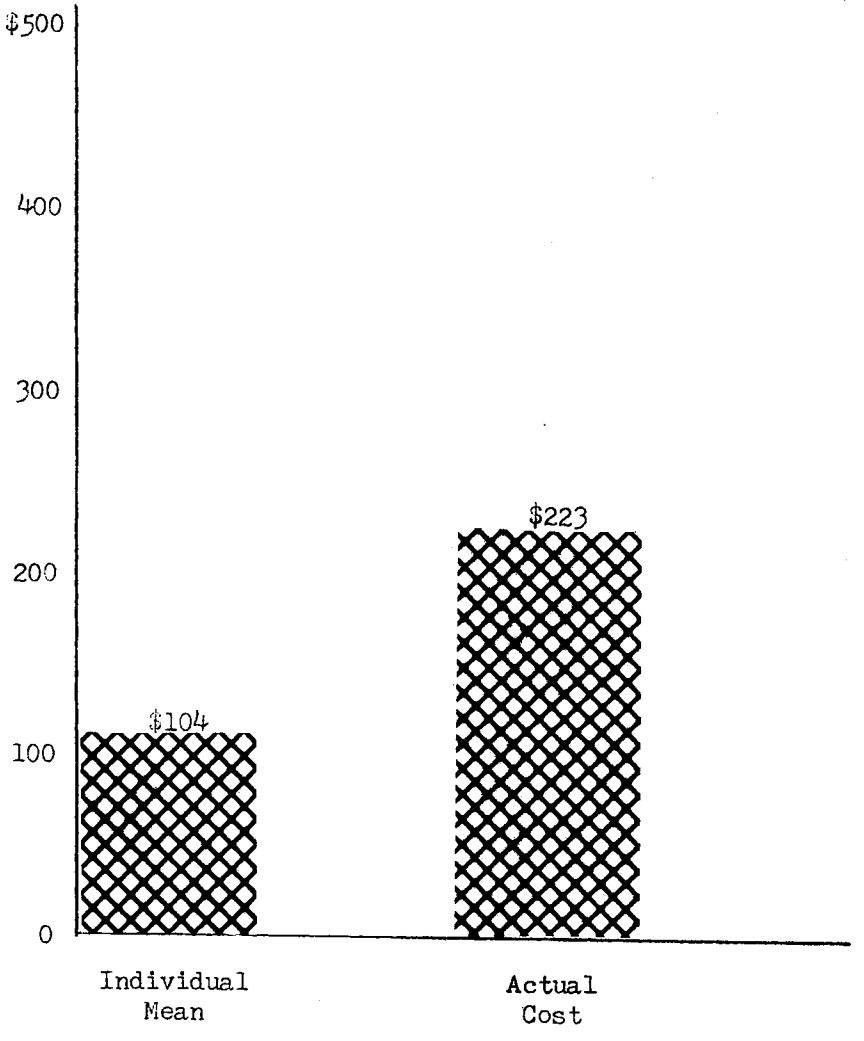


Figure 21. The Amount the Individual Would Pay Out of His Own Pocket to Take the PSMI. Survey Question III-49, Appendix G

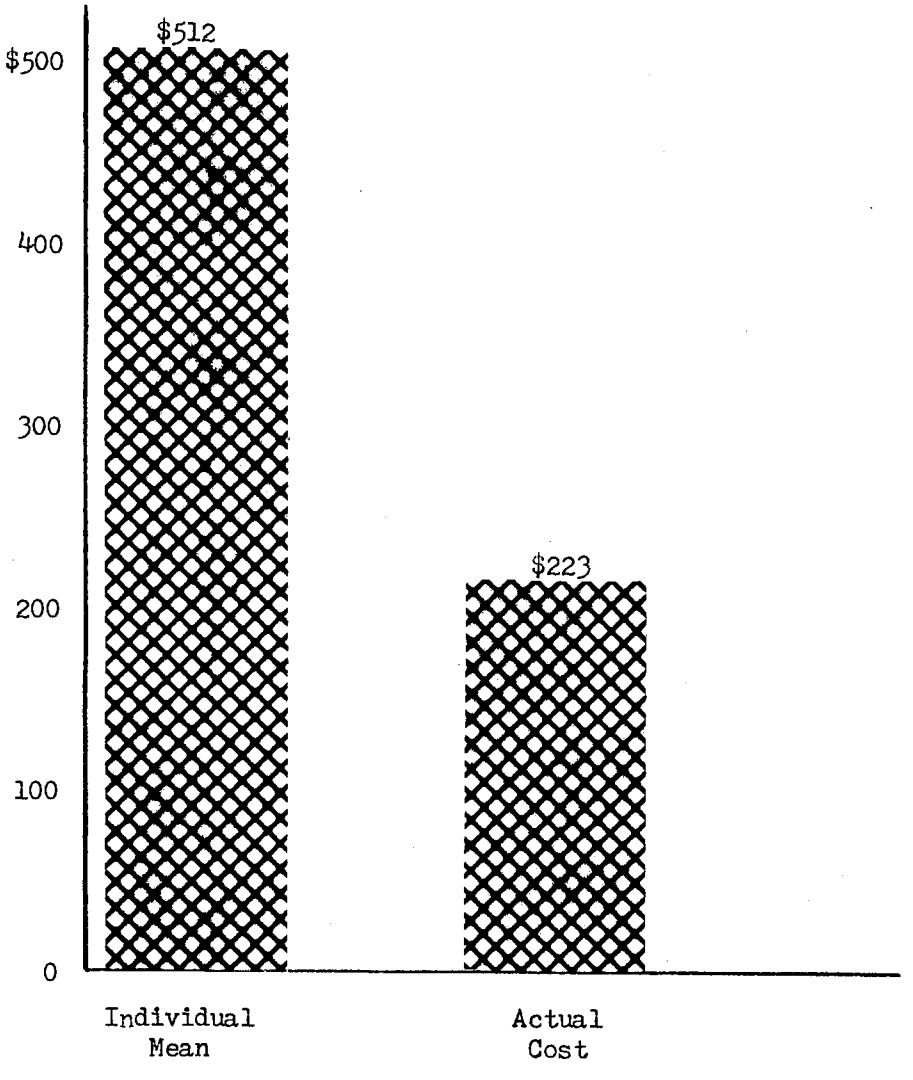
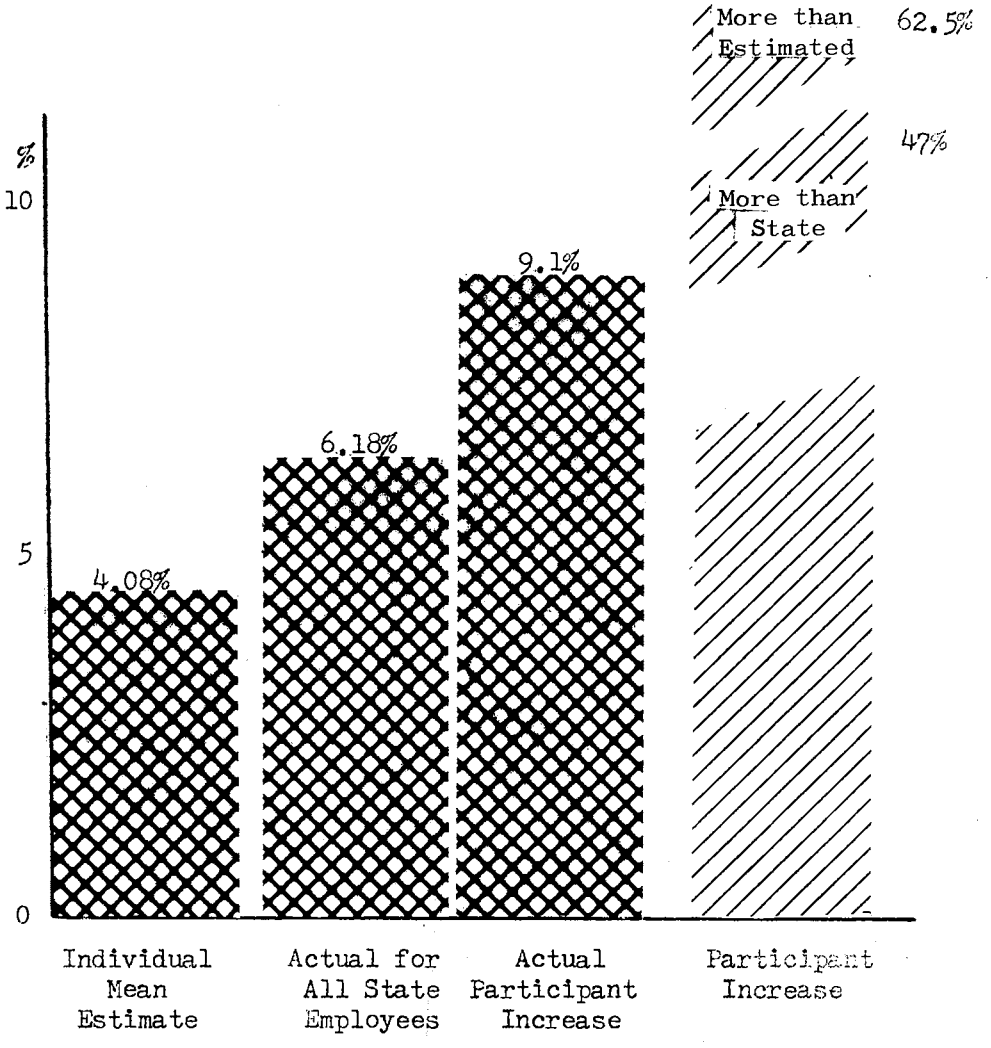
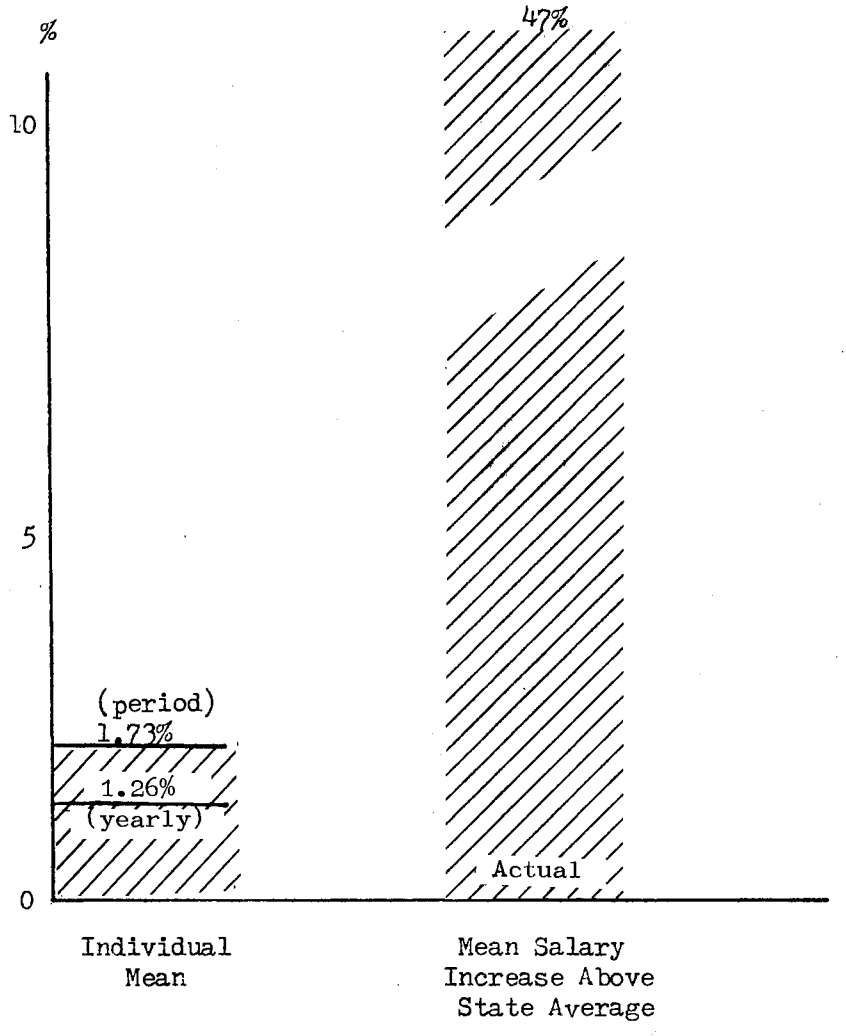


Figure 22. The Estimated Cost, by PSMI Participants, of a Program of Similar Quality From a Private Source. Survey Question III-50, Appendix G



NOTE: Mean time since participant completed program: 16.5 months. Figure 1, page 69, shows that 96% of the participants wanted to attend the Public Service Management Institute.

Figure 23. Estimated Participant Salary Increase and Actual. Survey Question III-51, Appendix G, and Information Obtained From the State of Tennessee Department of Personnel



NOTE: Mean time since participant completed program: 16.5 months.

Figure 24. Estimate by PSMI Participants of the Amount of Raises They Received Above Average State Employees. Survey Question I-B-19, Appendix G, and Information Obtained From the State of Tennessee Department of Personnel

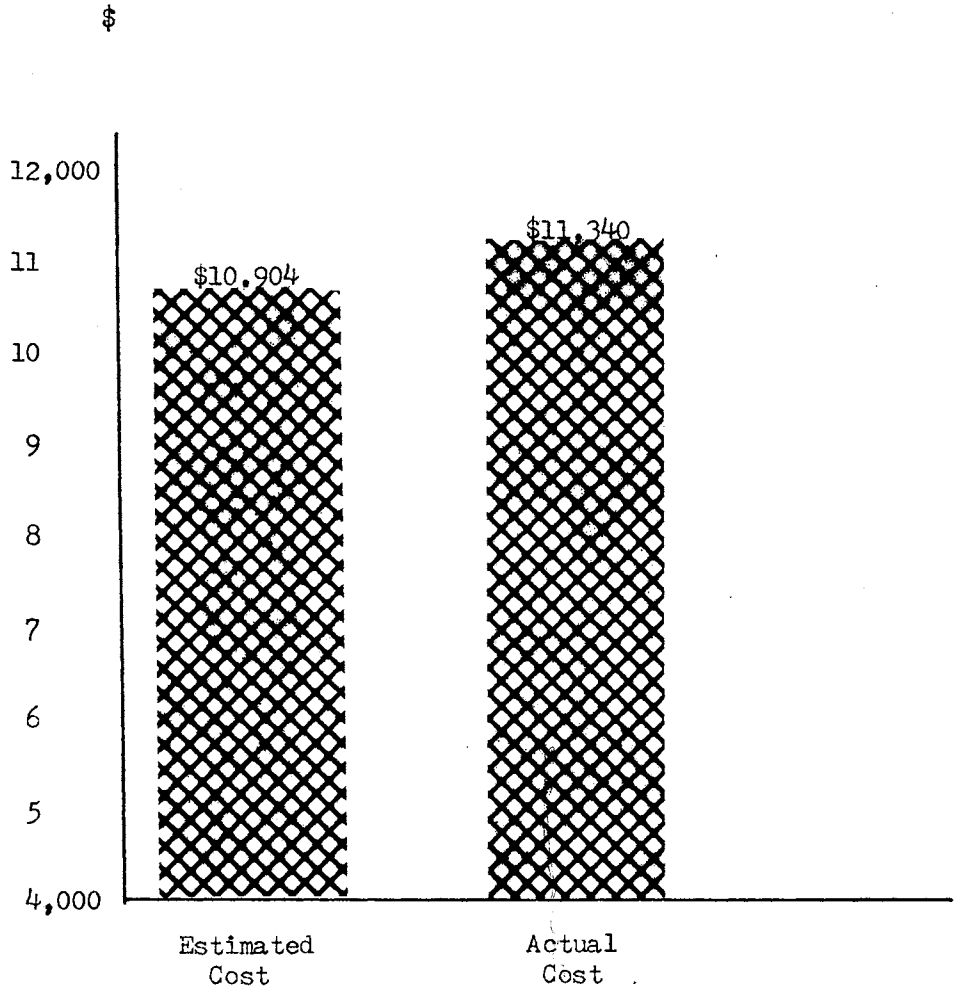


Figure 25. Participant Estimate of Total Program Cost, Including Salary, for Twenty People. Survey Question III-52, Appendix G

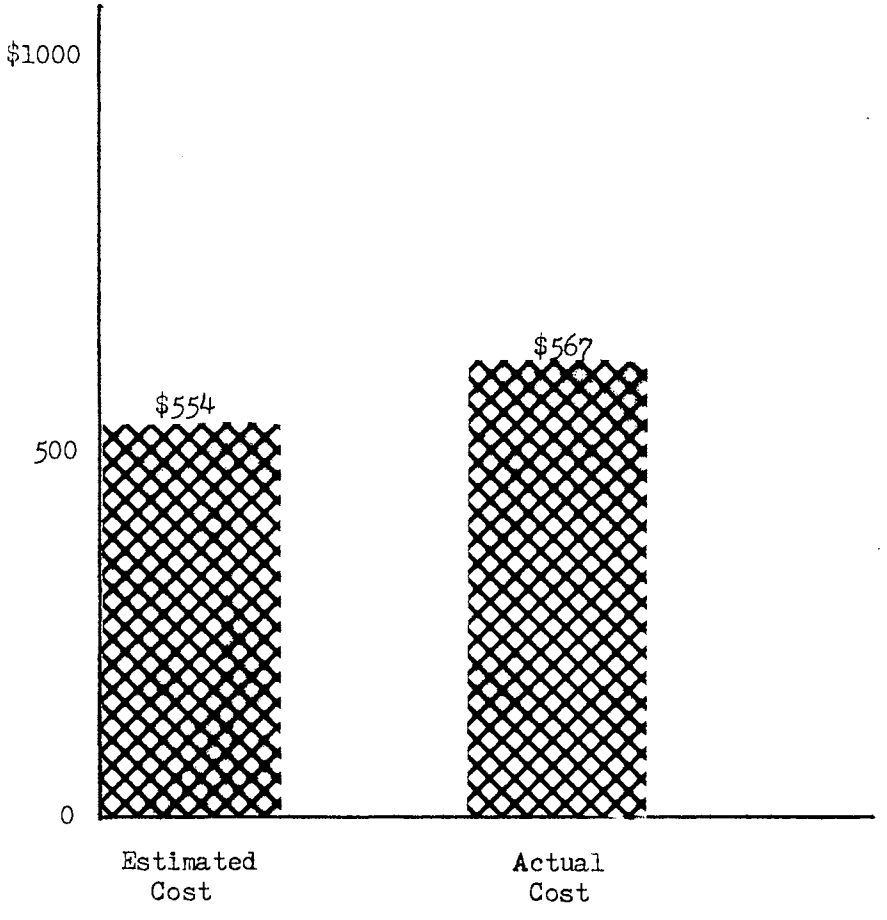


Figure 26. Participant Estimate of Individual Management Trainee Cost, Including Salary. Survey Question III-53, Appendix G

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

This research was designed to develop an assessment model for the evaluation of management training and development programs. This research was conducted using the Public Service Management Institute of the State of Tennessee as the data base. The model measured the organizational value of the Public Service Management Institute and identified variables that account for this value.

To measure the organizational value of the Public Service Management Institute program, a linear model containing one dependent and 17 independent variables was developed. Each variable was defined by several questions relating to a specific topic area. A Likert scale containing 167 items was constructed and dissiminated to those Public Service Management Institute participants who had successfully completed all phases. Coefficient Alpha reliabilities were calculated for each item and variable. Successive computer runs were made to eliminate low reliability items and maximize variable reliabilities. Low reliabilities eliminated 42 items leaving 125 items for reliability calculations. The George Peabody D01, distribution statistics program was used to analyze participant item response for the dependent variable, organizational economic value of the Public Service Management Institute. The International Business Machines "FACTO" factor analysis program was used to factor analyze the 18 variables and determine new factors. The

George Peabody V01, one way analysis of variance program was used to analyze the response in each of five categories to nine demographic questions versus each of the 18 model variables. A final analysis was made using the George Peabody R01, multiple regression program to regress 17 variables on the dependent variable, Organizational Value of the Public Service Management Institute. Of the original 17 independent variables, 10 were retained. The two most significant variables were the "Work Itself" and "Responsibility", with others contributing considerably less to the measure of overall Public Service Management Institute organizational value.

Thirteen of the 17 hypotheses proposed in Chapter III, pages 35-38, are supported by correlations calculated in the multiple regression program. As the organizational value of the Public Service Management Institute goes up, these 13 variables respond positively but not necessarily proportionally. Table X, page 61, shows the correlations for all hypotheses. Those hypotheses not rejected at an .01 level of significance are as follows:

H_1 The organizational value of the Public Service Management Institute will vary directly with a change in the perceived value of management process and principles training.

H_2 The organizational value of the Public Service Management Institute will vary directly with a change in the perceived value of Personnel Management (human relations) training.

H_3 The organizational value of the Public Service Management Institute will vary directly with a change in the

perceived value of managerial tools and techniques training.

H_5 The organizational value of the Public Service Management Institute will vary directly with a change in the perceived value of simulation exercises.

H_7 The organizational value of the Public Service Management Institute will vary directly with a change in the perceived value of group discussions.

H_8 The organizational value of the Public Service Management Institute will vary directly with a change in the perceived achievement due to the Public Service Management Institute.

H_9 The organizational value of the Public Service Management Institute will vary directly with a change in the perceived recognition due to the Public Service Management Institute.

H_{10} The organizational value of the Public Service Management Institute will vary directly with a change in the perceived value of Public Service Management Institute applications to the work iteself.

H_{11} The organizational value of the Public Service Management Institute will vary directly with a change in the perceived value of Public Service Management Institute influence on increased responsibility.

H_{12} The organizational value of the Public Service Management Institute will vary directly with a change in the perceived value of Public Service Management Institute

influence on advancement.

H_{13} The organizational value of the Public Service Management Institute will vary directly with a change in the perceived salary increases influenced by the Public Service Management Institute.

H_{14} The organizational value of the Public Service Management Institute will vary directly with a change in the perceived increase in job security due to Public Service Management Institute training.

H_{16} The organizational value of the Public Service Management Institute will vary directly with a change in the perceived productivity increases influenced by the Public Service Management Institute.

Each of these hypotheses are positively correlated with organizational value of the Public Service Management Institute.

As indicated by Table XIV, pages 82-84, there is significant economic value to and payback from the Public Service Management Institue. Analysis of the quantitative portion of the dependent variable indicates payback above cost of 2000% to above 7000%, 20 to 1 to 70 to 1, in three categories and 136% to 1123% in two other categories. Comments made by respondents on the returned research instrument indicate this to be on the conservative side since many respondents gave 0 value to questions concerning dollar estimates rather than commit themselves.

Based on the first three sets of data in Table XIV, pages 82-84, only 1.4% to 4% of the perceived savings need be real to have recouped all program cost, including participant salaries. With good question reliabilities as indicated by the coefficient Alpha item analysis, there

is strong indication that there is substantial program payback to date, and possibly millions to be realized from the estimated 1500 management trainee population.

As shown in Table IV, page 52, the analysis of variance program identified a strong relationship between educational level and nine of the 18 original variables. Those respondents with "some college" consistently ranked the organizational value of the Public Service Management Institute and eight other variables the highest while "high school only" ranked them the lowest. This is of particular interest indicating the "some college" group places the highest value on continued self education and particularly relates it to achievement, recognition, responsibility, and productivity. Other relationships are discussed in the analysis of variance section of Chapter III.

Factor analysis of the 18 variables identified three factors upon which several variables loaded.

The first factor indicates a strong relationship between program value, content, motivational variables, and productivity. The second factor was loaded highly by the variables recognition, advancement, security, salary, and taxes paid. The third factor, teaching strategies, loads positively on the lecture method, on simulation, case analysis and group discussion indicating that as the positive variable goes up the negative variables decrease or vice versa.

These three factors provide information which allows for the construction of new variables. These variables will be combinations of the variables that loaded most heavily on each factor, thus permitting the measurement of organizational value with greatly reduced variable and item volume. Although factor analysis did not add a great deal to this

study, it does give strong indications that the efficiency of the model can be improved.

The stepwise multiple regression program shows definite relationships between the dependent variable and ten of the independent variables. Although two of the ten variables account for most of the difference in variance in the total model, the remaining eight are necessary to explain the remaining variance differential indicating that all help identify program value. In essence, these ten items do the same job of measuring and explaining variance as do the original 17 variables, permitting greatly refined research questions and variables.

Analysis of demographic data indicates a significant change in participant mean salary prior to the Public Service Management Institute and now (up 9.1%) although the mean time since completion is only 16.5 months. Figure 23, page 99, and Figure 24, page 100, reflect participant estimates concerning salary and the actual. Public Service Mangement Institute participants received a 47% greater salary increase than the average state employee and 63% more than they estimated they would receive.

The final conclusions from this research is that there is significant organizational value to the Public Service Management Institute in both economic and non-economic terms. The evaluation methodology employed is very useful in establishing instrument reliability, and providing data for model refinement. Regression analysis indicates that the original model can be reduced from 18 variables and 167 questions to 11 variables and some 95 questions to obtain essentially the same results. Factor analysis indicates that further refinements can be made by developing new variables from combinations of the old.

This research indicates exciting possibilities for the measurement of management training programs as well as establishing generalized evaluative methodology for many areas. Additional applications should be made to permit the establishment of efficient evaluative models for other areas.

Recommended Future Research

This research found the application of the methodology to produce significant results as a tool for the evaluation of management training and development programs. The approach used could become an assessment methodology for various types of training programs. Empirical evidence supports the value of the Public Service Management Institute. This is indicated by the significant correlations between the dependent variable and 13 of the 17 hypotheses about the program, the item reliabilities, and the analysis of variance among groups. Future research should include the adding and dropping of variables, the subjective weighting of different factors and such to build a more efficient predictive model. Factor analysis, while not making a significant contribution to this research, does indicate combinatorial possibilities that can greatly enhance future assessment models. Additional management training programs should be evaluated using this methodology to permit refinement in the assessment model.

This methodology, along with properly designed research instruments, complemented by discriminant analysis or similar techniques could also be very effective in pre- and post-test evaluation of training and development. All should be applied to further investigate the feasibility of this evaluation methodology.

The research suggests that future researchers be aware of the value of perceived worth as well as actual cost dollars in the evaluation of training and development benefits.

SELECTED BIBLIOGRAPHY

(1) Alves, Euro, and William R. Hardy. "Evaluating Supervisory Training in Los Angeles County." Training Directors (August, 1963), pp. 37-40.

(2) Andrews, Kenneth R. "The Effectiveness of University Management Development Programs." Boston: Division of Research, Graduate School of Business Administration, Harvard University, 1966.

(3) Barnard, Chester I. The Functions of the Executive. Cambridge, Massachusetts: Harvard University Press, 1938, 1971.

(4) Baum, Bernard H., and Peter F. Sorensen, Jr. "Organizational Effects of Supervisory Human Relations Training: An Evaluation Technique." Personnel Journal (March, 1966), pp. 148-152.

(5) Belasco, James A., and Harrison M. Trice. The Assessment of Change in Training and Therapy. New York: McGraw-Hill, 1969.

(6) Belasco, James, and Harrison M. Trice. "Unanticipated Returns of Training." Training and Development Journal (July, 1969), pp. 12-17.

(7) Blake, Robert R., and Jane S. Mouton. "Some Effects of Managerial Grid Seminar Training on Union and Management Attitudes Toward Supervision." Journal of Applied Behavioral Sciences (October-November-December, 1966), pp. 387-400.

(8) Bolar, Malathi. "Evaluating Management Development Programs in Industry." Training and Development Journal (March, 1970), pp. 34-40.

(9) Bohrnstedt, George W. "Reliability and Validity Assessment." Attitude Measurement. Ed. Gene F. Summers. Chicago: Rand, McNally, 1970, pp. 80-99.

(10) Brown, Clarence W., and Edwin E. Ghiselle. Scientific Method in Psychology. New York: McGraw-Hill, 1955.

(11) Campbell, John P. "Personnel Training and Development," Annual Review of Psychology, Vol. 22, Palo Alto, California: Annual Reviews, Inc., 1971, pp. 565-602. Campbell is currently on the Department of Psychology faculty at the University of Minnesota.

(12) Campbell, J. P., M. D. Dunnette, E. E. Lawler, and K. E. Weick. "Managerial Behavior, Performance, and Effectiveness," in "Personnel Training and Development." J. P. Campbell. Annual Review of Psychology. Palo Alto, California: Annual Reviews, Inc., 1971, p. 581.

(13) Cochran, W. G., and G. M. Cox. Experimental Designs. New York: John Wiley and Sons, 1950.

(14) Catalanello, Ralph F., and Donald L. Kirkpatrick. "Evaluating Training Programs - The State of the Art." Training and Development Journal (May, 1968), pp. 2-9.

(15) Cox, Keith K., and Ben M. Enis. Experimentation for Marketing Decisions. Scranton, Pennsylvania: International Textbook, 1969.

(16) Crombach, Lee J. Essentials of Psychological Testing. New York: Harper and Row, 1960.

(17) Crombach, R. L. "Coefficient Alpha and the Internal Structure of Tests." Principles of Educational and Psychological Measurement, A Book of Readings. Eds. William A. Mehrens and Robert L. Ebel. Chicago: Rand McNally, 1967, pp. 132-166.

(18) Deutzer, Bernard A. "Measuring the Effectiveness of a Selected Management Development Program." (Unpub. Ph. D. dissertation, Ohio State University, 1967.)

(19) Draper, N. R., and H. Smith. Applied Regression Analysis. New York: John Wiley and Sons, 1966, pp. 163-195.

(20) Drucker, Peter F. The Practice of Management. New York: Harper and Row, 1954.

(21) Executive Management Development. State of Tennessee Department of Personnel Training Division and The University of Tennessee Center for Training and Career Development Bulletin dated August 3, 1967.

(22) Ferguson, William C. "Quantitative Evaluation of Training Using Student Reaction." Training and Development Journal, Vol. 22, No. 1 (November, 1968), pp. 36-43.

(23) Fishbein, Martin. Ed. Readings in Attitude Theory and Measurement. New York: John Wiley and Sons, 1967.

(24) Fischer, Ronald A. The Design of Experiments. Edinburgh: Oliver and Boyd, 1947.

(25) Gage, N. L. Ed. Handbook of Research on Teaching. A project of the American Educational Research Association. Chicago: Rank McNally, 1968.

(26) Hertzberg, Frederick, Bernard Mausner, and Barbara Block Snyderman. The Motivation to Work. New York: John Wiley and Sons, 1959.

(27) House, Robert J. Management Development: Design, Evaluation, and Implementation. Ann Arbor, Michigan: Bureau of Industrial Relations, Graduate School of Business Administration, The University of Michigan, 1967.

(28) House, Robert J. "Managerial Reactions to Two Methods of Management Training." A Selected Bibliography on Evaluation of Management Training and Development Programs. Vera Kohn. The American Foundation for Management Research, Inc., The American Management Association, April, 1970, p. 1.

(29) House, Robert J., and Henry Tosi. "An Experimental Evaluation of a Management Training Program." Academy of Management Journal (December, 1963), pp. 303-315.

(30) Hoyt, Cyril J. "Test Reliability Estimated by Analysis of Variance." Principles of Educational and Psychological Measurement, A Book of Readings. Eds. William A. Mehrens and Robert L. Ebel. Chicago: Rand McNally, 1967, pp. 108-115.

(31) Huntsberger, David V. Elements of Statistical Inference. Boston: Allyn and Bacon, 1961.

(32) Jack, W. R. "Are Management Attitudes Changed by 'Crash' Executive Development Programs?" Canadian Personnel and Industrial Relations Journal, Vol. 16, No. 1 (January, 1969), pp. 49-54.

(33) Kirkpatrick, Donald L. "Evaluating a Training Program for Supervisors and Foremen." Personnel Administration, Vol. 14, No. 5 (September-October, 1969), pp. 29-32, 34-36.

(34) Kuder, G. F., and Marion W. Richardson. "The Theory of the Estimation of Test Reliability." Principles of Educational and Psychological Measurement, A Book of Readings. Eds. William A. Mehrens and Robert L. Ebel. Chicago: Rand McNally, 1967, pp. 132-166.

(35) Kohn, Vera. An Assessment of Participants' Reactions to Management Development Meetings. New York: American Foundation for Management Research, Inc., 1968, pp. 1-67.

(36) Kohn, Vera, and Treadway C. Parker. Management Development and Program Evaluation: Partners in Promoting Managerial Effectiveness. New York: American Foundation for Management Research, Inc., 1967.

(37) Likert, Renis, and David Bowers. "People Capital." Behavior Today, Vol. 3, No. 48 (November 27, 1972).

(38) Likert, Renis. The Human Organization. New York: McGraw-Hill, 1967.

(39) Likert, Renis. New Patterns of Management. New York: McGraw-Hill, 1961.

(40) Likert, Renis. "A Technique for the Measurement of Attitudes, 1932." Attitude Measurement. Ed. Gene F. Summers. Chicago: Rand McNally, 1970, pp. 149-158.

(41) Livingston, Henry S. "The Training Function: Overhead or Profit." Training and Development Journal (August, 1970), pp. 18-21.

(42) McGehee, William, and Paul W. Thayer. Training in Business and Industry. New York: John Wiley and Sons, 1961.

(43) Mehrens, William A., and Robert L. Ebel. Principles of Educational and Psychological Measurement: A Book of Readings. Chicago: Rand McNally, 1967.

(44) Moffie, Dannie J., and Richard Calhoun. "Evaluation of a Management Development Program." Personnel Psychology (Winter, 1964), pp. 431-440.

(45) Odiorne, George S. Training by Objectives: An Economic Approach to Management Training. New York: The Macmillian Co., 1970.

(46) Phillips, Lee J., Jr. "Discriminant Factors Influencing Participation in Continuing Engineering Education." (Unpub. Ph. D. dissertation, Oklahoma State University, Stillwater, 1972.)

(47) Phillips, Robert Leslie. "A Study of Twenty-One Variables Relating to Leader Legitimation." (Unpub. Ph. D. dissertation, Ohio State University, 1972.)

(48) Porter, Lyman W., and Edward E. Lawler, III. Managerial Attitudes and Performance. Homewood, Illinois: Richard D. Irwin, Inc., 1968.

(49) Ritchey, John A. Classics in Industrial Engineering. Delphi, Indiana: Prairie Publishing Co., 1964.

(50) Rizzo, John R. "The Evaluation of Management Development." Management Development, Design, Evaluation, and Implementation. Ed. Robert J. House. Bureau of Industrial Relations, Graduate School of Business Administration, the University of Michigan, Ann Arbor, 1967, pp. 79-96.

(51) Shaw, Marvin E., and Jack M. Wright. Scales for the Measurement of Attitudes. New York: McGraw-Hill, 1967.

(52) Stogdill, R. M., and A. E. Coons. Eds. "Leadership Behavior: Its Description and Measurement," Monograph 88, Bureau of Business Research. The Ohio State University, 1957. (Ohio State Leader Description Questionnaire)

(53) Summers, Gene F. Ed. Attitude Measurement. Chicago: Rand McNally, 1970.

(54) Sullivan, Alden Patrick. "An Analysis of Management Training Program Evaluation Practices in American Industry." (Unpub. D.B.A. dissertation, George Washington University, 1970.)

(55) Tracy, William R. Evaluating Training and Development Systems. New York: The American Management Association, 1968.

(56) Trickett, Wilson L. "An Empirical Investigation of the Effectiveness of Executive Development Programs as Perceived by Participating Marketing and Sales Exectives." (Unpub. Ph. D. dissertation, Michigan State University, 1967.)

(57) United States Civil Service Commission. "A Follow Up Study of the Three Week Residential Seminar in PPBS." October 17, 1968. 93 pp.

APPENDIX A

RESEARCH MODEL VARIABLES, QUESTIONS BY VARIABLES AND THOSE ITEMS RETAINED AND DROPPED

RESEARCH MODEL VARIABLES, QUESTIONS

BY VARIABLES AND THOSE ITEMS

RETAINED AND DROPPED

The following is a listing of all variables and related questions. Questions retained under each variable are listed first with the item reliability shown in parentheses. Those items deleted are shown next. Overall variable reliability is shown in parentheses.

1. Dependent Variable: Organizational Value of the Public Service Management Institute (PSMI). (0.91)

   (1) I am enthusiastic about the PSMI training. (0.89)

   (2) PSMI is a waste of time and money. (0.48)

   (3) This program encouraged me to attend university credit courses. (0.52)

   (4) PSMI helped me to improve my use of resources by at least: (0.81)

   $0 10,000 20,000 30,000 40,000 or more

   (5) These savings will continue for a period of (years): (0.83)

   0 1 3 5 7 or more

   (6) PSMI helped me save the State at least: (0.71)

   $0 50,000 100,000 150,000 200,000 or more

   (7) These savings will continue for a period of (years): (0.79)

   0 1 3 5 7 or more

(8) For each participant the State has benefitted by at least: (0.74)

$0 10,000 20,000 30,000 40,000 or more

(9) These savings will continue for a period of (years): (0.79)

1 3 5 7 or more

(10) I know of another person who made resource savings as a result of PSMI, of approximately: (0.62)

$0 10,000 20,000 30,000 40,000 or more

(11) These savings will continue for a period of (years): (0.60)

1 3 5 7 or more

(12) PSMI will improve the use of State resources by at least: (0.70)

$0 500,000 or less 1,500,000 2,500,000 3,500,000 or more

Items Deleted

(1) I wanted to attend PSMI.

(2) PSMI training would benefit top management.

(3) PSMI training would benefit middle management.

(4) PSMI training would benefit lower management.

(5) PSMI training would help management trainees.

(6) PSMI did not help me in my job.

(7) This program motivated me to seek additional training.

(8) This was the best management training program I have attended.

(9) If I were Director of Training, I would be willing to spend per trainee (excluding salary) this amount for PSMI training:

$0 200 400 600 800 or more

(10) As a result of PSMI, my taxes have increased by:

$0 200 400 600 800 or more

(11) To buy a program of similar quality and content from a private firm would cost per trainee:

$100 300 500 700 900 or more

(12) Since PSMI, my annual salary has increased by at least:

3% 6% 9% 12%-up

(13) PSMI graduates get more raises than others by

0% 3% 6% 9% 12%-up

2. Variable: Management Process and Principles (0.83)

(1) PSMI increased my knowledge of planning, organizing, and controlling. (0.78)

(2) I now make more positive applications of planning, organizing, and controlling techniques. (0.75)

(3) PSMI improved my understanding of goal setting and goal achievement. (0.75)

(4) I have not changed my planning, organizing, or control systems. (0.67)

(5) The first week of PSMI, basic management, was of great help to me in my job. (0.74)

(6) More time should be spent on the first week subjects of planning, organizing, and controlling. (0.47)

(7) I am now able to do a better job because of better understanding of planning, organizing, and control. (0.79)

Items Deleted

None

3. Variable: Personnel Management (Human Relations) (0.86)

(1) Since PSMI, I have a better understanding of human relations. (0.64)

(2) PSMI improved my human relations skills, (0.54)

(3) Because of PSMI, my work group is more satisfied. (0.75)

(4) Because of PSMI, morale in my work group is improved. (0.71)

(5) Because of PSMI, employee turnover in my work group has been reduced. (0.64)

(6) As a result of PSMI, there has been a reduction of absenteeism in my work group. (0.62)

(7) More time should be spent on human relations. (0.43)

(8) As a result of PSMI, there have been positive changes in my work group. (0.69)

(9) PSMI improved my communication skills. (0.55)

(10) Because of PSMI, there have been fewer complaints from my subordinates. (0.65)

(11) I work better with my group since I took PSMI. (0.66)

(12) Since PSMI, I have more knowledge about employee behavior. (0.73)

(13) PSMI helped me to identify more strongly with my organization. (0.57)

(14) I now have fewer conflicts in my work. (0.65)

Items Deleted

(1) PSMI made me more aware of the significance of personality conflicts in work situations.

(2) The program improved my attitude toward State government.

(3) This program improved my attitude toward my supervisor.

(4) During PSMI, I had many opportunities to discuss job problems with my classmates.

4. Variable: Managerial Tools and Techniques (0.74)

(1) PSMI increased my knowledge of managerial tools and techniques. (0.52)

(2) I have not used any tools and techniques covered in PSMI. (0.49)

(3) The work simplification concepts as taught in PSMI are of little value to me. (0.74)

(4) Planning techniques (CPM/PERT) are useful to me. (0.66)

(5) I found the presentations on computers helpful. (0.64)

(6) The lectures and assignments on job design and work measurement have been of value to me. (0.61)

(7) The amount of time spent on scheduling techniques was of little value. (0.74)

Items Deleted

(1) PSMI taught me how to apply managerial tools and techniques.

(2) The ideas covered in economic analysis apply to my job.

(3) More time should be spent on managerial tools.

(4) I am not interested in work simplification techniques.

5. Variable: Lecture Method (0.77)

(1) The lectures were the best part of the course. (0.81)

(2) The lectures were good. (0.53)

(3) I learned the most from the lectures. (0.85)

(4) The lecture approach is the best for this type program. (0.77)

(5) I found the lectures stimulating. (0.58)

(6) The speakers were good. (0.50)

Items Deleted

(1) I thought the lectures were poor.

(2) There should be more speakers.

6. Variable: Simulation (0.75)

(1) Simulation exercises provide little insight to real world management problems. (0.62)

(2) The simulation exercises taught me how to apply managerial concepts and techniques. (0.60)

(3) Simulation exercises were the least interesting part of the program. (0.74)

(4) The simulation exercises were confusing. (0.62)

(5) The simulation exercises were good. (0.75)

(6) I like simulation exercises. (0.78)

Items Deleted

(1) More simulation exercises should be used in PSMI.

7. Variable: Case Analysis (0.79)

(1) The case analyses provided an excellent method for learning how to apply management concepts. (0.86)

(2) I believe the case analyses are of little value in PSMI. (0.82)

(3) The cases analyzed were good. (0.72)

(4) Most cases were realistic and applicable. (0.74)

Items Deleted

(1) More cases should be used in PSMI.
(2) The cases used did not relate well to State government.

8. Variable: Group Discussion (0.86)

(1) The group discussions were an excellent method for learning. (0.81)

(2) Group discussion was generally a poor way to learn new materials. (0.75)

(3) The group discussions clarified several things for me. (0.71)

(4) I found the group discussions to be stimulating. (0.79)

(5) I learned a lot from the group discussions. (0.89)

(6) I enjoyed the group discussions. (0.70)

Items Deleted

(1) More group discussion should be used.

9. Variable: Achievement (0.80)

(1) PSMI will help the State improve its professional and managerial competence. (0.72)

(2) My attendance in PSMI was a waste of time. (0.66)

(3) PSMI contributed nothing to my personal goals. (0.63)

(4) My participation in PSMI is evidence of my desire to be a better manager. (0.68)

(5) PSMI is one thing I can point to as evidence of my achievements and professional development. (0.72)

(6) PSMI has helped me to achieve worthwhile things in my job. (0.64)

(7) I have been able to achieve a great deal more for myself because of PSMI. (0.75)

Items Deleted

None

10. Variable: Recognition (0.79)

(1) PSMI has resulted in more notice of my efforts. (0.69)

(2) PSMI was worthwhile because of the resulting recognition I have received from management. (0.79)

(3) PSMI was a source of special recognition for me. (0.62)

(4) PSMI is not recognized as a means for up-grading a manager. (0.66)

(5) PSMI has resulted in my receiving more recognition from my fellow workers. (0.77)

(6) I have not received any recognition as a result of PSMI. (0.73)

Items Deleted

(1) My supervisor encouraged me to attend PSMI.

(2) My supervisor sent me to PSMI because he wanted me out of the office for a while.

11. Variable: Work Itself (0.88)

(1) My attendance in PSMI has given me problem solving tools that I have applied. (0.58)

(2) PSMI enables me to do a better job in managing my subordinates. (0.69)

(3) PSMI helped me to be more satisfied with my work. (0.67)

(4) My attendance in the PSMI has not helped me to do a better job (0.60)

(5) In PSMI, I made or renewed a friendship that has been helpful in improving my job performance. (0.66)

(6) PSMI has improved my job involvement and satisfaction. (0.79)

(7) As a result of PSMI, I enjoy my work more. (0.74)

(8) The program helped my associates in their jobs. (0.56)

(9) The program helped me in my job. (0.65)

(10) Since PSMI, I have a better attitude toward problem solving. (0.63)

(11) I am now more willing to take constructive action toward problem situations. (0.62)

(12) Because of PSMI, I feel that the State cares more about the problems of the manager. (0.52)

(13) PSMI made me more aware of the importance of my job. (0.62)

Items Deleted

(1) The PSMI is of value to me in non-managerial work.

(2) I use tools, techniques, and concepts that I learned in PSMI.

(3) PSMI training applies to real world work situations.

(4) I now find my work less tolerable than before PSMI.

(5) PSMI helped me to have a better understanding of the operation of State government.

(6) In PSMI, I shared experiences with others which helped me in my job.

12. Variable: Responsibility (0.60

(1) I have been given increased responsibility for the work of others since PSMI. (0.67)

(2) My training in PSMI was an excellent way for me to qualify for more responsibility. (0.63)

(3) My attendance in PSMI has given me the opportunity to make more decisions on my own. (0.75)

(4) There is a direct relationship between PSMI training and an increase in job responsibility. (0.61)

(5) My attendance in PSMI has resulted in reduced supervision for me. (0.43)

Items Deleted

None

13. Variable: Advancement (0.77)

(1) My attendance in the PSMI will not help me get a promotion. (0.78)

(2) PSMI will improve my chances for advancement. (0.80)

(3) My attendance in PSMI has specifically resulted in one or more promotions. (0.64)

(4) PSMI training should be an important factor in State policy concerning promotions. (0.43)

(5) PSMI has provided opportunities I would not otherwise have had. (0.65)

(6) There is a direct relationship between promotion and PSMI training. (0.79)

Items Deleted

None

14. Variable: Salary (0.87)

(1) PSMI has improved my chances for a pay raise. (0.79)

(2) Attendance in the PSMI has qualified me for a better salary. (0.65)

(3) Attendance in the PSMI will help me to qualify for a merit pay increase. (0.84)

(4) Attendance in the PSMI has been financially rewarding for me. (0.81)

(5) Attendance in PSMI will result in a pay increase greater than I normally would receive. (0.85)

(6) My participation in PSMI will not affect my chances for a raise. (0.79)

Items Deleted

None

15. Variable: Security (0.76)

(1) Attendance in the PSMI increases job security. (0.85)

(2) PSMI is a ncessary part of maintaining job security. (0.74)

(3) PSMI is of no value in maintaining one's job. (0.70)

(4) I am more secure in my job because of PSMI. (0.76)

Items Deleted

None

16. Variable: Taxes (0.79)

(1) Due to the financial benefits I have received as a result of PSMI training, I now pay more taxes. (0.79)

(2) I believe that raises resulting from PSMI training have caused the participants to pay more taxes. (0.82)

(3) PSMI has had no influence on increased payment of taxes by participants. (0.77)

(4) PSMI has not resulted in my paying more taxes. (0.78)

Items Deleted

None

17. Variable: Productivity (0.87)

(1) Since PSMI I have improved my on-the-job performance. (0.83)

(2) Since attending PSMI there has been no change in my individual job performance. (0.77)

(3) I feel that the program has helped the State government to do a better job. (0.79)

(4) I feel that my productivity has increased because of PSMI training. (0.81)

(5) PSMI helped improve the quality of work in my group. (0.78)

(6) Since attending PSMI I feel I am able to do a better job. (0.77)

Items Deleted

(1) PSMI has not improved the performance of State government.

(2) Since PSMI I handle heavier work loads with the same resources.

(3) There has been no improvement in my use of resources since

attending PSMI.

(4) I am not aware of any improvements in the use of State resources resulting from PSMI.

(5) PSMI helped increase the amount of work for which I am responsible.

18. Variable: Program Cost (0.72)

(1) I think the actual cost of the 3-week program for 20 people was: (0.9170)

$1,000 5,000 10,000 15,000 20,000 or more

(2) I think the actual PSMI cost per management trainee was: (0.8563)

$200 or less 500 1,000 2,000 2,500 or more

Items Deleted

(1) I think the money spent on this training was a good investment.

(2) We should spend more money on management training programs of this type.

APPENDIX B

EXCERPTS FROM ITEM AND VARIABLE RELIABILITY

COMPUTER PRINTOUTS AS CALCULATED BY THE

GEORGE PEABODY COLLEGE COMPUTER CENTER

PROGRAM NUMBER TO1

(Original 10 pages - Program available on request.)

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TOI, ITEM ANALYSIS AND TEST SCORING.
GEORGE PEABODY COLLEGE COMPUTER CENTER, VERSION OF FEBRUARY 20, 1969.

 ITEMS FOR TESTS 1 THROUGH 9

  72 ITEMS.
  83 SUBJECTS.
   3 CARD(S) PER SUBJECT, COLUMNS73-80 OF CARD ONE = IDENTIFICATION.
   9 SUBSCALES.
   3 = CONSTANT TO REPLACE BLANK ITEMS.
   5 CHOICES PER ITEM.
NO PUNCHED OUTPUT.

ARRANGEMENT OF ITEMS ON DATA CARDS.
ITEM  CARD  COLUMN
   1     1       2
   2     1       5
   3     1       7
   4     1       9
   5     1      20
   6     1      21
   7     1      24
   8     1      30
   9     1      31
  10     1      32
  11     1      34
  12     1      35
  13     1      37
  14     1      44
  15     1      45
  16     1      48
  17     1      51
  18     1      53
  19     1      55
  20     1      59
  21     1      62
  22     1      63
  23     1      66
  24     1      67
  25     1      68
  26     1      69
  27     2       3
  28     2       4
  29     2       5
  30     2       7
  31     2       9
  32     2      10
  33     2      14
  34     2      15
  35     2      17
  36     2      21
  37     2      23
  38     2      24
  39     2      26
  40     2      28
  41     2      29
  42     2      32
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43	2	38
44	2	40
45	2	42
46	2	43
47	2	44
48	2	45
49	2	49
50	2	50
51	2	54
52	2	57
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55	2	63
56	2	65
57	2	69
58	2	70
59	3	4
60	3	5
61	3	6
62	3	7
63	3	8
64	3	9
65	3	10
66	3	11
67	3	12
68	3	13
69	3	14
70	3	15
71	3	16
72	3	19

SCORES FOR EACH SUBJECT (LAST 'SUBSCALE' = TOTAL)

ID	1	2	3	4	5	6	7	8	9	10
100301	39	27	41	27	20	25	16	24	27	246
100516	44	38	53	30	25	20	11	17	32	270
100906	39	32	49	29	18	24	16	25	32	264
101115	59	32	50	33	19	30	19	29	33	304
101205	28	29	47	28	18	24	16	24	28	242
101608	42	32	43	22	20	22	13	26	24	244
201608	46	20	39	24	17	22	10	18	24	220
102215	21	21	39	27	18	24	16	24	23	213
102308	46	35	62	30	19	28	18	30	33	301
102503	70	35	59	32	21	28	19	30	34	328
102603	43	31	48	25	20	23	15	23	27	255
102811	24	29	40	28	19	25	16	24	25	230
102912	47	30	45	30	18	24	16	24	31	265
103409	26	28	45	26	24	22	16	24	28	239
103715	49	33	52	29	17	24	17	25	31	277
103805	25	29	50	23	18	23	15	25	31	239
104012	24	25	40	24	14	24	10	25	21	207
104411	35	27	43	21	23	23	15	23	24	234
104511	50	32	49	28	17	23	16	24	33	272
104705	44	32	50	27	20	24	16	24	28	265
104912	24	31	45	28	21	26	18	25	28	246
105112	42	31	42	27	18	23	15	25	28	251
105213	35	30	41	22	16	25	15	24	27	235
105312	23	30	38	26	18	23	16	24	25	223
105413	36	29	44	24	18	23	16	25	26	241
105716	22	30	42	24	23	21	16	23	26	227
105915	37	32	47	25	24	22	8	24	25	244
106212	25	28	45	24	24	18	14	16	27	221

106405	28	32	45	26	16	25	16	24	25	237
106605	32	33	46	27	17	20	16	24	29	244
106812	23	29	37	27	18	24	16	24	25	223
106916	40	29	47	28	18	24	16	25	28	255
107111	33	32	49	28	14	29	16	28	31	260
107208	39	31	45	28	19	24	16	24	26	252
107305	33	31	51	27	20	24	16	24	28	254
107603	32	30	43	27	19	22	15	25	30	243
107814	32	32	50	28	18	25	17	26	28	256
108012	30	35	52	29	17	28	20	30	32	273
108112	31	33	45	29	18	24	16	24	28	248
108305	44	29	43	23	21	21	16	24	26	247
1 8513	54	38	53	33	21	27	20	30	35	311
108903	61	31	46	31	22	27	17	27	31	293
109611	46	32	49	28	18	22	14	24	29	262
109712	49	32	52	28	18	24	16	24	28	271
109812	34	30	48	28	21	24	17	24	29	255
109903	29	32	46	26	15	21	16	23	28	236
110003	35	35	49	29	18	25	15	24	29	259
110103	21	15	25	23	18	23	16	24	20	185
110412	34	30	44	27	19	26	16	24	28	248
110515	32	29	44	28	19	24	16	24	27	243
110702	40	32	46	25	18	23	16	24	27	251
110811	25	30	48	27	20	25	18	25	26	244
111111	22	22	33	17	19	23	14	22	21	193
111208	67	37	59	32	14	29	16	30	35	319
111410	30	30	42	28	18	25	14	26	29	242
111711	23	26	40	27	18	24	16	24	29	227
111911	40	32	50	28	26	28	19	25	31	279
111909	39	30	42	26	24	25	16	24	26	252
112114	28	30	47	25	20	24	16	25	29	244
112316	32	29	46	27	22	25	17	27	23	248
112511	29	31	44	25	20	18	16	24	27	234
112905	42	33	47	30	26	25	15	22	29	269
112904	28	31	45	29	22	26	16	24	29	250
113113	30	27	41	22	26	17	16	27	25	231
113313	28	32	41	24	20	20	16	22	25	228
113512	48	28	44	25	24	24	16	24	28	261
113716	35	33	44	28	19	25	16	24	27	251
113811	44	30	42	26	24	25	15	24	26	256
114002	26	19	34	22	15	16	12	24	20	188
114116	23	26	45	26	22	23	16	24	22	227
114305	25	30	41	22	22	22	16	24	25	227
115013	32	30	45	26	20	24	16	24	28	245
115115	36	30	43	21	22	20	16	21	26	235
115205	45	34	42	25	20	26	16	29	30	267
115305	21	29	43	20	24	20	14	22	23	216
115809	26	25	33	22	23	21	16	24	22	212
115915	45	31	46	24	20	23	17	26	29	261
116312	29	32	37	28	24	24	16	24	28	242
116515	55	31	46	27	20	24	16	24	25	268
116610	28	29	40	19	18	21	16	29	26	225
116704	48	35	53	28	14	25	17	26	29	275
117006	51	31	47	29	21	24	16	25	28	272
118013	39	33	55	26	19	23	13	24	32	264

SCALE	ITEM N	MEAN	SIGMA	ALPHA
1	15	36.096	10.888	0.4051
2	8	30.192	3.749	0.8331
3	13	45.156	5.744	0.4618

4	7	26.349	3.039	0.7390
5	6	19.698	2.844	0.7682
6	6	23.650	2.548	0.7493
7	4	15.710	1.885	0.7919
8	6	24.530	2.396	0.8601
9	7	27.542	3.246	0.8018
10	72	248.927	25.846	0.9472

LAST "SCALE" IS TOTAL OF ALL ITEMS SCORED.

ITEM	SCALE	KEY	MEAN	SIGMA	R(TOTAL)	R(SCALE)
1	3	8	3.975	0.514	0.5156	0.6374
2	4	8	3.819	0.746	0.4337	0.6541
3	2	8	4.096	0.632	0.5352	0.7742
4	4	8	3.120	0.910	0.4893	0.6378
5	8	8	4.072	0.532	0.4552	0.7059
6	3	8	2.698	0.832	0.5642	0.6374
7	6	9	3.915	0.747	0.3444	0.6168
8	3	8	3.228	0.796	0.5878	0.6478
9	5	8	2.722	0.909	-0.1928	0.8062
10	7	8	3.903	0.505	0.2621	0.7162
11	3	8	3.240	0.872	0.5542	0.7448
12	2	8	3.867	0.635	0.5765	0.7436
13	3	8	3.590	0.850	0.4908	0.5678
14	9	8	3.385	0.954	0.6534	0.7488
15	8	8	4.216	0.538	0.4362	0.8067
16	3	8	4.060	0.608	0.6487	0.7249
17	8	8	4.084	0.495	0.4629	0.8849
18	1	8	4.096	0.651	0.7008	0.4402
19	2	8	3.469	0.854	0.2245	0.4678
20	9	8	3.638	0.815	0.5637	0.7205
21	6	8	3.939	0.448	0.4568	0.7511
22	3	8	3.987	0.452	0.5161	0.5431
23	7	8	3.891	0.658	0.3837	0.7410
24	6	9	4.192	0.751	0.3783	0.6200
25	5	8	2.722	0.935	-0.1662	0.8471
26	8	8	4.132	0.372	0.4697	0.7033
27	3	8	3.795	0.654	0.5991	0.6561
28	2	9	3.710	0.985	0.4571	0.6736
29	5	8	3.795	0.484	0.0545	0.5754
30	5	8	2.385	0.741	-0.0463	0.7689
31	9	9	4.373	0.595	0.5200	0.6557
32	4	9	3.746	0.757	0.5033	0.7338
33	8	9	4.072	0.616	0.2075	0.7485
34	7	8	3.927	0.616	0.3632	0.8627
35	8	8	3.951	0.535	0.3896	0.7896
36	4	8	3.759	0.612	0.3677	0.6078
37	3	8	3.843	0.610	0.5174	0.5495
38	7	9	3.987	0.611	0.4073	0.8231
39	3	8	2.662	0.681	0.4630	0.6197
40	2	8	3.216	0.745	0.6369	0.7094
41	6	8	3.819	0.562	0.5697	0.5945
42	2	8	3.987	0.502	0.6117	0.7424
43	4	9	4.144	0.494	0.5140	0.4877
44	5	8	4.096	0.505	0.4558	0.4976
45	4	9	3.710	0.784	0.5201	0.7347
46	9	9	3.975	0.600	0.4988	0.6245

47	2	8	3.831	0.655	0.7227	0.7487
48	4	8	4.048	0.436	0.6080	0.5141
49	1	9	4.337	0.565	0.5785	0.4798
50	6	9	3.891	0.694	0.4016	0.7344
51	1	8	3.554	0.939	0.5548	0.5160
52	3	8	3.469	0.854	0.1820	0.4290
53	5	8	3.975	0.409	0.4284	0.5310
54	3	8	3.084	0.731	0.5674	0.6534
55	9	8	4.132	0.576	0.6124	0.6832
56	9	8	4.156	0.667	0.6684	0.7227
57	9	8	3.879	0.475	0.5743	0.6350
58	2	8	4.012	0.502	0.7277	0.7911
59	3	8	3.518	0.750	0.6909	0.6912
60	6	8	3.891	0.559	0.4906	0.7641
61	1	8	1.783	1.130	0.6587	0.8129
62	1	8	2.397	1.671	0.6496	0.8339
63	1	8	1.590	0.982	0.4862	0.7111
64	1	8	2.180	1.643	0.5904	0.7878
65	1	8	1.903	0.830	0.5801	0.7365
66	1	8	3.036	1.638	0.6321	0.7884
67	1	8	1.301	0.723	0.4926	0.6170
68	1	8	1.542	1.185	0.4940	0.5980
69	1	8	2.132	0.902	0.5771	0.6990
70	1	8	2.542	1.225	0.5658	0.7356
71	1	8	2.168	1.039	0.4835	0.5351
72	1	8	1.530	0.717	0.5663	0.6184

CHOICE DISTRIBUTION (PERCENTAGES).

ITEM	SCALE	KEY	ZERO	1	2	3	4	5	6	7	8	9
1	3	8	0	0	1	11	77	11	0	0	C	0
2	4	8	0	0	8	13	66	12	0	0	0	0
3	2	8	0	1	1	5	72	20	0	0	C	0
4	4	8	0	2	25	34	35	4	C	0	0	0
5	8	8	0	0	1	7	75	17	C	0	0	0
6	3	8	0	7	33	43	17	0	0	0	0	0
7	6	9	0	16	69	7	8	0	C	0	C	0
8	3	8	0	0	22	35	42	1	0	0	0	0
9	5	8	0	4	47	24	24	1	C	C	C	0
10	7	8	0	0	2	11	81	6	0	0	0	0
11	3	8	0	4	13	43	35	5	0	0	C	0
12	2	8	0	1	4	10	78	7	0	0	C	0
13	3	8	0	2	11	18	63	6	C	0	0	0
14	9	8	0	2	17	30	41	10	0	0	C	0
15	8	8	0	0	1	2	70	27	0	0	0	0
16	3	8	0	0	4	5	73	18	0	0	C	0
17	8	8	0	0	2	1	82	14	0	0	0	0
18	1	8	0	0	2	10	64	24	0	0	0	0
19	2	8	0	1	16	23	55	5	0	0	0	0
20	9	8	0	0	12	22	57	10	0	0	0	0
21	6	8	0	0	0	13	80	7	0	0	0	0
22	3	8	0	0	0	11	80	10	0	0	0	0
23	7	8	0	0	7	6	77	10	0	0	0	0
24	6	9	0	35	54	6	5	0	C	C	C	0
25	5	8	0	1	55	16	25	2	0	0	0	0
26	8	8	0	0	C	1	84	14	0	0	C	0
27	3	8	0	0	5	19	67	8	C	0	0	0

28	2	9	0	12	64	7	17	0	0	0	0	0
29	5	8	0	0	1	20	76	2	0	0	0	0
30	5	8	0	5	63	22	11	0	0	0	0	0
31	9	9	0	42	54	2	1	0	0	0	0	0
32	4	9	0	7	72	8	12	0	0	0	0	0
33	8	9	0	18	76	1	5	0	0	0	0	0
34	7	8	0	1	4	5	82	8	0	0	0	0
35	8	8	0	0	4	6	82	8	0	0	0	0
36	4	8	0	0	4	23	67	6	0	0	0	0
37	3	8	0	0	6	10	78	6	0	0	0	0
38	7	9	0	13	76	8	1	1	0	0	0	0
39	3	8	0	1	41	49	7	1	0	0	0	0
40	2	8	0	1	13	51	33	2	0	0	0	0
41	6	8	0	0	4	16	76	5	0	0	0	0
42	2	8	0	0	4	2	86	8	0	0	0	0
43	4	9	1	19	77	1	1	0	0	0	0	0
44	5	8	1	0	0	7	73	18	0	0	0	0
45	4	9	1	7	70	8	13	0	0	0	0	0
46	9	9	1	14	71	11	2	0	0	0	0	0
47	2	8	1	0	7	8	76	7	0	0	0	0
48	4	8	1	0	1	2	84	11	0	0	0	0
49	1	9	1	39	57	4	0	0	0	0	0	0
50	6	9	1	13	69	11	6	0	0	0	0	0
51	1	8	1	0	16	19	57	7	0	0	0	0
52	3	8	1	0	19	18	57	5	0	0	0	0
53	5	8	1	0	0	8	83	7	0	0	0	0
54	3	8	1	0	20	52	24	2	0	0	0	0
55	9	8	1	0	1	6	69	23	0	0	0	0
56	9	8	1	0	4	4	64	28	0	0	0	0
57	9	8	1	0	1	13	80	5	0	0	0	0
58	2	8	1	0	1	7	78	12	0	0	0	0
59	3	8	0	0	12	28	57	4	0	0	0	0
60	6	8	0	0	2	14	75	8	0	0	0	0
61	1	8	0	53	33	5	2	7	0	0	0	0
62	1	8	0	53	5	16	2	24	0	0	0	0
63	1	8	0	63	25	7	0	5	0	0	0	0
64	1	8	0	60	7	8	2	22	0	0	0	0
65	1	8	0	28	63	5	1	4	0	0	0	0
66	1	8	0	29	12	19	6	34	0	0	0	0
67	1	8	0	81	12	5	1	1	0	0	0	0
68	1	8	0	81	1	7	5	6	0	0	0	0
69	1	8	0	18	63	12	2	5	0	0	0	0
70	1	8	0	18	43	16	12	11	0	0	0	0
71	1	8	0	27	46	17	6	5	0	0	0	0
72	1	8	0	57	36	6	0	1	0	0	0	0

```
END OF JOB.
// XEQ OFF
```

APPENDIX C

EXCERPTS FROM ONE-WAY ANALYSIS OF VARIANCE

COMPUTER PRINTOUTS AS CALCULATED BY THE

GEORGE PEABODY COLLEGE COMPUTER CENTER

PROGRAM NUMBER V01

(Original 60 pages - Program available on request.)

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VOI, ANALYSIS OF VARIANCE WITH MULTIPLE GROUPS AND/OR TRIALS.
GEORGE PEABODY COLLEGE COMPUTER CENTER, VERSION OF JULY 1, 1969.

 ANALYSIS OF VARIABLES 1 - 9

 9 DEPENDENT VARIABLE(S).
 4 GROUP(S).
 1 TRIAL(S) PER SUBJECT.
 1 CARD(S) PER SUBJECT.
 9 SCORE(S) ON CARD 1.
ZERO SCORES (IF ANY) INCLUDED IN ANALYSES.
FORMAT CARD(S) =

(2X,9F3.0)

 GROUP 1.   8 SUBJECTS.      HIGHSCHOOL GRADUATE

 GROUP 2.  15 SUBJECTS.      SOME COLLEGE

 GROUP 3.  31 SUBJECTS.      COLLEGE GRADUATE

 GROUP 4.  29 SUBJECTS.      GRADUATE DEGREE


 VARIABLE 1 ANALYSIS.

 SOURCE      MEAN SQUARE     D.F.      F-RATIO        P

 TOTAL          120.015       82.
  GROUPS        457.406        3.       4.2667      0.0077
  ERROR (G)     107.202       79.

 GROUP MEANS

              1       2       3       4
           29.750  44.066  35.483  34.379


 VARIABLE 2 ANALYSIS.

 SOURCE      MEAN SQUARE     D.F.      F-RATIO        P

 TOTAL          14.230        82.
  GROUPS        60.328         3.       4.8338      0.0041
  ERROR (G)     12.480        79.

 GROUP MEANS

              1       2       3       4
           26.125  31.733  30.774  29.896


 VARIABLE 3 ANALYSIS.
```

SOURCE	MEAN SQUARE	D.F.	F-RATIO	P
TOTAL	33.402	82.		
GROUPS	196.354	3.	7.2151	0.0004
ERROR (G)	27.214	79.		

GROUP MEANS

1	2	3	4
39.375	49.600	45.354	44.241

VARIABLE 4 ANALYSIS.

SOURCE	MEAN SQUARE	D.F.	F-RATIO	P
TOTAL	9.352	82.		
GROUPS	36.247	3.	4.3510	0.0070
ERROR (G)	8.330	79.		

GROUP MEANS

1	2	3	4
23.750	28.066	25.870	26.689

VARIABLE 5 ANALYSIS.

SOURCE	MEAN SQUARE	D.F.	F-RATIO	P
TOTAL	8.188	82.		
GROUPS	12.722	3.	1.5870	0.1977
ERROR (G)	8.016	79.		

GROUP MEANS

1	2	3	4
20.125	19.733	20.387	18.827

VARIABLE 6 ANALYSIS.

SOURCE	MEAN SQUARE	D.F.	F-RATIO	P
TOTAL	6.571	82.		
GROUPS	14.169	3.	2.2551	0.0871
ERROR (G)	6.283	79.		

GROUP MEANS

1	2	3	4
22.125	24.866	23.419	23.689

VARIABLE 7 ANALYSIS.

SOURCE	MEAN SQUARE	D.F.	F-RATIO	P
TOTAL	3.598	82.		
GROUPS	8.197	3.	2.3944	0.0733
ERROR (G)	3.423	79.		

GROUP MEANS

1	2	3	4
13.000	16.733	15.322	15.793

VARIABLE 8 ANALYSIS.

SOURCE	MEAN SQUARE	D.F.	F-RATIO	P
TOTAL	5.813	82.		
GROUPS	17.200	3.	3.1966	0.0273
ERROR (G)	5.380	79.		

GROUP MEANS

1	2	3	4
23.125	25.933	24.096	24.655

VARIABLE 9 ANALYSIS.

SOURCE	MEAN SQUARE	D.F.	F-RATIO	P
TOTAL	10.665	82.		
GROUPS	57.216	3.	6.4300	0.0008
ERROR (G)	8.898	79.		

GROUP MEANS

1	2	3	4
24.875	30.200	27.451	27.000

APPENDIX D

EXCERPTS FROM FACTOR ANALYSIS COMPUTER PRINTOUTS AS CALCULATED BY THE IBM FACTO PROGRAM

(Original 8 pages)

ITERATION CYCLE	VARIANCES
0	0.197147
1	0.315808
2	0.316656
3	0.316913
4	0.316956
5	0.316963
6	0.316964
7	0.316964
8	0.316964
9	0.316964
10	0.316964

ROTATED FACTOR MATRIX (3 FACTORS)

VARIABLE 1			
	0.67705	0.23374	0.02814
VARIABLE 2			
	0.80256	0.29373	0.09536
VARIABLE 3			
	0.82939	0.28397	0.04268
VARIABLE 4			
	0.69932	0.34359	-0.24467
VARIABLE 5			
	0.08663	-0.16207	0.67476
VARIABLE 6			
	0.62012	-0.01609	-0.55630
VARIABLE 7			
	0.51194	-0.06766	-0.42996
VARIABLE 8			
	0.56979	-0.24934	-0.56514
VARIABLE 9			
	0.84977	0.25844	-0.08880

VARIABLE 10

0.32310	0.70741	-0.32031

VARIABLE 11

0.87609	0.31552	-0.06582

VARIABLE 12

0.65115	0.44505	-0.19725

VARIABLE 13

0.38185	0.80921	-0.13995

VARIABLE 14

0.19048	0.88411	-0.12375

VARIABLE 15

0.44132	0.71556	-0.07110

VARIABLE 16

0.08754	0.67115	0.03234

VARIABLE 17

0.85933	0.23412	0.13840

VARIABLE 18

0.09182	-0.19408	0.47736

CHECK ON COMMUNALITIES

VARIABLE	ORIGINAL	FINAL	DIFFERENCE
1	0.51384	0.51383	0.00000
2	0.73949	0.73948	0.00000
3	0.77035	0.77034	0.00000
4	0.66698	0.66698	0.00000
5	0.48908	0.48908	0.00000
6	0.69429	0.69429	0.00000
7	0.45153	0.45153	0.00000
8	0.70623	0.70623	0.00000
9	0.79680	0.79680	0.00000
10	0.70743	0.70742	0.00000
11	0.87144	0.87143	0.00000
12	0.66098	0.66098	0.00000
13	0.82024	0.82023	0.00000
14	0.83326	0.83325	0.00000
15	0.71186	0.71186	0.00000
16	0.45916	0.45916	0.00000
17	0.81243	0.81243	0.00000

APPENDIX E

EXCERPTS FROM MULTIPLE REGRESSION ANALYSIS

COMPUTER PRINTOUTS AS CALCULATED BY THE

GEORGE PEABODY COLLEGE COMPUTER CENTER

PROGRAM NUMBER RO1

(Origianl 16 pages - Program available on request)

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301. REGRESSION ANALYSIS WITH GENERATION AND/OR TRANSFORMATION OF VARIABLES.
GEORGE PEABODY COLLEGE COMPUTER CENTER, VERSION OF SEPTEMBER 1, 1969.

TRIALS IN SEARCH OF ANSWER

  18 ORIGINAL VARIABLES.
NO GENERATION AND/OR TRANSFORMATION OF VARIABLES.
  83 SUBJECTS.
  27 MODEL(S).
  52 F TEST(S).
VARIABLE NAMES SUPPLIED.
CORRELATION MATRIX PRINTED.
NO SCATTER PLOTS OR LISTINGS OF PREDICTED SCORES.
   2 CARD(S) PER SUBJECT.
   9 VARIABLE(S) ON CARD 1.
   9 VARIABLE(S) ON CARD 2.
FORMAT CARDS =

(12X,9F3.0)

(12X,9F3.0)
```

VARIABLE	DESCRIPTION	MEAN	STANDARD DEVIATION
1	ECONOMIC ORGAN	35.710	11.163
2	MANAGEMENT PROCESS	30.469	3.858
3	PERSONNEL MANAG.	44.915	6.420
4	MANAGERIAL TOOLS	26.289	3.152
5	LECTURE MOTHOD	19.722	2.846
6	SIMULATION	23.506	2.964
7	CASE ANALYSIS	15.759	1.798
8	GROUP DISCUSSION	24.566	2.333
9	ACHIEVEMENT	27.337	3.951
10	RECOGNITION	17.578	5.106
11	WORK ITSLLF	48.373	6.515
12	RESPONSABILITY	15.746	3.850
13	ADVANCEMENT	17.614	3.853
14	SALARY	16.072	4.520
15	SECURITY	11.975	3.044
16	TAXES PAID	10.650	3.121
17	PRODUCTIVITY	22.554	3.339
18	PROGRAM COST	5.554	2.951

CORRELATIONS

	1	2	3	4	5	6	7	8	9	10
1 ECONOMIC ORGAN	1.000	0.427	0.628	0.560	-0.004	0.467	0.238	0.417	0.618	0.313
2 MANAGEMENT PROCESS	0.427	1.000	0.484	0.420	-0.009	0.119	0.176	0.181	0.366	0.390
3 PERSONNEL MANAG.	0.628	0.484	1.000	0.640	-0.060	0.562	0.283	0.376	0.823	0.269
4 MANAGERIAL TOOLS	0.560	0.420	0.640	1.000	-0.107	0.661	0.408	0.375	0.705	0.333
5 LECTURE MOTHOD	-0.004	-0.009	-0.060	-0.107	1.000	-0.150	-0.013	-0.299	-0.062	-0.164
6 SIMULATION	0.467	0.119	0.562	0.661	-0.150	1.000	0.480	0.596	0.650	0.202
7 CASE ANALYSIS	0.238	0.176	0.283	0.408	-0.013	0.480	1.000	0.506	0.387	0.075
8 GROUP DISCUSSION	0.417	0.181	0.376	0.375	-0.299	0.596	0.506	1.000	0.418	0.209
9 ACHIEVEMENT	0.618	0.366	0.823	0.705	-0.062	0.650	0.387	0.418	1.000	0.227

10 RECOGNITION	0.313	0.390	0.269	0.333	-0.164	0.202	0.075	0.209	0.227	1.000
11 WORK ITSELF	0.590	0.568	0.719	0.664	-0.046	0.495	0.470	0.362	0.711	0.068
12 RESPONSABILITY	0.470	0.394	0.469	0.380	-0.162	0.386	0.121	0.259	0.424	0.756
13 ADVANCEMENT	0.372	0.546	0.477	0.509	-0.173	0.248	0.208	0.105	0.396	0.662
14 SALARY	0.301	0.386	0.317	0.426	-0.114	0.132	0.213	0.052	0.294	0.565
15 SECURITY	0.409	0.515	0.449	0.441	-0.100	0.166	0.230	0.161	0.340	0.670
16 TAXES PAID	0.250	0.263	0.173	0.263	-0.035	0.078	0.141	-0.002	0.200	0.316
17 PRODUCTIVITY	0.605	0.650	0.725	0.654	0.036	0.415	0.333	0.314	0.725	0.172
18 PROGRAM COST	0.072	-0.088	0.008	-0.128	0.131	-0.067	-0.211	0.012	-0.076	0.335

	11	12	13	14	15	16	17	18
1 ECONOMIC ORGAN	0.590	0.470	0.372	0.301	0.409	0.250	0.605	0.072
2 MANAGEMENT PROCESS	0.568	0.394	0.546	0.386	0.515	0.263	0.650	-0.088
3 PERSONNEL MANAG.	0.719	0.469	0.477	0.317	0.449	0.173	0.725	0.008
4 MANAGERIAL TOOLS	0.664	0.380	0.509	0.426	0.441	0.263	0.654	-0.128
5 LECTURE METHOD	-0.046	-0.162	-0.173	-0.114	-0.100	-0.035	0.036	0.131
6 SIMULATION	0.495	0.386	0.248	0.132	0.166	0.078	0.415	-0.067
7 CASE ANALYSIS	0.470	0.121	0.208	0.213	0.230	0.141	0.333	-0.211
8 GROUP DISCUSSION	0.362	0.259	0.105	0.052	0.161	-0.002	0.314	0.012
9 ACHIEVEMENT	0.711	0.424	0.396	0.294	0.340	0.200	0.725	-0.076
10 RECOGNITION	0.068	0.756	0.662	0.565	0.670	0.316	0.172	0.335
11 WORK ITSELF	1.000	0.121	0.426	0.377	0.352	0.263	0.766	-0.371
12 RESPONSABILITY	0.121	1.000	0.568	0.401	0.615	0.233	0.391	0.419
13 ADVANCEMENT	0.426	0.568	1.000	0.796	0.765	0.434	0.462	0.009
14 SALARY	0.377	0.401	0.796	1.000	0.682	0.587	0.358	-0.100
15 SECURITY	0.352	0.615	0.765	0.682	1.000	0.386	0.404	0.198
16 TAXES PAID	0.263	0.233	0.434	0.587	0.386	1.000	0.235	-0.030
17 PRODUCTIVITY	0.766	0.391	0.462	0.358	0.404	0.235	1.000	-0.084
18 PROGRAM COST	-0.371	0.419	0.009	-0.100	0.198	-0.030	-0.084	1.000

MODEL 1. FULL MODEL

CRITERION = 1. ECONOMIC ORGAN

R = 0.7711 AND R SQUARED = 0.5946 WITH 127 ITERATION(S).

PREDICTOR	DESCRIPTION	BETA WEIGHT	B WEIGHT
2	MANAGEMENT PROCESS	-0.0656	-0.1900
3	PERSONNEL MANAG.	0.0037	0.0065
4	MANAGERIAL TOOLS	0.1478	0.5235
5	LECTURE METHOD	0.1425	0.5588
6	SIMULATION	-0.0749	-0.3575
7	CASE ANALYSIS	-0.2022	-1.2553
8	GROUP DISCUSSION	0.2740	1.3111
9	ACHIEVEMENT	0.0570	0.1612
10	RECOGNITION	-0.0804	-0.1758
11	WORK ITSELF	0.5441	0.9322
12	RESPONSABILITY	0.4215	1.2220
13	ADVANCEMENT	-0.0937	-0.2715
14	SALARY	-0.0057	-0.0141
15	SECURITY	0.0340	0.1247
16	TAXES PAID	0.0817	0.2922
17	PRODUCTIVITY	-0.0272	-0.0910
18	PROGRAM COST	0.0649	0.2457

REGRESSION CONSTANT = -92.1624.

CRITERION = 1. ECONOMIC ORGAN

R = 0.7493 AND R SQUARED = 0.5614 WITH 36 ITERATION(S).

PREDICTOR	DESCRIPTION	BETA WEIGHT	B WEIGHT
4	MANAGERIAL TOOLS	0.0667	0.2364
5	LECTURE METHOD	0.1046	0.4104
8	GROUP DISCUSSION	0.1563	0.7482
9	ACHIEVEMENT	0.0804	0.2271
11	WORK ITSELF	0.4515	0.7736
12	RESPONSABILITY	0.2988	0.8665
15	SECURITY	-0.0521	-0.1910
16	TAXES PAID	0.0561	0.2007
18	PROGRAM COST	0.1261	0.4769

REGRESSION CONSTANT = -56.7589.

MODEL 27. REGRESSION IEN
CRITERION = 1. ECONOMIC ORGAN

R = 0.7499 AND R SQUARED = 0.5623 WITH 49 ITERATION(S).

PREDICTOR	DESCRIPTION	BETA WEIGHT	B WEIGHT
3	PERSONNEL MANAG.	0.0644	0.1120
4	MANAGERIAL TOOLS	0.0691	0.2449
5	LECTURE METHOD	0.1055	0.4139
8	GROUP DISCUSSION	0.1586	0.7548
9	ACHIEVEMENT	0.0480	0.1357
11	WORK ITSELF	0.4241	0.7266
12	RESPONSABILITY	0.2887	0.8371
15	SECURITY	-0.0564	-0.2070
16	TAXES PAID	0.0619	0.2217
18	PROGRAM COST	0.1184	0.4478

REGRESSION CONSTANT = -56.9836.

F TEST 1. FULL VS FIRST LOAD
RSQ FULL = 0.5946 MODEL 1
RSQ REDUCED = 0.3490 MODEL 2
DIFFERENCE = 0.2455
DEN = 16. DEG = 65. F RATIO = 2.460 P = 0.0057

F TEST 2. FIRST LOAD

TEST OF SIGNIFICANCE OF MODEL 2 (R SQUARED = 0.3490).
DEN = 16. DEG = 65. F RATIO = 2.178 P = 0.0144

F TEST 3. FULL VS SECOND LOAD

```
RSQ REDUCED = 0.5614     MODEL 26
DIFFERENCE =  0.0331
DEN =  8.     DFD =   65.     F RATIO =   0.664   P = 0.7218


F TEST 50.    REGRESSION NINE

TEST OF SIGNIFICANCE OF MODEL 26 (R SQUARED = 0.5614).
DEN =  8.     DFD =   65.     F RATIO =  10.402   P = 0.0000


F TEST 51.    FULL VS REGRESSION TEN
RSQ FULL =    0.5946     MODEL  1
RSQ REDUCED = 0.5623     MODEL 27
DIFFERENCE =  0.0322
DEN =  7.     DFD =   65.     F RATIO =   0.738   P = 0.6421


F TEST 52.    REGRESSION TEN

TEST OF SIGNIFICANCE OF MODEL 27 (R SQUARED = 0.5623).
DEN =  7.     DFD =   65.     F RATIO =  11.933   P = 0.0000


END OF JOB.
// XEQ OFF
```

APPENDIX F

EXCERPTS FROM DISTRIBUTION STATISTICS COMPUTER PRINTOUTS AS CALCULATED BY THE GEORGE PEABODY COLLEGE COMPUTER CENTER PROGRAM NUMBER DO1

(Original 183 pages - Program available on request)

```
 1 D01, DISTRIBUTION STATISTICS,
 2 GEORGE PEABODY COLLEGE COMPUTER CENTER, VERSION OF SEPTEMBER 1, 1969.
 3
 4  FIRST FIFTY ITEMS JOHN REYNOLDS
 5
 6   83 SUBJECTS,
 7   50 VARIABLE(S).
 8    1 CARD(S) PER SUBJECT.
 9   50 VARIABLE(S) ON CARD 1.
10  NO VARIABLE NAMES SUPPLIED.
11  NO TRANSFORMATIONS REQUESTED.
12  HISTOGRAM CODE CARD = 11111111111111111111111111111111111111111111111111
13
14  FORMAT CARD(S) =
15
16 (50F1.0)
17
```

VARIABLE	ZEROS	SUM X	SUM X2	MEAN	MIN	MAX	UNBIASED VARIANCE
1	0	345.00	1451.00	4.156	3.00	5.00	0.204
2	0	329.00	1327.00	3.963	2.00	5.00	0.275
3	0	325.00	1321.00	3.915	2.00	5.00	0.583
4	0	276.00	1000.00	3.325	1.00	5.00	0.990
5	0	317.00	1257.00	3.819	2.00	5.00	0.557
6	0	231.00	697.00	2.783	1.00	4.00	0.651
7	0	340.00	1426.00	4.096	1.00	5.00	0.400
8	0	330.00	1348.00	3.975	1.00	5.00	0.433
9	0	261.00	889.00	3.144	1.00	5.00	0.822
10	0	313.00	1237.00	3.771	1.00	5.00	0.682
11	0	337.00	1417.00	4.060	2.00	5.00	0.586
12	0	309.00	1187.00	3.722	2.00	5.00	0.441
13	0	327.00	1323.00	3.939	2.00	5.00	0.418
14	0	148.00	298.00	1.783	1.00	4.00	0.410
15	0	233.00	741.00	2.807	1.00	5.00	1.047
16	0	228.00	694.00	2.746	1.00	5.00	0.815
17	0	332.00	1408.00	4.000	1.00	5.00	0.963
18	0	269.00	947.00	3.240	1.00	5.00	0.905
19	0	367.00	1707.00	4.421	1.00	5.00	1.014
20	0	339.00	1407.00	4.084	2.00	5.00	0.269
21	0	223.00	655.00	2.686	1.00	4.00	0.672
22	0	124.00	212.00	1.493	1.00	3.00	0.322
23	0	235.00	743.00	2.831	1.00	5.00	0.935
24	0	173.00	407.00	2.084	1.00	4.00	0.559
25	0	347.00	1481.00	4.180	2.00	5.00	0.364
26	0	262.00	932.00	3.156	1.00	5.00	1.264
27	0	310.00	1214.00	3.734	1.00	5.00	0.676
28	0	282.00	1026.00	3.397	1.00	5.00	0.817
29	0	278.00	992.00	3.349	1.00	5.00	0.733
30	0	269.00	923.00	3.240	2.00	5.00	0.616
31	0	225.00	677.00	2.710	1.00	5.00	0.807
32	0	325.00	1293.00	3.915	2.00	5.00	0.245
33	0	320.00	1308.00	3.855	1.00	5.00	0.894
34	0	268.00	928.00	3.228	1.00	5.00	0.754
35	0	322.00	1280.00	3.879	1.00	5.00	0.371
36	0	163.00	355.00	1.963	1.00	5.00	0.420
37	0	300.00	1142.00	3.614	1.00	5.00	0.694
38	0	225.00	679.00	2.710	1.00	4.00	0.832

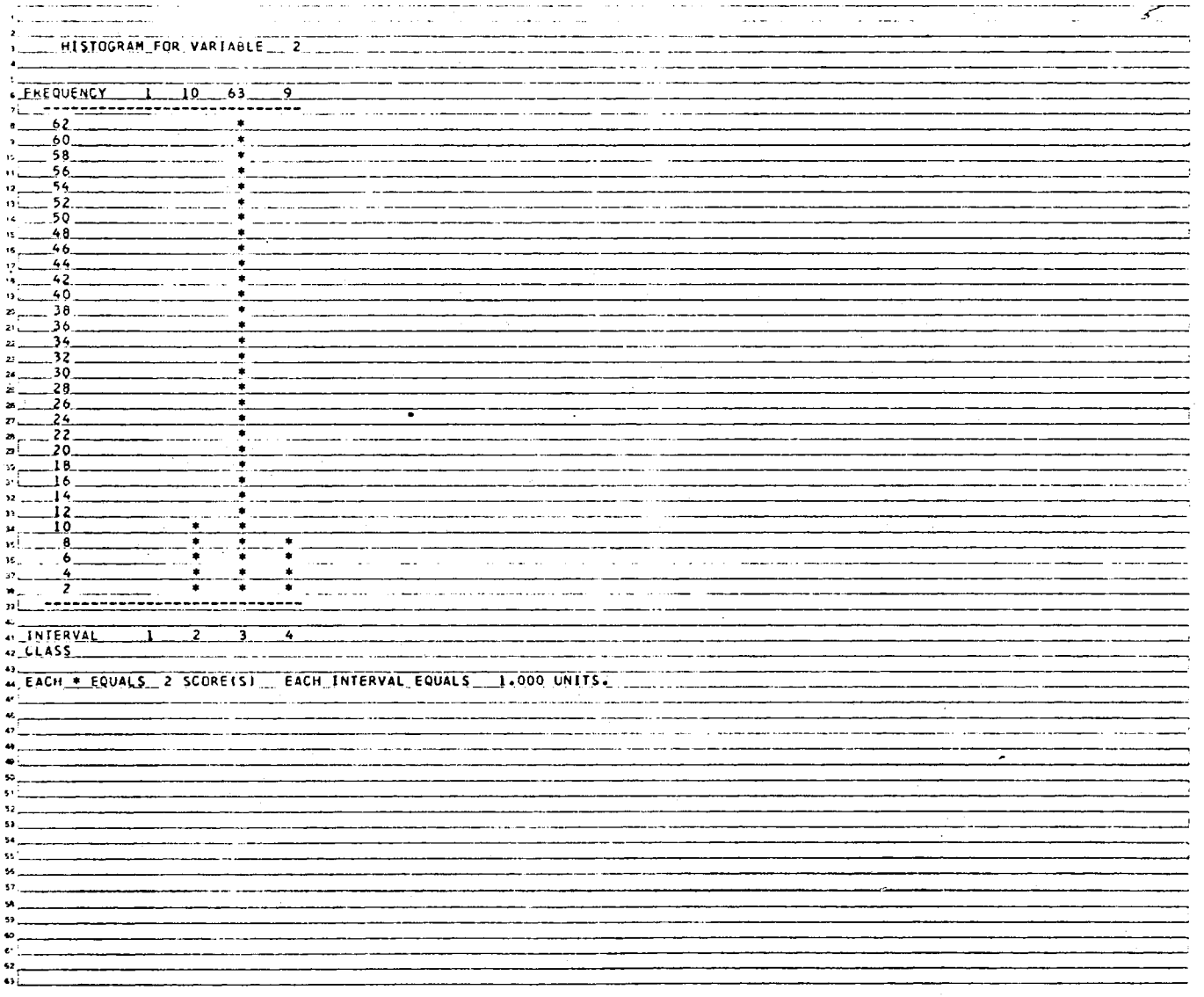
39	0	296.00	1106.00	3.566	2.00	5.00	0.607
40	0	325.00	1321.00	3.915	2.00	5.00	0.583
41	0	276.00	1010.00	3.325	1.00	5.00	1.111
42	0	278.00	998.00	3.349	1.00	5.00	0.805
43	0	342.00	1430.00	4.120	2.00	5.00	0.250
44	0	281.00	1027.00	3.385	1.00	5.00	0.911
45	0	351.00	1507.00	4.228	2.00	5.00	0.272
46	0	201.00	569.00	2.421	1.00	5.00	0.990
47	0	335.00	1369.00	4.036	2.00	5.00	0.203
48	0	338.00	1404.00	4.072	2.00	5.00	0.332
49	0	269.00	951.00	3.240	1.00	5.00	0.953
50	0	333.00	1359.00	4.012	2.00	5.00	0.276

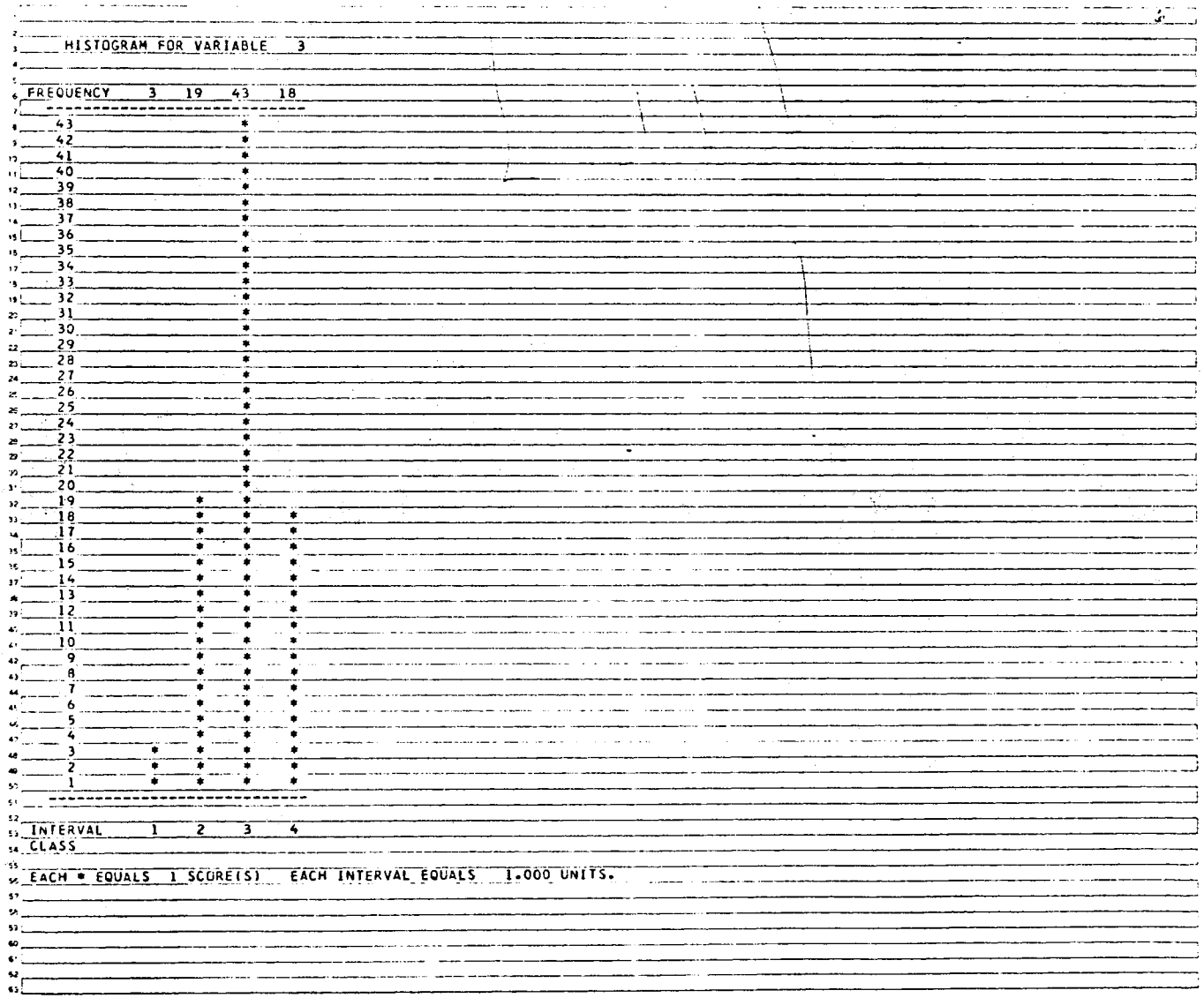
VARIABLE	SIGMA	STD.DEV.	SIGMA(M)	S.D.(M)	SKEWNESS .. PROB		KURTOSIS .. PROB	
1	0.452	0.454	0.049	0.049	2.2825	0.0213	1.6738	0.0904
2	0.525	0.528	0.057	0.057	-2.0152	0.0414	4.3995	0.0000
3	0.763	0.768	0.083	0.084	-1.2779	0.1985	-0.3988	0.6928
4	0.995	1.001	0.109	0.109	-0.3678	0.7143	-1.1854	0.2341
5	0.746	0.751	0.081	0.082	-3.3799	0.0011	1.7065	0.0842
6	0.807	0.812	0.088	0.089	0.0035	0.9926	-1.4340	0.1479
7	0.632	0.636	0.069	0.069	-5.6046	0.0000	12.3655	0.0000
8	0.658	0.662	0.072	0.072	-4.6214	0.0000	8.3971	0.0000
9	0.906	0.912	0.099	0.100	-0.7125	0.5165	-1.3310	0.1800
10	0.826	0.831	0.090	0.091	-3.1071	0.0023	1.6909	0.0871
11	0.765	0.770	0.084	0.084	-3.3720	0.0011	1.9772	0.0453
12	0.664	0.668	0.072	0.073	-2.2601	0.0225	1.0083	0.3145
13	0.646	0.650	0.070	0.071	-2.7705	0.0058	2.9113	0.0040
14	0.640	0.644	0.070	0.070	2.8982	0.0041	3.3122	0.0013
15	1.023	1.029	0.112	0.113	1.2067	0.2255	-0.9865	0.6750
16	0.903	0.908	0.099	0.099	0.8348	0.5910	-0.7091	0.5144
17	0.981	0.987	0.107	0.108	-4.5460	0.0000	2.1385	0.0306
18	0.951	0.957	0.104	0.105	0.0255	0.9778	-0.8530	0.6016
19	1.007	1.013	0.110	0.111	-6.5646	0.0000	4.2338	0.0001
20	0.519	0.522	0.057	0.057	-1.5072	0.1279	5.3720	0.0000
21	0.820	0.825	0.090	0.090	-0.5648	0.5794	-0.9482	0.6547
22	0.567	0.571	0.062	0.062	2.2923	0.0207	-1.1759	0.2380
23	0.967	0.973	0.106	0.106	0.3806	0.7054	-1.5878	0.1084
24	0.747	0.752	0.082	0.082	3.9877	0.0002	2.7670	0.0059
25	0.604	0.607	0.066	0.066	-2.8281	0.0050	4.6919	0.0000
26	1.124	1.131	0.123	0.124	-0.3982	0.6932	-2.1686	0.0284
27	0.822	0.827	0.090	0.090	-3.8468	0.0003	2.0166	0.0413
28	0.904	0.909	0.099	0.099	-2.1316	0.0311	-1.2073	0.2253
29	0.856	0.861	0.093	0.094	-1.4514	0.1429	-0.8459	0.5975
30	0.785	0.790	0.086	0.086	-1.1253	0.2595	-1.9484	0.0486
31	0.898	0.904	0.098	0.099	1.4919	0.1319	-1.6062	0.1043
32	0.495	0.498	0.054	0.054	-5.0665	0.0000	9.0498	0.0000
33	0.945	0.951	0.103	0.104	-3.9994	0.0002	1.7804	0.0715
34	0.868	0.874	0.095	0.095	-1.2997	0.1908	0.2607	0.7903
35	0.609	0.612	0.066	0.067	-6.8850	0.0000	12.0905	0.0000
36	0.648	0.652	0.071	0.071	5.0616	0.0000	10.0381	0.0000
37	0.833	0.838	0.091	0.092	-4.3760	0.0000	2.2915	0.0208
38	0.912	0.917	0.100	0.100	-0.5954	0.5589	-1.5299	0.1222
39	0.779	0.783	0.085	0.086	-2.8106	0.0052	-0.3061	0.7576
40	0.763	0.768	0.083	0.084	-3.6924	0.0004	2.2290	0.0244

41	1.054	1.060	0.115	0.116	-2.2901	0.0209	-1.0160	0.3106
42	0.897	0.903	0.098	0.099	-2.3939	0.0159	-1.5475	0.1179
43	0.500	0.503	0.054	0.055	-3.4526	0.0009	11.8514	0.0000
44	0.954	0.960	0.104	0.105	-1.2495	0.2090	-0.8306	0.5885
45	0.522	0.525	0.057	0.057	-1.1163	0.2635	4.9325	0.0000
46	0.995	1.001	0.109	0.109	3.3955	0.0010	0.7325	0.5291
47	0.451	0.453	0.049	0.049	-2.3608	0.0174	10.4237	0.0000
48	0.576	0.579	0.063	0.063	-2.8124	0.0052	5.5189	0.0000
49	0.976	0.982	0.107	0.107	-0.9811	0.6721	-1.6448	0.0962
50	0.526	0.529	0.057	0.058	-5.4819	0.0000	11.8959	0.0000

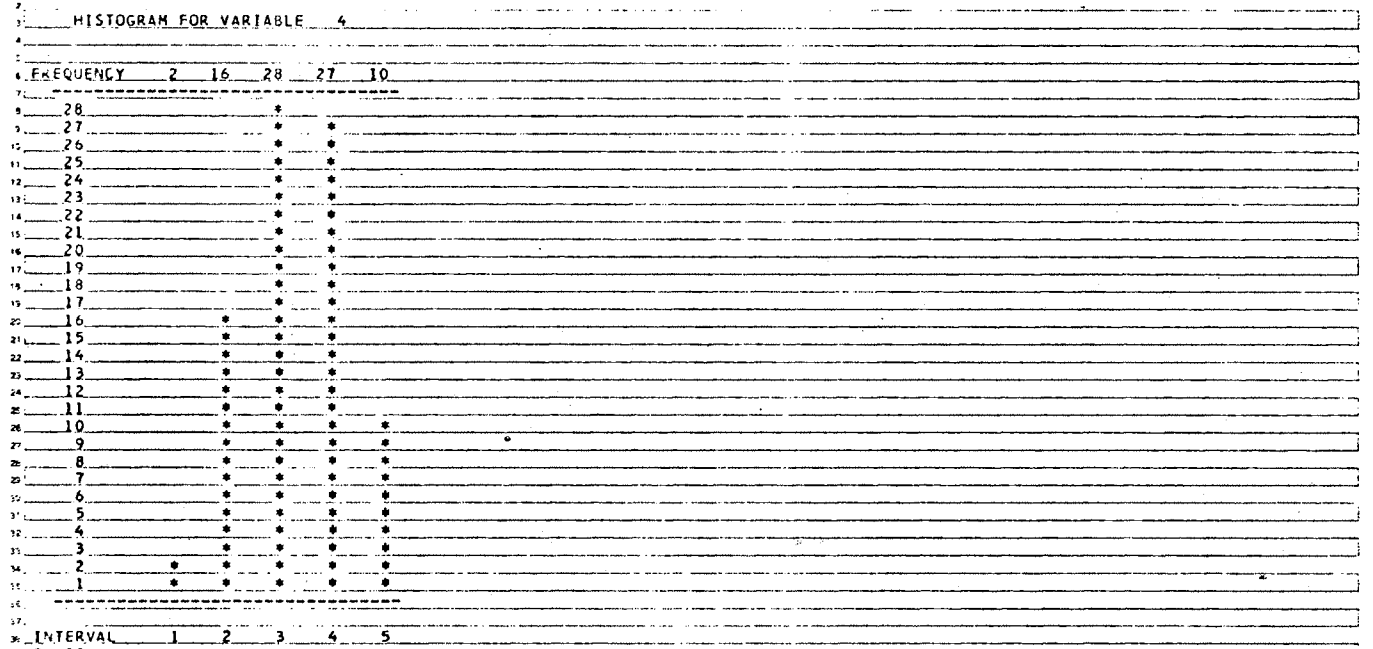
NOTE - DECIMAL FRACTIONS ARE NOT ROUNDED. ROUND TO ONE PLACE LESS THAN OUTPUT.

```
     HISTOGRAM FOR VARIABLE    1


FREQUENCY      3   64   16
  ----------------------------
    64              *
    62              *
    60              *
    58              *
    56              *
    54              *
    52              *
    50              *
    48              *
    46              *
    44              *
    42              *
    40              *
    38              *
    36              *
    34              *
    32              *
    30              *
    28              *
    26              *
    24              *
    22              *
    20              *
    18              *
    16              *    *
    14              *    *
    12              *    *
    10              *    *
     8              *    *
     6              *    *
     4              *    *
     2         *    *    *
  ----------------------------

 INTERVAL      1    2    3
 CLASS

 EACH * EQUALS  2 SCORE(S)   EACH INTERVAL EQUALS   1.000 UNITS.
```


HISTOGRAM FOR VARIABLE 2
FREQUENCY 1 10 63 9
62
60
58
56
54
52
50
48
46
44
42
40
38
36
34
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
INTERVAL 1 2 3 4
CLASS
EACH * EQUALS 2 SCORE(S) EACH INTERVAL EQUALS 1.000 UNITS.


HISTOGRAM FOR VARIABLE 3
FREQUENCY 3 19 43 18
43
42
41
40
39
38
37
36
35
34
33
32
31
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
INTERVAL 1 2 3 4
CLASS
EACH * EQUALS 1 SCORE(S) EACH INTERVAL EQUALS 1.000 UNITS.

HISTOGRAM FOR VARIABLE 4

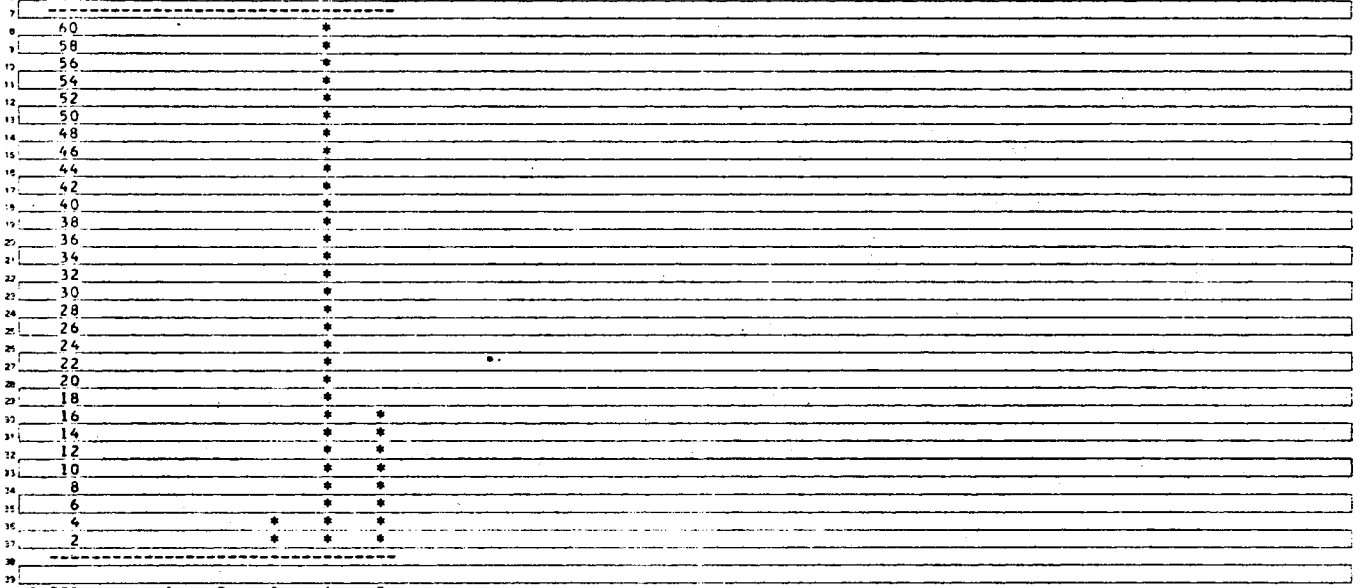


EACH * EQUALS 1 SCORE(S) EACH INTERVAL EQUALS 1.000 UNITS.

```
 HISTOGRAM FOR VARIABLE    5


FREQUENCY     7    11    55    10
  ----------------------------------
     54                   *
     52                   *
     50                   *
     48                   *
     46                   *
     44                   *
     42                   *
     40                   *
     38                   *
     36                   *
     34                   *
     32                   *
     30                   *
     28                   *
     26                   *
     24                   *
     22                   *
     20                   *
     18                   *
     16                   *
     14                   *
     12                   *
     10             *     *     *
      8             *     *     *
      6       *     *     *     *
      4       *     *     *     *
      2       *     *     *     *
  ----------------------------------

INTERVAL      1     2     3     4
CLASS

EACH * EQUALS  2 SCORE(S)   EACH INTERVAL EQUALS   1.000 UNITS.
```

```
HISTOGRAM FOR VARIABLE   6

FREQUENCY    3   29   34   17
   --------------------------
   34                  *
   33                  *
   32                  *
   31                  *
   30                  *
   29             *    *
   28             *    *
   27             *    *
   26             *    *
   25             *    *
   24             *    *
   23             *    *
   22             *    *
   21             *    *
   20             *    *
   19             *    *
   18             *    *
   17             *    *    *
   16             *    *    *
   15             *    *    *
   14             *    *    *
   13             *    *    *
   12             *    *    *
   11             *    *    *
   10             *    *    *
    9             *    *    *
    8             *    *    *
    7             *    *    *
    6             *    *    *
    5             *    *    *
    4             *    *    *
    3        *    *    *    *
    2        *    *    *    *
    1        *    *    *    *
   -----  ----------------------

INTERVAL     1    2    3    4
CLASS

EACH * EQUALS  1 SCORE(S)   EACH INTERVAL EQUALS   1.000 UNITS.
```

HISTOGRAM FOR VARIABLE 7



EACH * EQUALS 2 SCORE(S) EACH INTERVAL EQUALS 1.000 UNITS.

APPENDIX G

SURVEY INSTRUMENT AND ACCOMPANYING TRANSMITTAL DOCUMENT

WINFIELD DUNN
GOVERNOR

JANE L. HARDAWAY
COMMISSIONER

JAMES O. KEATHLEY
DEPUTY COMMISSIONER

STATE OF TENNESSEE • Department of Personnel • 1401 Andrew Jackson State Office Building • Nashville 37219

MEMORANDUM

TO: All Public Service Management Institute Graduates

FROM: Jane L. Hardaway, Commissioner of Personnel

DATE: March 30, 1973

SUBJECT: Public Service Management Institute Research Study

In order to maintain top management programs at their peak of excellence, it is vital that they be revised and updated. It is this concern that prompts me to ask your assistance in this important study of the Public Service Management Institute.

Dr. John Reynolds of the University of Tennessee at Nashville and author of the PSMI is conducting the study. All 250 PSMI graduates are receiving a copy of this questionnaire. You will notice that the questionnaire is in three parts. It is imperative that these be done on three consecutive days in order to minimize fatigue. Please read each question carefully and fill in the blank or circle the most appropriate response. The statements within the questionnaire are representative of various topical areas. However, as it is possible that an important area was overlooked, I would appreciate your attaching an additional sheet noting such areas and giving your comments and observations.

You will notice that the questionnaires are coded. This coding is necessary only to insure adequate response and permit better data analysis. I can assure you of the anonymity of your responses and encourage your free and universal participation.

The enclosed self addressed envelope is for your convenience in returning the questionnaire promptly to Dr. Reynolds no later than April 10, 1973. I know that you share my concern for the continuing excellence of the PSMI, for only those of you who have completed the program can adequately testify to it's relevance for the top management of Tennessee State Government.

Thank you.

JLH/GHB/rc

COMMENTS

Please answer all questions. Add brief description of resource savings on comment sheet. Please complete the three sections of the questionnaire in the requested sequence. Upon completion insert in the enclosed self-addressed envelope and return by April 10, 1973.

The source of the response will be known to the respondent and researcher from The University of Tennessee at Nashville only. Code number will be used as a check off on responses and to insure confidentially. All reference to source will be eliminated upon completion of data analysis.

Definitions: Some questions ask specific responses in these areas.

Resources - Includes manpower, materials, time, equipment, facilities, etc. necessary to perform work. Please identify and briefly describe each resource saving on attached sheet(s).

Program Cost - Includes material, instructor, equipment, facilities, per diem, participants' salary and fringes unless specified.

Individual Cost - Same as above on an individual scale.

The early PSMI participants attended four weeks of training which were in the following sequence: (1) Basic Management, (2) Personnel Management, (3) Fiscal Management, (4) Managerial Tools. In later programs the Fiscal Management (Week #3) section was removed from the PSMI and made a separate program.

The enclosed questionnaire is concerned with only the weeks on: Basic Management, Personnel Management and Managerial Tools (which included some financial analysis). Fiscal Management is excluded for later research.

SECTION I

Code_____

COMPREHENSIVE EVALUATION QUESTIONNAIRE
FOR
THE PUBLIC SERVICE MANAGEMENT INSTITUTE (PSMI)

This questionnaire is divided into three sections. Please answer Section I the first day; Section II the second day; Section III the third day.

Please identify your:

Department_____ Division_____

First Day (I-A and I-B TO BE ANSWERED THE FIRST DAY)

I. A. Background Data (please circle or fill in the most appropriate category)

1. I took the PSMI program within the past (months) 6 12 18 24 36 or more

2. My length of State employment is (years) 1 2-6 7-11 12-16 17-up

3. My job organizational level as listed in the State of Tennessee Management Directory is I II III IV V

4. My level of formal education is (check one)
   ____ less than high school graduate
   ____ high school graduate
   ____ some college
   ____ college degree
   ____ graduate degree

5. My age is 30-under 31-37 38-44 45-51 52-up

6. My annual State salary immediately prior to PSMI was (check one)
   ____ $11,000 or less
   ____ $11,001 to 13,000
   ____ $13,001 to 15,000
   ____ $15,001 to 17,000
   ____ $17,001 - up

7. My annual State salary is now (check one)
   ____ $11,000 or less
   ____ $11,001 to 13,000
   ____ $13,001 to 15,000
   ____ $15,001 to 17,000
   ____ $17,001 - up

8. Number of subordinates supervised
   a. Direct supervision____
   b. Indirect supervision____

9. I am directly responsible for an annual budget of approximately $_____.

I-2

Key:

SA = Strongly Agree
A = Agree
I = Indifference
D = Disagree
SD = Strongly Disagree

I. B.	1.	PSMI training applies to real world work situations.	SA	A	I	D	SD
	2.	Since PSMI, I have a better understanding of human relations.	SA	A	I	D	SD
	3.	PSMI helped me to have a better understanding of the operation of State government.	SA	A	I	D	SD
	4.	PSMI was a source of special recognition for me.	SA	A	I	D	SD
	5.	Planning techniques (CPM/PERT) are useful to me.	SA	A	I	D	SD
	6.	PSMI has resulted in my receiving more recognition from my fellow workers.	SA	A	I	D	SD
	7.	PSMI increased my knowledge of planning, organizing, and controlling.	SA	A	I	D	SD
	8.	I learned a lot from the case analyses.	SA	A	I	D	SD
	9.	I found the presentations on computers helpful.	SA	A	I	D	SD
	10.	This program motivated me to seek additional training.	SA	A	I	D	SD
	11.	PSMI made me more aware of the significance of personality conflicts in work situations.	SA	A	I	D	SD
	12.	The program improved my attitude toward State government.	SA	A	I	D	SD
	13.	I am now more willing to take constructive action toward problem situations.	SA	A	I	D	SD
	14.	I thought the lectures were poor.	SA	A	I	D	SD
	15.	PSMI helped increase the amount of work for which I am responsible.	SA	A	I	D	SD
	16.	PSMI has resulted in more notice of my efforts.	SA	A	I	D	SD
	17.	This was the best management training program I have attended.	SA	A	I	D	SD
	18.	PSMI has had no influence on increased payment of taxes by participants.	SA	A	I	D	SD
	19.	PSMI graduates get more raises than others by at least	0	3%	6%	9%	12%-up

20.	The group discussions clarified several things for me.	SA	A	I	D	SD
21.	Because of PSMI, employee turnover in my work group has been reduced.	SA	A	I	D	SD
22.	My superior sent me to PSMI because he wanted me out of the office for a while.	SA	A	I	D	SD
23.	Attendance in the PSMI increases job security.	SA	A	I	D	SD
24.	The simulation exercises were confusing.	SA	A	I	D	SD
25.	PSMI training would benefit middle management.	SA	A	I	D	SD
26.	I have not received any recognition as a result of PSMI.	SA	A	I	D	SD
27.	PSMI made me more aware of the importance of my job.	SA	A	I	D	SD
28.	Since PSMI I handle heavier work loads with the same resources.	SA	A	I	D	SD
29.	More cases should be used in PSMI.	SA	A	I	D	SD
30.	I now have fewer conflicts in my work.	SA	A	I	D	SD
31.	The lectures were the best part of the course.	SA	A	I	D	SD
32.	The cases analyzed were good.	SA	A	I	D	SD
33.	PSMI training should be an important factor in State policy concerning promotions.	SA	A	I	D	SD
34.	Because of PSMI my work group is more satisfied.	SA	A	I	D	SD
35.	The first week of PSMI, basic management, was of great help to me in my job.	SA	A	I	D	SD
36.	There has been no improvement in my use of resources since attending PSMI.	SA	A	I	D	SD
37.	PSMI helped me to identify more strongly with my organization.	SA	A	I	D	SD
38.	PSMI has improved my chances for a pay raise.	SA	A	I	D	SD
39.	More simulation exercises should be used in PSMI.	SA	A	I	D	SD
40.	We should spend more money on management training programs of this type.	SA	A	I	D	SD
41.	PSMI has not resulted in my paying more taxes.	SA	A	I	D	SD
42.	The ideas covered in economic analysis apply to my job.	SA	A	I	D	SD
43.	During PSMI, I had many opportunities to discuss job problems with my classmates.	SA	A	I	D	SD

44.	I have been able to achieve a great deal more for myself because of PSMI.	SA	A	I	D	SD
45.	The group discussions were an excellent method for learning.	SA	A	I	D	SD
46.	PSMI has not improved the performance of State government.	SA	A	I	D	SD
47.	PSMI taught me how to apply managerial tools and techniques.	SA	A	I	D	SD
48.	Since PSMI I have more knowledge about employee behavior.	SA	A	I	D	SD
49.	My attendance in PSMI has given me the opportunity to make more decisions on my own.	SA	A	I	D	SD
50.	My attendance in PSMI has given me problem solving tools that I have applied.	SA	A	I	D	SD
51.	I learned a lot from the group discussions.	SA	A	I	D	SD
52.	I am not aware of any improvements in the use of State resources resulting from PSMI.	SA	A	I	D	SD
53.	I am enthusiastic about the PSMI training.	SA	A	I	D	SD
54.	PSMI was worthwhile because of the resulting recognition I have received from management.	SA	A	I	D	SD
55.	More time should be spent on the first week subjects of planning, organizing, and controlling.	SA	A	I	D	SD
56.	PSMI has provided opportunities I would not otherwise have had.	SA	A	I	D	SD

STOP.

SECTION II (TO BE ANSWERED THE SECOND DAY)

Key:

SA = Strongly Agree
A = Agree
I = Indifference
D = Disagree
SD = Strongly Disagree

1.	The PSMI is of value to me in non-managerial work.	SA	A	I	D	SD
2.	The PSMI training would benefit top management.	SA	A	I	D	SD
3.	PSMI is one thing I can point to as evidence of my achievements and professional development.	SA	A	I	D	SD
4.	I have been given increased responsibility for the work of others since PSMI.	SA	A	I	D	SD
5.	PSMI did not help me in my job.	SA	A	I	D	SD
6.	The simulation exercises were good.	SA	A	I	D	SD
7.	PSMI improved my human relations skills.	SA	A	I	D	SD
8.	PSMI training would help management trainees.	SA	A	I	D	SD
9.	I think the money spent on this training was a good investment.	SA	A	I	D	SD
10.	Most cases were realistic and applicable.	SA	A	I	D	SD
11.	Simulation exercises provide little insight to real world management problems.	SA	A	A	I	SD
12.	I learned the most from the lectures.	SA	A	I	D	SD
13.	I enjoyed the group discussions.	SA	A	I	D	SD
14.	Since attending PSMI I feel I am able to do a better job.	SA	A	I	D	SD
15.	Since PSMI, I have a better attitude toward problem solving.	SA	A	I	D	SD
16.	The program helped my associates in their jobs.	SA	A	I	D	SD
17.	I feel that my productivity has increased because of PSMI training.	SA	A	I	D	SD
18.	The program helped me in my job.	SA	A	I	D	SD
19.	I work better with my group since I took PSMI.	SA	A	I	D	SD
20.	I have not changed my planning, organizing, or control systems.	SA	A	I	D	SD
21.	I found the lectures stimulating.	SA	A	I	D	SD
22.	This program improved my attitude toward my supervisor.	SA	A	I	D	SD
23.	The lecture approach is the best for this type program.	SA	A	I	D	SD

24.	PSMI helped improve the quality of work in my group.	SA	A	I	D	SD
25.	My attendance in PSMI was a waste of time.	SA	A	I	D	SD
26.	The amount of time spent on scheduling techniques was of little value.	SA	A	I	D	SD
27.	My participation in PSMI will not affect my chances for a raise.	SA	A	I	D	SD
28.	Due to the financial benefits I have received as a result of PSMI training, I now pay more taxes.	SA	A	I	D	SD
29.	My attendance in the PSMI will not help me get a promotion.	SA	A	I	D	SD
30.	Group discussion was generally a poor way to learn new materials.	SA	A	I	D	SD
31.	The case analyses provided an excellent method for learning how to apply management concepts.	SA	A	I	D	SD
32.	More group discussion should be used.	SA	A	I	D	SD
33.	I found the group discussions to be stimulating.	SA	A	I	D	SD
34.	In PSMI, I shared experiences with others which helped me in my job.	SA	A	I	D	SD
35.	My training in PSMI was an excellent way for me to qualify for more responsibility.	SA	A	I	D	SD
36.	Attendance in the PSMI has been financially rewarding to me.	SA	A	I	D	SD
37.	The lectures and assignments on job design and work measurement have been of value to me.	SA	A	I	D	SD
38.	PSMI helped me to be more satisfied with my work.	SA	A	I	D	SD
39.	PSMI improved my communication skills.	SA	A	I	D	SD
40.	I believe the case analyses are of little value in PSMI.	SA	A	I	D	SD
41.	Because of PSMI, I feel that the State cares more about the problems of the manager.	SA	A	I	D	SD
42.	As a result of PSMI, there has been a reduction in absenteeism in my work group.	SA	A	I	D	SD
43.	My attendance in the PSMI has not helped me to do a better job.	SA	A	I	D	SD
44.	Because of PSMI, morale in my work group is improved.	SA	A	I	D	SD
45.	The simulation exercises taught me how to apply managerial concepts and techniques.	SA	A	I	D	SD

46.	I am more secure in my job because of PSMI.	SA	A	I	D	SD
47.	PSMI is not recognized as a means for up-grading a manager.	SA	A	I	D	SD
48.	PSMI improved my understanding of goal setting and goal achievement.	SA	A	I	D	SD
49.	I now find my work less tolerable than before PSMI.	SA	A	I	D	SD
50.	Since PSMI I have improved my on-the-job performance.	SA	A	I	D	SD
51.	I use tools, techniques, and concepts that I learned in PSMI.	SA	A	I	D	SD
52.	I wanted to attend PSMI.	SA	A	I	D	SD
53.	The cases used did not relate well to State government.	SA	A	I	D	SD
54.	I have not used any tools and techniques covered in PSMI.	SA	A	I	D	SD
55.	As a result of PSMI, I enjoy my work more.	SA	A	I	D	SD
56.	The speakers were good.	SA	A	I	D	SD
57.	My attendance in PSMI resulted in reduced supervision for me.	SA	A	I	D	SD
58.	The work simplification concepts, as taught in PSMI, are of little value to me.	SA	A	I	D	SD

STOP.

SECTION III (TO BE ANSWERED THE THIRD DAY)

Key:

SA = Strongly Agree
A = Agree
I = Indifference
D = Disagree
SD = Strongly Disagree

1.	PSMI contributed nothing to my personal goals.	SA	A	I	D	SD
2.	I now make more positive applications of planning, organizing, and controlling techniques.	SA	A	I	D	SD
3.	PSMI increased my knowledge of managerial tools and techniques.	SA	A	I	D	SD
4.	PSMI has improved my job involvement and satisfaction.	SA	A	I	D	SD
5.	There is a direct relationship between PSMI training and an increase in job responsibility.	SA	A	I	D	SD
6.	I am not interested in work simplification techniques.	SA	A	I	D	SD
7.	PSMI is a waste of time and money.	SA	A	I	D	SD
8.	Simulation exercises were the least interesting part of the program.	SA	A	I	D	SD
9.	Since attending PSMI there has been no change in my individual job performance.	SA	A	I	D	SD
10.	PSMI enables me to do a better job in managing my subordinates.	SA	A	I	D	SD
11.	This program encouraged me to attend university credit courses.	SA	A	I	D	SD
12.	In PSMI, I made or renewed a friendship that has been helpful in improving my job performance.	SA	A	I	D	SD
13.	There should be more speakers.	SA	A	I	D	SD
14.	My attendance in PSMI has specifically resulted in one or more promotions.	SA	A	I	D	SD
15.	More time should be spent on human relations.	SA	A	I	D	SD
16.	PSMI is of no value in maintaining one's job.	SA	A	I	D	SD
17.	The lectures were good.	SA	A	I	D	SD
18.	Because of PSMI, there have been fewer complaints from my subordinates.	SA	A	I	D	SD
19.	I feel that the program has helped the State government to do a better job.	SA	A	I	D	SD
20.	PSMI training would benefit lower management.	SA	A	I	D	SD
21.	My participation in PSMI is evidence of my desire to be a better manager.	SA	A	I	D	SD
22.	More time should be spent on managerial tools.	SA	A	I	D	SD
23.	PSMI will help the State improve its professional and managerial competence.	SA	A	I	D	SD

24.	Attendance in the PSMI has qualified me for a better salary.	SA	A	I	D	SD
25.	Attendance in PSMI will result in a pay increase greater than I normally would receive.	SA	A	I	D	SD
26.	Attendance in the PSMI will help me to qualify for a merit pay increase.	SA	A	I	D	SD
27.	PSMI has helped me to achieve worthwhile things in my job.	SA	A	I	D	SD
28.	I am now able to do a better job because of a better understanding of planning, organizing, and controlling.	SA	A	I	D	SD
29.	PSMI is a necessary part of maintaing job job security.	SA	A	I	D	SD
30.	My supervisor encouraged me to attend PSMI.	SA	A	I	D	SD
31.	I believe that raises resulting from PSMI training have caused the participants to pay more taxes.	SA	A	I	D	SD
32.	There is a direct relationship between promotions and PSMI training.	SA	A	I	D	SD
33.	PSMI will improve my chances for advancement.	SA	A	I	D	SD
34.	As a result of PSMI, there have been positive changes in my work group.	SA	A	I	D	SD
35.	I like simulation exercises.	SA	A	I	D	SD

Directions:
Please circle the dollar estimate, percentage, and year most appropriate.

36.	PSMI helped me to improve my use of resources by at least	0	10,000	20,000	30,000	40,000 or more
37.	These savings will continue for a period of (years)	0	1	3	5	7 or more
38.	PSMI helped me save the State at least	0	50,000	100,000	150,000	200,000 or more
39.	These savings will continue for a period of (years)	0	1	3	5	7 or more
40.	For each participant the State has benefited by at least	0	10,000 or less	20,000	30,000	40,000 or more
41.	These savings will continue for a period of (years)	0	1	3	5	7 or more

42. I know of another person who made resource savings as a result of PSMI, of approximately 0 $10,000 20,000 30,000 40,000 or more

43. These savings will continue for a period of (years) 0 1 3 5 7 or more

44. PSMI will improve the use of State resources by at least 0 $500,000 or less 1,500,000 2,500,000 3,500,000 or more

45. I believe this training program will benefit the State by at least 0 $100,000 500,000 1,000,000 2,000,000 or more

46. For each of my subordinates to take the training, I would pay out of my own budget (excluding salary) this amount 0 $200 400 600 800 or more

47. If I were Director of Training, I would be willing to spend, per trainee (excluding salary) this amount for PSMI training 0 $200 400 600 800 or more

48. As a result of PSMI, my taxes have increased by 0 3% 6% 9% 12%-up

49. If release time were granted, I would pay out of <u>my own pocket</u> to take this training 0 $200 400 600 800 or more

50. To buy a program of similar quality and content from a private firm would cost per trainee $100 300 500 700 900 or more

51. Since PSMI, my annual salary has increased by at least 0 3% 6% 9% 12%-up

52. I think the total actual cost including salary of the 3-week program for 20 people was $1000 or less 5000 10,000 15,000 20,000 or more

53. I think the actual total PSMI cost per management trainee was $200 or less 500 1000 2000 2500 or more

<u>END</u>.

Thank you. Please insert copies in the provided self-addressed envelope and mail promptly.

Your assistance in this research is greatly appreciated.

COMMENT SHEET

Please add any additional pertinent information. Specifically identify resources, savings, etc.

APPENDIX H

ITEM CROSS REFERENCE FOR RESEARCH MODEL, QUESTIONNAIRE AND COMPUTER SEQUENTIAL NUMBERS

CROSS REFERENCE - RESEARCH MODEL

QUESTIONNAIRE AND COMPUTER SEQUENCIAL NUMBERS
4/16/73

	A	B	C
X_1	1	2-52	108
	2	1-53	53
	3	2-2	58
	4	1-25	25
	5	3-20	134
	6	2-8	64
	7	2-5	61
	8	3-7	121
	9	1-10	10
	10	3-11	126
	11	1-17	17
	12	3-36	150
	13	3-37	151
	14	3-38	152
	15	3-39	153
	16	3-40	154
	17	3-41	155
	18	3-42	156
	19	3-43	157
	20	3-44	158
	21	3-45	159
	22	3-46	160
	23	3-47	161
	24	3-49	163
	25	3-48	162
	26	3-50	164
	27	3-51	165
	28	1-19	19
X_2	29	1-7	7
	30	3-2	116
	31	2-48	106
	32	2-20	76
	33	1-35	35
	34	1-55	55
	35	3-28	142
X_3	36	1-2	2
	37	2-7	63
	38	1-34	34
	39	2-44	100
	40	1-21	21
	41	2-42	98
	42	3-15	129
	43	3-34	148
	44	2-39	95
	45	1-11	11
	46	3-18	132
	47	2-19	75
	48	1-12	12
	49	2-22	78
	50	1-48	48
	51	1-43	43
	52	1-37	37
	53	1-30	30
X_4	54	3-3	117
	55	1-47	47
	56	2-54	110
	57	2-58	114
	58	1-5	5
	59	1-42	42
	60	1-9	9
	61	2-37	93
	62	3-22	136
	63	2-26	82
	64	3-6	120
X_5	65	1-31	31
	66	3-17	131
	67	1-14	14
	68	2-12	68
	69	2-23	79
	70	2-21	77
	71	2-56	112
	72	3-13	127
X_6	73	2-11	67
	74	2-45	101
	75	3-8	122
	76	1-39	39
	77	1-24	24
	78	2-6	62
	79	3-35	149
X_7	80	2-31	87
	81	2-40	96
	82	1-32	32
	83	1-29	29
	84	2-53	109
	85	2-10	66
	86	1-8	8
X_8	87	1-45	45
	88	2-30	86
	89	2-32	88
	90	1-20	20
	91	2-33	89
	92	1-51	51
	93	2-13	69
X_9	94	3-23	137
	95	2-25	81
	96	3-1	115
	97	3-21	135
	98	2-3	59
	99	3-27	141
	100	1-44	44
X_{10}	101	1-16	16
	102	1-54	54
	103	3-30	144
	104	1-4	4
	105	2-47	103
	106	1-22	22
	107	1-6	6
	108	1-26	26
X_{11}	109	1-50	50
	110	3-10	124
	111	2-1	57
	112	2-38	94
	113	2-43	99
	114	3-12	126
	115	3-4	118
	116	2-51	107
	117	1-1	1
	118	2-55	111
	119	2-49	105
	120	2-16	72
	121	2-18	74
	122	1-3	3
	123	2-15	71
	124	1-13	13
	125	2-41	97
	125a	2-34	96
	126	1-27	27
X_{12}	127	2-4	60
	128	2-35	91
	129	1-49	49
	130	3-5	119
	131	2-57	113

Page 2

	A	B	C
X_{13}	132	2-29	85
	133	3-33	147
	134	3-14	128
	135	1-33	33
	136	1-56	56
	137	3-32	146
X_{14}	138	1-38	38
	139	3-24	138
	140	3-26	140
	141	2-36	92
	142	3-25	139
	143	2-27	83
X_{15}	144	1-23	23
	145	3-29	143
	146	3-16	130
	147	2-46	102
X_{16}	148	2-28	84
	149	3-31	145
	150	1-18	18
	151	1-41	41
X_{17}	152	2-50	106
	153	1-46	46
	154	3-9	123
	155	3-19	133
	156	1-28	28
	157	1-36	36
	158	2-17	73
	159	1-52	52
	160	2-24	80
	161	1-15	15
	162	2-14	70
X_{18}	163	2-9	65
	164	1-40	40
	165	3-52	166
	166	3-53	167
	167	TOTAL	

A. Research Model Sequencial Number

B. Questionnaire Section and Number

C. Sequencial Question Number for Computer Analysis

VITA

John E. Reynolds

Candidate for the Degree of

Doctor of Philosophy

Dissertation: THE DEVELOPMENT OF A MODEL TO ASSESS THE ORGANIZATIONAL VALUE OF MANAGEMENT TRAINING AND DEVELOPMENT PROGRAMS: AN EMPIRICAL ANALYSIS OF EIGHTEEN VARIABLES

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