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ABSTRACT

The objective of the research study was to determine if dimensions of the innovation diffusion process could be identified empirically. Questionnaires were administered to a sample of 300 educational practitioners in various roles in Kansas and Ohio. The data resulting from the 82 percent response are divided into two categories. One category studied was the innovation characteristics domain with a six-factor solution (student concern orientation, additional resource requirements, organized resistance potential, consumer report rating, credibility, and operational implementation concern) which accounted for 63 percent of the variance. The second category studied was the client characteristics domain. Its four-factor solution (the dynamic professional bureaucrat, the adapter-creater, the impoverished practitioner, and the economic bureaucrat) accounted for 48 percent of the variance. The study, as it has progressed thus far, suggests that individuals concerned with introducing and/or implementing innovations should be prepared to deal with the reactions of clients to various perceived characteristics of that innovation. The study further suggests that persons dealing with change in educational settings should consider the individual's patterns of behavior when he is attempting to understand and/or gain the adoption of innovations. (Future program activities are described.) (AG)

Research and Development Series No. 92

IDENTIFICATION OF EMPIRICAL DIMENSIONS OF THE DIFFUSION PROCESS:

Interim Report

THE CENTER FOR VOCATIONAL AND TECHNICAL EDUCATION

THE OHIO STATE UNIVERSITY
1960 Kenny Rd., Columbus, Ohio 43210

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RESEARCH AND DEVELOPMENT
SERIES NO. 92

IDENTIFICATION OF EMPIRICAL DIMENSIONS OF THE DIFFUSION PROCESS:

Interim Report

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FOREWORD

A multitude of complex factors interrelate to facilitate or inhibit the acceptance of innovation in education. At the present time very little knowledge of innovation adoption is based on scientific observation. Therefore, persons responsible for gaining the acceptance of innovations rely on intuition and personal experience when formulating diffusion strategies.

This publication reports progress on research underlying dimensions of the process of innovation acceptance. The ultimate output of this study is empirical knowledge of educational innovation characteristics, client characteristics, and diffusion tactics as they impact on innovation adoption behavior. This knowledge, if applied judiciously, should assist educational professionals in facilitating the acceptance of desirable innovation.

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Robert E. Taylor
Director
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and Technical Education

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SUMMARY

Persons responsible for facilitating the acceptance of innovations in education need access to knowledge that will permit them to use diffusion tactics appropriate for their situational needs. Existing knowledge of the innovation diffusion process provides a wide variety of conceptualizations but little empirical data on the efficacy of these ideas. Therefore, the objective of this research study was to determine if dimensions of the innovation diffusion process could be identified empirically. Two domains of the process were studied: the innovation characteristics domain and the client characteristics domain.

A fifty-item questionnaire with Likert-type response categories was generated for each of the domains indicated. The items were developed from interviews with teachers and school administrators in the field, literature reviews, and previous research findings in the program. The questionnaires were administered to a sample of 300 educational practitioners in various roles (teacher, administrator, supervisor, teacher educator, and state advisory council member) in two states. Eighty-one percent of the subjects returned useable questionnaires. A principal component factor analysis of cross products was used to identify a six-factor solution for the innovations characteristics domain and a four-factor solution for the client characteristics domain.

The six-factor solution accounted for 63 percent of the variance among the innovation characteristics. The factors were labeled as follows:

1. Student Concern Orientation (39 percent of the variance explained)
2. Additional Resource Requirements (13 percent of the variance explained)
3. Organized Resistance Potential (3 percent of the variance explained)
4. Consumer Report Rating (3 percent of the variance explained)
5. Credibility (3 percent of the variance explained)
6. Operational Implementation Concern (3 percent of the variance explained)

The four-factor solution in the client domain accounted for 48 percent of the variance. The factors are:

1. The Dynamic Professional Bureaucrat (35 percent of the variance explained)

2. The Adapter-Creator (5 percent of the variance explained)

3. The Improvetished Practitioner (5 percent of the variance explained)

4. The Economic Bureaucrat (3 percent of the variance explained)

The factor solutions are described within the report: items with high loadings on a factor were used to define the factor. These factors are perceived by the authors of the report as foci for conveying information about the innovation and client characteristics.

IDENTIFICATION OF EMPIRICAL DIMENSIONS OF THE DIFFUSION PROCESS:

Interim Report

Chapter One

THE CONTEXT OF INNOVATION DIFFUSION

Introduction

This interim report contains a description of factors perceived to influence the diffusion of innovations. Chapter One presents background information on (1) the problem being researched, (2) the strategy used in attacking the problem, and (3) the objectives of the research. Chapter Two reports program progress on identification of factors in two domains of knowledge: one describing characteristics of innovation and the other describing characteristics of individuals who adopt innovations. The final chapter, Chapter Three, provides a summary of the findings to date and an overview of future data collection activities.

The Present Context

Much has been written about the diffusion of innovation. Books by Havelock (1971), Rogers and Shoemaker (1971), and others have summarized numerous publications that have addressed the topic of innovation diffusion from several different perspectives. The definition of diffusion used in this publication comes from the work of Elihu Katz and others (1963). He defines diffusion as cumulative acceptance over time of some specific product, idea, or practice by individuals, groups, or some other adopting unit, linked to specific channels of communication to a social structure and to a given system of values or culture. An "innovation" can be equated with a research and development product such as a curriculum unit for the purposes of this report. The term "acceptance" is interpreted by the authors to mean "use and liking" of a product. For example, unless a teacher uses a curriculum unit satisfactorily, she has not accepted the unit, and she is not likely to use it again or recommend it to another teacher.

Despite the great volume of literature discussing the problems and procedures of innovation diffusion and the investment being made by the government in the development of viable research and development products, there is very little evidence of much product impact on educational practice. Dr. Sidney Marland, Jr., former Assistant Secretary of Education, Department of Health, Education, and Welfare, was quoted in the *Report on Educational Research* of December 8, 1971:

> We have sprinkled our R&D dollars like seeds, hopefully but thinly, enthusiastically but improvidently, not so much working systematically for a new order of educational efficiency, but wishing one might suddenly burst into luxurious bloom; it hasn't happened.

Almost every administrator of educational research funds in the Office of Education has spoken out on the need for the diffusion of its products.

Norm Boyan (1969) said "The existing gulf between the performers and real or potential users of educational R&D shows no signs of becoming smaller. . ." Further, "Improved dissemination techniques and improved practice in promoting the intelligent adoption of well-tested alternatives will generate a more beneficial reaction among practitioners." Likewise, James Gallagher, former Director of the National Center for Educational Research and Development, USOE, in a May 13, 1970, speech to the National Association of School Psychologists, said,

> . . .the other major contribution that I hope will be made in the next decade will be a more thorough understanding of the process of dissemination, diffusion, and implementation itself. There is a tremendous amount of energy that needs to be spent on the problem of how do you change, how do you get new ideas and new practices from one place to the other.

One might ask the question, therefore, Why are research and development products not being used? Two answers to this question are suggested. The first might be that the products are no good. This answer is not within the scope of a diffusion problem; it is a product development problem. The diffusion problem is viewed as one of distribution and utilization of products. The second answer seems more tenable for diffusion research: products are not being used because the products will not be accepted on their own merits. Some person or organization may need to accept responsibility for conveying product information to intended users. In many instances, a catalytic influence is needed to insure that adequate resources are available for trial use of the product.

Statement of the Problem

The problem can be represented by a discrepancy: research and development products should be used by the intended clients, but these products are not being used to any great or continuing extent. Evidences of this problem can be found in the time lag usually associated with the adoption of innovations and the ceremonial adoption that sometimes accompanies the "use" of innovations.

There are many examples of the time lag usually associated with adoption of educational innovations. Studies by Paul Mort and his associates at Columbia University many years ago established the time lag for innovation adoption at approximately fifty to sixty-five years for utilization of a single innovation. Miles (1964) estimated that it took fifteen years for

3 percent of the schools to adopt the very practical notion of the kindergarten. State legislatures are finally authorizing state funds for the support of kindergarten 150 years after kindergarten was invented. A study completed by the National Commission on Technology, Automation, and Economic Progress (1966) looked at twenty innovations and the time lag between invention and adoption. Its report indicates progress in reducing the time lag associated with innovation diffusion: in the early twentieth century it took twenty-seven years; in post-World War I it took twenty-four years; and in post-World War II it took fourteen years for these inventions to be adopted. Despite this shortening of the time lag, a significant lapse of time occurs before the government can begin to recoup its investment in educational research and development products.

Secondly, there is the question of permanence of adoption after funding is withdrawn. In too many cases, only ceremonial adoption takes place. The innovation is implemented as long as "outside" money is supporting the innovation and supervision is maintained. As soon as either of these conditions is withdrawn, individuals and organizations revert to previous practices. Norman Hearn (1970), in a follow-up of Title III programs funded for the years 1965-66 with termination dates during 1968-69, reports continuation figures from a high of 85 percent to a low of around 60 percent, depending on how one interprets the responses. To insure adoption, it may be necessary to attach conditions to the acceptance of funds for innovations. A report by the Center for Educational Policy Research at Harvard University entitled *Education USA* (March 12, 1973) states, "It is unrealistic to expect to give free money and stimulate change." It would appear that resources such as dollars should be targeted for specific purposes. This suggests the need for strategies that make possible the effective utilization of research and development products.

Strategies that can bring about efficient and effective adoption need to be devised, since research and development products are not being accepted on their own merits. "Natural" acceptance of new ideas takes too long and may not be permanent. Therefore, intervention strategies are needed to emphasize characteristics of the product that have utility for potential users.

Little seems to be known about the formulation of effective diffusion strategies. Rosenau, Hutchins, and Hemphill (1971) were asked to develop a concept paper for the production, distribution, and utilization of National Institute of Education (NIE) products. They report, "Strategies designed to insure awareness and motivation may be the most difficult to engineer. This is also the area where there is little empirical evidence as to what works best."

This feeling is echoed by Kirkpatrick when he says that most judgments that match target audience information with product delivery costs typically are made on the basis of intuition. The knowledge base in innovation diffusion lacks the kind of systematic and empirical organization needed in order to formulate effective diffusion strategies. The task of organizing the knowledge base is made difficult by the complexities of the conditions that impinge on

the formulation of diffusion strategies. The intended users' knowledge of the innovation, the unique conditions in the users' environment that enhance or retard acceptance of the innovation, and the particular adoption needs of the innovation must be taken into account when devising a diffusion strategy. A need exists for definitive, empirical knowledge of the innovation diffusion process. A more clearly organized knowledge base should assist decision-makers in formulating diffusion strategies.

Objectives of the Research

The objectives of this study were to: (1) determine if dimensions of innovation diffusion can be empirically identified,[1] (2) identify the dimensions, and (3) interpret those dimensions descriptively and empirically via intercorrelations with other important variables. If these objectives can be accomplished, then (4) the resultant empirically identified dimensions can be related to behaviors of innovation adoption. Advocates or decision-makers can (5) then use this knowledge to formulate strategies for gaining acceptance of innovations.

Research Strategy

The first year of this four-year study included three types of research activities: (1) the development of a conceptual framework for the study of innovation diffusion, (2) a survey of client groups who would be affected by any innovation diffusion strategy, and (3) a case study of the school-based career education model. Commissioned papers were written for the Diffusion Program of The Center for Vocational and Technical Education (CVTE) by scholars in the field. These concept papers were used with literature reviews to develop a conceptual framework for the study of innovation diffusion. Three conceptual domains were identified: characteristics of the innovation, characteristics of the clients, and characteristics of diffusion tactics.

This interim report of research findings includes the survey of client groups for only the first two domains of the conceptual framework (innovation characteristics and client characteristics). It does not contain any new information on the conceptual framework. The case study of diffusion practices in the school-based career education model will be the subject of a later report.

Once the underlying dimension of each of the three domains (the innovation, the client, and the diffusion tactics) has been identified, the task of determining interrelationships will begin. Of course, some interpretations must occur in order to name the factors in each domain, but the critical considerations

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[1]This objective sought to observe dimensions of the diffusion process in the summarized responses of subjects to questionnaire items.

for innovation diffusion strategy formulation entail knowledge of the interrelationships among the factors within and between each domain. Also, the observable demographics of each client setting must be related to the underlying dimensions of the domains if innovation advocates are to emphasize particular innovation qualities for particular types of clients. The observable demographics of client types should act as cues to an innovation advocate in formulating an intervention strategy.

Interrelationships among the factors will be explored with multiple regression analyses of data collected via the survey technique. Present plans call for either an application of the factors within each domain to a variety of innovations and adoption settings or a design that holds the innovation constant and explores the effects of the characteristics of various diffusion tactics over a variety of adoption settings. Trade-offs are apparent for either approach: the first design allows for generalizations to various types of innovations but it would include perceptual data only; the second design offers the prospect of direct observations of changes in students and teachers who have adopted or resisted an innovation, but it lacks the application of the factors over a variety of innovations, which is needed for adequate generalization. The plans for a field application of the identified and interpreted factors will be finalized at a later date.

Following the field application, a simulated laboratory test of the utility of the factors for formulating innovation diffusion strategies will be conducted. As with the field application, plans for this simulation phase are contingent upon the successful identification of diffusion tactics before the dimensions can be interpreted in a field setting.

The Conceptual Framework

The reader should have some knowledge of the basic paradigm used in conducting the research in order to understand the variables that influence the adoption of innovations. As mentioned previously, one activity of the initial research was the development of a conceptual schema derived from several broad characterizations of the diffusion process. This schema was not visualized as a model of the diffusion process but more or less a categorization schema that, over time, could provide the elements of a theory of diffusion. The reader is referred to CVTE Research and Development Series No. 89, *A Conceptual Framework of the Diffusion Process in Vocational and Technical Education*, for a more detailed discussion of the framework.

After an extensive review in the diffusion process literature, the following conceptual domains were established: (1) the innovation being considered, (2) the consumer (i.e., individual, group, or organization) to which the innovation is directed, and (3) the strategy being used to effect the acceptance. Each of these major domains have sub-categories that further explain variables that have an effect on the acceptance of innovations.

The Diffusion Strategies Program in general and the conceptual framework in particular take into account two major assumptions:

1. A wide variety of innovations, characteristics of adoption settings (individual-group, rural-urban, etc.), and diffusion tactics can be described by a single conceptual framework.

2. Consumers of innovations have the ability to reject as well as accept innovations. Even in highly structured bureaucratic organizations, employees find ways of subverting innovations that they perceive to be detrimental to their interests.

The innovation is initially divided into two sub-categories: the form (e.g., instructional materials, installable system, etc.) and general characteristics (e.g., cost, relative advantage, compatibility with the existing context, etc.).

The consumer of the innovation can be identified as an individual, group, or organization. Some sub-categories of this domain are the setting (e.g., size, location, socioeconomic background, etc.), the formal organization (e.g., span of control, complexity, standardization, etc.), the social organization (e.g., communication channels, leadership styles, group relations, etc.), and the individual (e.g., biographical demographics, attitudes, and behaviors).

The third domain, which completes the descriptive elements of the conceptual framework, is the strategy. This domain attempts to describe the types of actions or considerations the advocate must take into account when initiating an intended change (innovation) and also the types of actions or considerations the consumer takes into account in responding to an advocate's strategy. Therefore, a more precise label for this category of the conceptual framework would be the strategy-response domain. Although the elements of this domain are presented sequentially, this does not imply that they occur in that manner. One action is the decision as to what level the strategy or response is being directed (e.g., individual, group, or organization). This action would contain such issues as what "point of entry" is appropriate into an organization. The second action is the selection of a communication mode (e.g., media, personal contact, or some combination). The third action is the selection of a basic style or type of tactic to be used. The tactics used may be informative, persuasive, or coercive, depending upon the intent and judgment of the advocate or respondent. The fourth and final consideration of the strategy-response domain is the relationship that exists between the advocate and the consumer. Whether the advocate is considered a peer, superior, or subordinate of the consumer will influence the nature of the strategy that is employed. In addition, the relationship between an advocate and a consumer can be considered to have a certain intent (e.g., rejection, resistance, or acceptance), and state (e.g., consensus, cooperation, coalition, conflict, or flight).

Summary

The following statements are intended as a logical summation of the need for empirical documentation of the dimensions underlying domains of knowledge associated with the innovation diffusion process. Conflicting conceptualization and a high level of abstraction characterize the present "state of the

art" knowledge about innovation diffusion.

Undoubtedly, this condition contributes to the practice of using personal experience and intuition as a basis for formulating innovation diffusion strategies. Therefore, the project reported in part by this publication has attempted to empirically identify underlying dimensions of the innovation diffusion process as delineated by a conceptual framework. These dimensions were generated from respondent perceptions of innovation diffusion activities. The dimensions have not yet been tested by innovation advocates formulating realistic strategies.

Chapter Two

PERCEIVED IMPORTANCE OF INNOVATION CHARACTERISTICS AND INDIVIDUAL CONSUMER DIFFERENCES

Introduction

This chapter is designed to report the methodology and findings of the survey mode of inquiry as applied to the conceptual framework categories identified in Chapter One. Two domains of the innovation process were addressed: characteristics of innovation and characteristics of clients. The objective of the survey mode was to empirically[2] assess a set of theoretically based constructs concerning perceptions of educational consumers. The research question to be answered was: Can these theoretical constructs be described empirically? If the theoretical constructs in both domains can be described empirically, the opportunity exists to empirically explore the interrelationships between perceived characteristics of innovations and individual consumer differences.

Due to the exploratory nature of the activity, a factor analytic approach was selected to determine the underlying structure of the responses. A set of items with Likert reponses was generated to describe each domain being investigated. The items reflected concepts of the domains as they exist in the diffusion literature. The items were submitted to a sample of innovation consumers to obtain responses for use in the analysis of the underlying factors. This chapter presents the methods and procedures used to identify these factors and is organized around the following topics:

1. Item generation for both domains
2. Selection of sample and data collection procedures
3. Data analysis procedures
4. Findings

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[2]The term empirical is used to describe a process that uses some type of observational technique (e.g., questionnaire) to record responses to a particular domain of content. It also implies some use of statistical means for analyzing the results of the objectives.

Item Generation

Introduction

The empirical nature of the study necessitated the generation of items to measure both the innovation characteristics and individual consumer domains. Both generation tasks were based on: (1) previous R&D projects completed at The Center, (2) consultant inputs, and (3) a review of related literature.

Before presenting the item generation process for each of the domains, an introduction to the total data collection set will be given. (See Appendix A for a sample of the questionnaire.) The total questionnaire consisted of three basic parts: (1) The Innovation Characteristics Questionnaire (ICQ), (2) The Occupational Opinion Survey (OOS), and (3) a set of biographical demographics. The Innovation Characteristics Questionnaire (ICQ) consisted of fifty (50) items designed to measure the repondents' perceived importance of innovation characteristics. The Occupational Opinion Survey (OOS) consisted of items designed to measure the respondents' perception of their own attitudes and/or behavior in a context relevant to the acceptance of innovations and contained four scales (see Appendix A). They are: The Professional Organizational Image Inventory (POII), (Item 1-50); a Perceived Situational Support for Change Scale (PSSC), Items 51-60 [Kievit & Douma, n.d.]); the Professionalism Inventory (PI), (Items 61-85 [Snizek, 1972]), and a Change Orientation Scale (COS), (Items 86-106 [Russell, 1972]). The three additional scales PSSC, PI and COS and the biographical demographics were included in the data set as potential intervening or moderating variables. The set of demographics (e.g., the three additional scales and biographical information) will not be used in the analysis presented in the progress report. Therefore, no further explanation of them will be provided at this time. Subsequent reports on the total research effort will include a more detailed discussion of this demographic set.

Generation of ICQ

Concepts concerning characteristics of innovation in the *Innovations Evaluation Guide* (IEG), a product from a previous research effort at The Center (Hull and Wells, 1972), were used as the basis for the innovation characteristics used in this instrument.

First, the concepts in the IEG were reviewed by the researchers, labeled, and assembled into twenty-four tentatively non-overlapping categories. Six persons at The Center who had had experience working with evaluating new ideas in different educational settings were then asked to generate questionnaire items that related to these twenty-four concepts.

The resultant 150 items were then grouped under a set of major concepts. As a result, some concepts were collapsed into others or eliminated altogether. For example, the concept "relative advantage" was not useful as an item-generating category. Therefore, it was eliminated from the list. Another concept, "control factor," was eliminated due to a dearth of items. However, one concept,

"reputation," which had not been included in the original *Innovations Evaluation Guide*, emerged as a useful item generator.

Also, items were included that related to the reputation of the change agent and the manner in which the reputation of the adopter would be affected by a failure of the educational innovation.

The reorganization of the initial set of major concepts resulted in sixteen concepts assumed to sufficiently cover the domain of content (i.e., characteristics of innovation). See Appendix B for a listing of the sixteen *a priori* concepts. These items were written by the research team based on the item generation. These were revised at least twice during tryouts with selected individuals. The items were written and edited using the following guidelines:

1. The items must flow like conversation.

2. The verbs used were to be probabilistic whenever possible. Verb helpers such as could, should, may, might, or can were used for this purpose.

3. The items were to contain a minimal amount of jargon.

4. Each item had to be written such that it could be answered on the degree of importance continuum.

5. The items should not be "socially acceptable." In other words, the items should not force a favorable reaction from all people. Loaded words such as mother, apple pie, etc., should be avoided.

6. The items should not be bipolar. In other words, they should deal with only a single central concept.

7. Items should be written that will tap the relevant dimensions in the *a priori* conceptual categories. In other words, a rectangular distribution of items should be used which will elicit differences of opinion.

8. The items should not be vague or ambiguous.

9. The items should be behaviorally stated in most cases.

10. The number of negatively and positively stated statements should be balanced.

The final fifty items were randomized on the questionnaire form and associated with a five-point rating scale ranging from "not important" to "very important." Each respondent was asked to rate the relative importance of each characteristic (item) from the point of view of his role in his profession.

Generation of POII

The fifty (50) items of the Professional Organizational Image Inventory were generated to measure perception of educational practitioners as professionals and employees of organizations. These perceptions were in the form of items indicating behaviors related to the individual functioning in these two roles. A process that involved both systematic and intuitive elements was used to generate the items. The use of the term "analysis" in the following discussion will mainly refer to a process of reading and rationally and/or intuitively deriving conclusions on that basis. In some cases, specific criteria were applied, in which case, they are stated.

An initial set of 1,000 items was primarily generated through several readings of Brickell's ten images of educational practitioners (Brickell, 1971) and then writing statements that would be consistent with the ten images. In many cases, the items are paraphrases of the statements made by Brickell. A brief summary of the ten Brickell images is given below:

Image Number 1 - This practitioner, a "creature of regulation: is able to control those below him better than those above him in the organization." "His energy level and work output are low." He is secure in his position and is striving for promotion. He responds quicker to legislative action than to administrative action. He is difficult to reach, either personally or monetarily from outside the organization.

Image Number 2 - This practitioner is achievement-oriented. His "reward is the sense of forward movement." He is sociable, works long hours, makes decisions quickly, and "trusts his own judgment over hard evidence." He is easily reached from outside the organization.

Image Number 3 - This practitioner is professionally oriented, and thus maintains professional codes of conduct. He keeps informed, continues his own education, is concerned about his clients, and demonstrates leadership abilities. Any change that is to be accepted by him must be in keeping with existing professional norms. "His chief reward is the recognition and respect of others, especially the leaders." He is energetic, secure in his position, and best persuaded by "the wisdom of his teachers."

Image Number 4 - This practitioner is "interested in the uses of power and seeks positions which will allow him to exercise it." He is very conscious of formal and informal relations between persons in the organizational setting and "relies very heavily on his own instincts and his personal sense of timing in making decisions." He is very energetic. He is very responsive to those closely associated with him and is "most seriously threatened by the prospect of losing" their support.

Image Number 5 - This practitioner is oriented to the technical end of his position. He relies on "his professional tools to give substance and method to his work." He is not creative in his use of the tools, but uses them strictly as they were designed. He is not extremely energetic.

His work habits are "quite stable" and he gives up those habits only reluctantly.

Image Number 6 - This practitioner is relatively powerless to operate beyoung a limited, well-defined scope of activity. He has a "limited repertoire of techniques," and has had general education as opposed to specific technique training. He has low energy level and is noncompetitive. He will ask for help, but requires specific guidance for any change attempt.

Image Number 7 - This practitioner is continually concerned about the lack of funds to accomplish his goals. He has the skill and energy to accomplish his goals when able to acquire sufficient funding (i.e., his present funds are allocated and cannot be "reassigned without disrupting the system and triggering counter pressures both from inside and outside the institution—pressures he may not be able to withstand").

Image Number 8 - This practitioner is very advanced in his skills and "takes pride in using his skill." He does not necessarily invent new methods or materials but will most often adapt new ideas rather than use them as they were designed. He enjoys doing things in a distinctively different way. He has "modest energy," "fairly steady" work habits and will change if he feels it is for the better. He depends largely on his own judgment rather than that of others.

Image Number 9 - This practitioner enjoys the process of bargaining; "anyone interested in changing his behavior must negotiate for that change." He uses salary payments and work load as his main items for trading. He is very concerned about the amount of his time that would be required for any change attempt.

Image Number 10 - This practitioner is oriented toward rationalistic thinking and procedures. "He has a sense of obligation to change to whatever is proven better than his current practice, but he has learned that not many of the alternatives rest on a factual basis." He has considerable energy and ability to act on something once he is convinced that it is better. He is not extremely competitive, but does want to keep up with that which has been proven worthy.

It can be said that Brickell's images are not mutually exclusive, although they do cover a broad range of ideal types. They also provide enough specificity for generating items that could be used to quantify and determine the existence of images in a sample of the domain of educational practitioners.

In addition to the content of Brickell's paper, conceptions from the following references were also used as input to the process:

1. Four classifications discussed by Schien (Schien, 1965)

2. Barnes' four category typologies (Vroom, Ch. 2, 1967

3. Sieber's discussion of four images of practitioners (Sieber, 1972)

4. Corwin's conception of Employee-Bureaucratic Orientation and Professional Orientation as represented by scales he has developed to measure those constructs (Corwin, 1970, Appendix A. pp. 363-374)

After the 100 items had been generated, they were reviewed to systematically eliminate as much overlap as possible. First, it was determined that there were five categories of statements to which Brickell referred in his discussion of the ten images. These five categories (refer to the discussion that follows) were used to reorganize the 100 items that had been initially generated so as to better match the content of the items with the ten images. Also, the reorganization of the items in this manner facilitated the process of eliminating content overlap in the items within images as well as between images. A brief description of the categories follows:

1. Professional Orientation Items - This category refers to items concerning the practitioner's opinions and behaviors concerning his profession.

2. Bureaucratic Orientation Items - This category refers to items concerning the practitioner's opinions and behaviors related to the organization (i.e., rules, management, office) in which he is employed.

3. Rationality of Decision-Making Items - This category refers to items concerning how the practitioner arrives at a decision and what motivates him in the process.

4. Internal Motivation Items - This category refers to items about the practitioner's "energy" to take action and operate on his own without external incentives (i.e., money, power, and recognition).

5. Change Orientation Items - These items are statements concerning the practitioner's opinions and behaviors relative to changes or change situations in his environment.

The next step in the process of eliminating overlap was to assume that each of the ten images (refer to previous discussion) had elements of each of the five reorganized categories (stated above). Two or three items were then selected for each of the five categories under each image. To allow for a decision on which item best fit a given image, some items were listed under more than one image (see Appendix C for a listing of the final fifty items under the ten images and five *a priori* constructs).

Some items were more relevant to the Brickell image conceptions than others. Using the following criteria, fifty items were selected from the initial set of items:

1. Five items for each of the ten images was set as an optimal number of items. Five items per image was used because there were ten images and a total of fifty items was suggested by a measurement specialist

as optimal for any one scale.

2. The five items under each image were to be mutually exclusive relative to the actual statement. (Note: Content overlap was consciously controlled, but with ten images, the content undoubtedly overlaps somewhat. What can be said is that the statements were written specifically to the image and were as discrete as rationally possible.)

These items were again perused for content or item overlap. Several items were altered or substituted so as to gain maximum discreteness.

After the items had been selected on the basis of content, they were examined for their psychometric properties. With the exception of Guideline 2, the criteria used for examination were the same as those eleven criteria used in the writing of the Innovations Characteristic Questionnaire Items.

The final step in the generation of the items for the questionnaire was to decide on a scaling technique. A Likert-type, five-point scale was used. This scale was deemed to have sufficient precision to allow the respondent to develop a response pattern, and it provides a neutral category for responding ("Uncertain"). Also, the Likert-type scale is an equal appearing interval scale which facilitates the process of the factor analytic techniques used in the analysis. All items were randomized for the final questionnaire.

Population and Sample

Introduction

The population for this survey study consisted of both instrumental and ultimate target audiences as defined by the research program. The instrumental audience is defined here as those persons in educational roles who have responsibility for gaining the acceptance of research-based educational products. The ultimate audience is defined as those who would benefit from the implementation of the research-based educational products.

For the purpose of this study, the instrumental target population was stratified into five subpopulations. They were:

1. State-level policy-makers - These included state legislators, state education board members, and state vocational education advisory council members.

2. State-level administrators of vocational education - This subpopulation consisted of the professional staffs of state departments of vocational and technical education (SDVTE's).

3. State-level vocational education teacher educators - This included teacher educators in the various service areas of vocational education.

4. Local school administrators - This included principals and central administrators (i.e., directors, superintendents, assistant superintendents, etc.) in local districts.

5. Secondary teachers in local districts - This included teachers of any subject area in a secondary (i.e., 7-12) school at the local level who had taught in that school more than one year.

Table 1 displays the number of respondents projected for each stratified cell.

A two-phased sampling technique was used to identify the sites for data collection. It was efficient to start with data on the 100 most populous cities and narrow the range of selection by rank-ordering cities that most nearly represented national averages on a number of criteria. The selection criteria were generated from national statistics to reflect typical urban and suburban school districts in the United States. Urban sites were selected as the initial sample because of the concentration of the ultimate audiences at this level. The suburban and rural sites were defined in terms of their geographic relationship to the urban centers. An urban site was defined as a Standard Metropolitan Statistical Area (SMSA) meeting the following criteria:

1. Have a school district student population above 25,000

2. Have a citizen population above 150,000

3. Have a black population of between 9 and 14 percent

4. Have another (i.e., other than black or white) minority population of between .5 and 2 percent

5. Have a per capita income between 90 and 110 percent of the average for SMSA's

6. Have a per pupil expenditure between two hundred dollars plus or minus the national average

7. Be in two different census areas

TABLE 1

Number of Respondents Projected by Sample Category
for the Innovation/Client Survey

LEVELS	N	N	N
State Level			
State Legislators		25	
State Board Members		25	
State Advisory Councils		25	
SDVTE Staff		25	
Teacher Educators		25	
Local Level	Urban	Suburban	Rural
Administrators	25	25	25
Teachers	25	25	25

Selection of the Sites

On the basis of this criteria, four potential urban data collection sites were invited to participate in the study. Two of the sites declined to participate. In each case, the reason given was the timing of the study: it was late in the school year and insufficient time was available for clearance procedures with state and local officials. The other two sites, Wichita, Kansas, and Toledo, Ohio, were operable. Table 2 provides a comparison of the selected sites with the established criteria.

SMSA stands for Standard Metropolitan Statistical Area, which is a type of area defined by the Bureau of the Census as a county or a group of contiguous counties that contain at least one "central city" of 50,000 inhabitants or more. The census areas are New England, Middle Atlantic, East North Central, South Atlantic, West South Central, Pacific, West North Central, East South Central, and Mountain.

The selection of the two urban sites identified the states in which the state and other local data were collected. Suburban sites were identified with the assistance of an administrator in the central office of the urban sites. The criteria for selecting the suburban sites were: (1) the sites be within the SMSA, (2) the sites should be "bedroom districts" (i.e., districts where the residents commute to the central city to work), (3) one site should be representative of an affluent (i.e., upper middle class to high class area of the surrounding city), and (4) one site should be representative of a low middle class to upper middle class area of the surrounding city. Typically, suburban sites have one high school, thus the need for having two suburban districts. If the suburban area had more than one high school, the superintendent or central office representative was asked to indicate the one that best matched the criteria.

The selection of the rural data collection sites was made with the assistance of knowledgeable persons in the state division of vocational and technical education. They were asked to identify "typical" rural districts that were at least 25 miles from a city of 50,000 population or more and had a population of 5,000 inhabitants or less. Appendix D provides a summary listing of the urban, suburban, and rural sites that were used as data collection sites.

Data Collection Procedures

The data collection procedures were presented according to the five subpopulations previously explained. Secondary teachers in the urban, suburban, and rural sites were randomly selected. In a few cases, additional names were drawn due to the lack of availability of the teachers. In the urban and suburban schools, seven teachers were drawn per school. In rural areas, about five teachers were drawn per school.

Administrators at the local level were drawn from the available professional staff in the superintendent's office whenever possible. High school

TABLE 2

Urban Site Statistics
Compared to National Averages

	National Averages	Wichita, Kansas	Toledo, Ohio
Census Area		West N. Central	East N. Central
Population		277,000.00	384,000.00
Percent Black (1970)	11.00	9.70	13.80
Percent Other Minority (1970)	1.50	1.00	0.50
Per Capita Income (1968)	3,421.00	3,484.00	3,634.00
Per Pupil Expenditure for Education (1967-68)	783.00	556.30	608.46
State Superintendent of Schools		Elected	Elected
State Board of Education		Elected	Elected

building principals were also used. In a few instances in the rural or suburban districts, it was necessary to obtain responses from elementary school principals.

The state-level respondents were selected from the states where the local data were gathered. Teacher educators were selected from The Ohio State University (Columbus), Kansas State University (Manhattan), Kansas State Teachers College (Emporia), and Kansas State College (Pittsburgh). All vocational and technical education teacher educators above the rank of instructor received a questionnaire.

State supervisors were selected from the staffs of the state department of vocational and technical education in both states. All available staff were requested to respond.

The state policy-makers were selected from only one state. Personnel in the other state discouraged the research team from contacting state-level policy groups (i.e., state board members, advisory council members, and legislators) in their state. All state board members and state advisory council members in the sample state received a copy of the questionnaire. State legislators on the education committee in the sample state received their questionnaires from their committee chairman.

The administration procedures varied according to the particular respondent group. Teachers and administrators in high schools within the districts were contacted by research team members. In most cases, the questionnaires were left with respondents over night and picked up the following day by the research team. In a few cases, the teachers were asked to mail their responses back to the research staff in the stamped envelopes provided. Approximately 80 percent of the responses from local education agency persons were collected by the research team members while on the site.

Some individuals were absent from the staff meetings held for state supervisors and teacher educators. In these cases, their vocational director and department chairman, respectively, collected questionnaires and returned them by mail.

Most respondents were extremely cooperative. One principal did not accept the questionnaire, nor did he allow teachers to be contacted because there were difficulties in his school at the time. Two teachers did not wish to participate because of their lack of time and their involvement in a school function during the week the researchers were in that school. On the whole, however, the number of responses was very gratifying. Table 3 lists the number of useable questionnaires returned by respondent category. Local administrators and teachers had a very high return. The other groups were less satisfactory. Only six legislators out of twenty-nine returned useable forms. Since the legislators were from one state only, and the percent return was so low, these six responses were discarded. For analysis purposes, state board members and advisory council members were combined to represent a new category of state policy-makers. This allowed a relatively even mix of respondents in each

TABLE 3

Number of Useable Questionnaires
Returned by Response Category[a]

	Number Distributed	Total Returned	Percent
Local Administrators	80	77	96
Local Secondary Teachers	91	80	88
State Supervisors	32	26	81
Teacher Educators	41	33	80
State Policy Makers			
State Board Members	24	8	33
Advisory Council Members	32	19	59
TOTAL	300	243	81 (Avg.)

[a]The category "State Legislators" was eliminated since only six (6) out of twenty-nine (29) persons responded.

category. The number of respondents in each of the categories then ranged from twenty-three to thirty-three. Table 4 shows the breakdown of useable responses according to the original stratified sampling design presented in Table 2.

Analysis Procedures

Introduction

Once the data had been collected, factor analytic techniques were used for analysis. Typically, the application of factor analysis results in a more parsimonious description of the subject matter domain. In the case of the innovation characteristics domain, the purpose was to determine if underlying factors existed. In the case of the individual consumer domain, the purpose was to determine if "idealized" types of consumers existed.

Four factor analytic models were selected for comparative effectiveness, and criteria were established as guidelines for the comparisons. The four factor analytic models were: (1) a principal component analysis with the input matrix being the Pearson product-moment correlations of items across all subjects, (2) a factor analytic design with estimated communalities, (3) a hierarchical design (Wherry, 1953), and (4) a principal component analysis with the sum of the squares and the cross products of the raw sources (item responses) as the input matrix, which is similar to a design developed by Tucker and Messick, 1963. It should be reemphasized that there were two sets of data examined: (1) the Innovations Characteristics Questionnaire (ICQ) and (2) the Professional Organizational Image Inventory. The analysis procedures for each will be presented separately.

Analysis of the ICQ Data

An eigenvalue[3] equal to one or greater was the criteria used to determine the number of factors to be examined on the first unrotated principal component solution (Rummel, 1970, p. 357). This analysis resulted in fourteen factors accounting for 65 percent of the variance. A chart of the eigenvalues was prepared (see Appendix E) and on the basis of the maximum drop in eigenvalues, a six- and a ten-factor varimax rotated solution were examined. The unrotated fourteen-factor solution and the oblique rotated solutions of the principal component design were set aside on the basis that they were not as interpretable as the varimax solutions.

Interpretations of the factors within a given solution were based on the rank order and content of the items that loaded on a given factor. The magnitude of the item loadings for all factor solutions except the cross products solution was limited to a loading of .30 or greater for interpretation. The basic criteria for interpretation of the factors were:

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[3]An eigenvalue is the sum of the squares of the loadings on a given factor.

TABLE 4

Number of Useable Questionnaires Returned
By Sample Groups[a]

LEVELS				TOTALS
State Level				
State Board Members		8		8
State Advisory Councils		19		19
SDVTE Staff		26		26
Teacher Educators		33		33
Local Level	Urban	Suburban	Rural	
Administrative	25	27	25	77
Teachers	23	25	32	80
			TOTAL	243

[a]The category "State Legislators" was eliminated since only six (6) out of twenty-nine (29) persons responded.

1. Does the factor communicate the intent of the study?

2. Is the content logically consistent?

3. Is the factor heuristic, suggestive of theoretical considerations and the generation of hypotheses for future research?

4. Is it sufficiently parsimonious to be labeled mnemonically (easily recalled)?

The several factor solutions of the data (the factor analysis with estimated communalities, the hierarchical analysis, and the principal component analyses) were compared on the following criteria[4]:

1. Parsimony - Is the factorial description a relatively simple description of the items in comparison with the other descriptions?

2. Comparative Interpretability - Is the factorial description more, or as, logical internally consistent in content with the other descriptions so as to easily draw a rational inference as to its meanings?

3. Consensus - Does the interpretation team independently agree that the description is the "most meaningful"?

4. Variance Accounted For - Does the factorial description account for as much or more variance than the other descriptions?

Using these criteria, the factor analytic solution with communalities and the hierarchical solution were determined to be less interpretable than either the six or fourteen principal component rotated solutions. In addition, the resultant five factors of the factor analytic solution accounted for only 36 percent of the variance.

The other set of factor analytic solutions compared were the cross products solutions. Initially, a twenty-five-factor solution was sought. On the basis of the maximum drop in eigenvalues a six-factor varimax solution subsequently was obtained. (See Appendix F for a chart of the eigenvalues for the cross products solutions.)

In comparison to the ten- and six-factor principal component solution, the six-factor cross products solution best matched the criteria previously stated. Table 5 gives a summary of the variance accounted for by each factor solution compared. On this basis, the six-factor varimax rotated cross products solution was selected as the solution that best represented the intent of the study. Therefore, the interpretation of the six cross products factor solution is presented in the findings section of this chapter.

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[4]These criteria were adapted from Rummel, 1970, pp. 473-475

TABLE 5

Variance Accounted For By Factor Analytic Solution
Innovations Characteristics Questions

Principal Component Analysis Using Correlations	Total Common Variance Accounted For
6-factor varimax rotated solution	.45
10-factor varimax rotated solution	.56
14-factor varimax rotated solution	.65
Principal Component Analysis Using Cross Products	
6-factor varimax rotated solution	.63
"Standard Analysis Using Estimated Communalities"	
5-factor varimax rotated solution	.36
Hierarchical Analysis	
7 first order factors 3 second order factors 1 third order factor	No Information Provided

Analysis of the POII Data

Based on the analysis of the ICQ data, it was decided that only the principal component correlational and cross products procedures would be used and compared for the client data. A limit of an eigenvalue equal to one or greater was used to determine the number of factors on the initial principal component correlational solution. This resulted in eighteen rotated factors accounting for 64 percent (64%) of the variance. Interpretations were made on a varimax rotated solution of those eighteen factors using the criteria previously stated in the ICQ analysis section. Several of the eighteen factors were very difficult to interpret. On the basis of an examination of the chart of eigenvalues, a fourteen, ten, and seven unrotated and varimax rotated solutions were compared using the criteria previously stated in the ICQ analysis section. (See Appendix G for a chart of the eigenvalues for the principal component correlational solution.) In general, the varimax solutions were easier to interpret than the unrotated.

Based on the overall design, which was to compare factor solutions to determine the "most meaningful" result, the cross products model was applied to the POII data. From the examination of the chart of eigenvalues a varimax rotated four-factor solution was interpreted. (See Appendix H for a chart of the eigenvalues for the cross products solution.) On the basis of this interpretation, one of the factors potentially held two underlying concepts. Therefore a rotated five- and six-factor solution was compared to the four-factor solution. It was judged that the four-factor solution "best" matched the criteria for selection of the "most meaningful" factor solution. Table 6 gives a summary of the factor solutions compared. The four cross product factors of the Professional Organizational Image Inventory data are presented in the findings section of this chapter.

Findings

The findings relative to this progress report consist of the descriptive interpretations of the factors selected for the innovation characteristics and client domains. The criteria and procedures for interpretation of the factors are presented again for the reader's convenience.

1. Does the interpretation communicate the intent of the study?

2. Is the interpretation logically consistent?

3. Is the interpretation heuristic, suggestive of theoretical considerations such as the generation of hypotheses for future research?

4. Is the interpretation sufficiently parsimonious and labeled mnemonically?

The research team was asked to independently interpret the factors. They independently expressed their interpretations in a group meeting and then discussions of differences were considered until a consensus of the group was reached.

TABLE 6

Variance Accounted for by Factor Analytic Solution
Professional-Organizational Image Inventory Data

Principal Component Analysis Using Correlations	Total Common Variance Accounted For
18-factor rotated solution	.64
14-factor rotated solution	.56
10-factor rotated solution	.46
7-factor rotated solution	.37
Principal Component Analysis Using Cross Products	
4-factor rotated solution	.48
5-factor rotated solution	.50
6-factor rotated solution	.53

Interpretation of the ICQ Six-Factor Cross Products Solution

Respondents were asked to rate the "importance" of the general set of statements about innovations characteristics in general. This high level of abstraction assumes that an individual would be responding in a style consistent with his basic values. In other words, the response patterns (i.e., factors) identified probably include the respondent's social functioning style (e.g., his general attitudes, cognitions, and behaviors) as well as his more focused attention on innovation characteristics. Thus, the research team tended to speculate on the attitudes, cognitions, and behaviors represented in the respondents when interpreting the factors.

The interpretations in this section are descriptive of the content of the rank-ordered marker items[5] in each factor. The interpretations will be first presented independently and then there will be a brief comparative summary. Table 7 presents the total rotated factor matrix for the six-factor cross products solution. Factor #1 was labeled Student-User Concern Orientation. Table 8 presents the marker items for factor #1.

This factor is initially directed at basically the content of the innovation: Is the innovation oriented toward student learning in the broadest sense? In addition, another concern is exhibited. This concern is related to a general set of items about the innovation, its compatibility with existing circumstances and its potential effect on various users. Therefore, the overall innovation characteristic is the student orientation of the innovation with secondary concerns of how the innovation will "match" with some basic existing resources and values. The latter element of this factor and the percentage of variance accounted for by this factor (.39) indicate that it is a general factor. As previously mentioned, the principal component technique typically results in this type of first factor.

Due to the nature of the cross products analysis and the fact that this factor accounted for 39 percent of the variance, it may be that the content of this factor exhibits the socially desirable or initial response that one gets when introducing an innovation to educators. In this sense, the order of the factors relative to the variance accounted for plays an important role in the interpretation. This point will be expanded on in the summary discussion.

Factor #2 was labeled Additional Resource Requirements. Table 9 presents the marker items for this factor.

In contrast to the first factor, this factor does not reflect a concern for the content or objectives of the innovation. The concern or attribute of the innovation being considered by this factor is: Will the innovation "require additional" resources? Resources are interpreted here in the broadest sense (e.g., space, staff, retraining, supplies, money, etc.). This factor

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[5]Marker items are those which in rank order, relative to their respective loadings, represent the basic content structure of the factor.

TABLE 7

Rotated Factor Matrix For The ICQ Six-Factor Cross Products Solution

	ICQ FACTORS					
ITEM NO.	#1	#2	#3	#4	#5	#6
1	(9.99)[a]	4.30	(16.89)	1.94	2.05	2.97
2	1.91	3.40	4.44	(7.44)	(-6.22)	(7.91)
3	(26.50)	2.93	(6.51)	3.94	1.37	3.01
4	5.33	3.55	(12.13)	1.39	0.75	0.62
5	(20.19)	2.84	2.40	(7.04)	1.78	(4.54)
6	5.12	3.92	0.75	-0.06	0.60	(17.13)
7	(23.90)	2.27	2.71	4.92	1.70	3.17
8	6.36	4.79	3.73	5.13	1.42	(6.38)
9	(20.83)	1.97	3.30	3.62	2.10	2.69
10	7.08	4.55	(16.21)	2.19	3.42	1.39
11	-1.96	6.06	4.97	4.35	2.18	(5.02)
12	2.63	1.63	2.67	4.00	(11.15)	-0.71
13	(23.74)	3.26	4.18	4.89	1.15	3.16
14	(10.27)	2.79	3.21	3.53	(9.67)	-1.00
15	2.49	4.03	(8.00)	4.95	0.91	0.62
16	1.39	(10.60)	4.21	4.41	0.21	2.01
17	1.82	(7.82)	3.80	3.84	2.73	3.26
18	(16.46)	3.98	(5.99)	(7.02)	0.31	2.34
19	6.41	3.96	5.00	(10.22)	1.26	0.87
20	(-14.82)	1.64	-2.19	1.37	4.02	1.99
21	(-7.60)	6.42	2.38	1.18	3.41	3.41

TABLE 7, Continued

ITEM NO.	ICQ FACTORS #1	#2	#3	#4	#5	#6
22	(9.57)	(14.57)	3.16	3.67	-0.36	0.62
23	(14.14)	5.37	0.72	1.04	5.41	2.49
24	4.98	(13.44)	0.96	3.90	-0.63	0.66
25	5.64	2.51	3.02	(10.74)	1.64	(4.85)
26	(9.69)	4.84	5.10	(9.08)	2.38	1.25
27	0.09	(12.40)	0.12	4.76	-0.86	0.00
28	1.90	6.31	4.54	(8.74)	4.13	-2.41
29	5.38	(11.92)	3.65	2.45	1.31	(-3.65)
30	(9.88)	(9.87)	1.49	(7.99)	1.37	-0.30
31	(-18.74)	3.90	-0.73	3.17	4.24	2.26
32	-6.38	6.25	4.76	1.40	(7.66)	1.88
33	1.38	(14.63)	3.53	-1.17	2.37	0.41
34	(19.98)	3.82	4.81	3.95	3.75	0.87
35	0.97	(8.24)	2.37	3.34	(7.45)	(7.04)
36	6.95	5.83	-1.03	2.20	(8.41)	(5.02)
37	8.05	2.85	3.09	(6.99)	4.70	3.58
38	-5.88	3.97	-2.24	5.54	2.56	3.21
39	-3.54	(11.78)	-0.48	3.99	4.58	(4.17)
40	(17.51)	5.83	4.65	1.53	4.98	1.08
41	1.54	5.49	5.01	5.90	3.67	0.58
42	1.07	5.71	-1.11	(12.03)	3.13	0.20
43	1.45	(11.79)	1.23	1.43	(5.65)	1.84
44	7.33	3.79	3.65	(7.98)	(7.09)	0.58

TABLE 7, Continued

ITEM NO.	ICQ FACTORS #1	#2	#3	#4	#5	#6
45	7.07	(13.22)	4.54	2.32	-0.99	0.75
46	4.11	(8.27)	4.35	3.99	1.93	(5.38)
47	-1.31	(11.50)	2.86	1.00	3.57	(4.96)
48	6.57	(10.28)	3.81	5.91	-3.56	3.39
49	-1.83	(10.00)	0.47	1.99	5.78	(4.12)
50	(9.84)	4.38	5.54	1.28	5.08	1.53

[a]The parentheses ( ) around a given loading indicate a high loading on that factor. These loadings were a function of the type of factor analytic technique that was employed. Interpretations of the factors were made on the basis of the current items associated with these parenthesized loadings. These items are referred to as marker items and represent those items which in rank order load the highest on a given factor.

TABLE 8

ICQ Factor #1
Student-User Concern Orientation

ITEM	RANKED FACTOR LOADINGS	ITEM CONTENT
3	26.50	the innovation may improve student's attitudes toward school?
7	23.90	the innovation may help the student learn faster?
13	23.74	the innovation may help the student learn additional skills and ideas?
9	20.83	the innovation may teach the student about himself?
5	20.19	the innovation may help the student get a job?
34	19.98	the users believe that the innovation will succeed?
31	-18.74	the innovation be consistent with the traditional subject matter areas?
40	17.51	the teachers can help in the development of the innovation?
18	16.46	the innovation provides evidence of its success?
20	-14.82	you are not the one who will be responsible if the innovation fails?
23	14.13	the students can help in the development of the innovation?
1	9.99	the superintendent of schools may be against the innovation?
30	9.87	funding may be available only for the initial stages of the innovation?
50	9.84	students may object to the innovation?
26	9.69	the goals of the innovation match the community values?
22	9.57	the innovation may require additional building space?
21	-7.60	the innovation be consistent with existing organizational policy?

TABLE 9

ICQ Factor #2
Additional Resource Requirements

ITEM	RANKED FACTOR LOADINGS	ITEM CONTENT
33	14.63	the innovation may require retraining of existing staff?
22	14.57	the innovation may require additional building space?
24	13.44	the innovation may require additional equipment?
45	13.22	the innovation may require additional staff?
27	12.40	the innovation may require additional supplies?
29	11.92	the innovation may require skills not present in the existing staff?
43	11.79	the innovation may require time for preparing the staff to use it?
39	11.78	the innovation may require new uses of existing space?
47	11.50	the innovation may require a structural change within the organization?
16	10.60	the innovation may require a request for outside funds?
48	10.27	the innovation does not go over the existing budget?
30	9.87	funding may be available only for the initial stages of the innovation?
49	10.00	the innovation may require that time be spent in daily or weekly planning?
46	8.27	the innovation cannot be adjusted to fit existing class schedules?
35	8.24	the innovation may change the working relationships between teachers and principals?
17	7.82	The innovation may change the working relationships among teachers?

accounted for 13 percent of the total variance and therefore is a relatively strong factor of specific concern. This specific concern is reflected in the consistency of the content of the items (e.g., "may require additional").

An interesting additional note that can be mentioned about this factor is that it shifted from first to second in rank order (i.e., variance accounted for) from the six-factor principal component solution to the cross products solution. Due to the differences in the nature of the two analyses, this fact may lend stronger support for the idea that the Student-User factor is a mean group and/or socially desirable response.

Factor #3 was labeled Organized Resistance Potential. Table 10 presents the marker items for this factor.

The items of this factor are very consistent in content (e.g., "may object or be against" the innovation). Similar to Factor #2, the concern or attribute of the innovation being reflected in the content of the items is not focused on the innovation per se. The attention is being focused primarily on the potential effects the innovation may have on a given set of organized audiences. The element of "organized" resistance in this factor is very interesting. The two groups that are conspicuously missing from the significant items in this factor are: "Parents may object to the innovation?" and "Students may object to the innovation?" This could possibly indicate that only those groups that represent resistance within the "traditional" organizational boundaries of the school are being considered. The general public would be included in this category due to the "traditional" function of the school board. The order of the marker items in this factor also reflects the "traditional" authority relationship that exists in local educational situations. This factor accounted for 3 percent of the total variance.

Factor #4 was labeled Consumer Report Rating. Table 11 presents a listing of the marker items for this factor. The content of this factor seems to reflect a concern for the more tangible or concrete aspects of the innovation (e.g., "guarantee," "used successfully," "cost"). The characteristic that is being considered is related to the authenticity of the innovation. The authenticity of the innovation is determined by the ratings on several of these tangible aspects of the innovation (e.g., guarantee, used successfully in a similar setting, cost, etc.). This factor accounted for 3 percent of the variance.

Factor #5 was labeled Credibility. Table 12 presents the marker items for this factor. The focus of this factor is more on the actual innovation rather than the potential effects that might result in the event of its implementation. The characteristic being considered is the "who" aspect of the innovation. In other words, who produced the innovation, and who is presenting it at the moment? Overall, this factor seems to be concerned with the "aura" of credibility that surrounds the innovation. In this respect, the factor reflects a concern with an element of the more abstract or less tangible qualities of the innovation. This factor accounted for 3 percent of the variance.

TABLE 10

ICQ Factor #3
Organized Resistance Potential

ITEM	RANKED FACTOR LOADINGS	ITEM CONTENT
1	16.89	the superintendent of schools may be against the innovation?
10	16.21	the principal may be against the innovation?
4	12.13	teachers may object to the innovation?
15	8.00	the general public may object to the innovation?
3	6.51	the innovation may improve students' attitudes toward school?
18	5.99	the innovation provides evidence of its success?

TABLE 11

ICQ Factor #4
Consumer Report Rating

ITEM	RANKED FACTOR LOADINGS	ITEM CONTENT
42	12.03	the developers of the innovation guarantee that it will do what they say it will?
25	10.74	the innovation has been used successfully in school districts like yours?
19	10.22	the consumers know exactly how much the innovation will cost in the long run?
26	9.08	the goals of the innovation match the community values?
28	8.74	the innovation may get bad publicity?
30	7.99	funding may be available only for the initial stages of the innovation?
44	7.98	the innovation gets good publicity?
2	7.44	the innovation saves money?
5	7.04	the innovation may help the student get a job?
18	7.02	the innovation provides evidence of its success?
37	6.99	the innovation could be tested on a small scale before it is completely installed?

TABLE 12

ICQ Factor #5
Credibility

ITEM	RANKED FACTOR LOADINGS	ITEM CONTENT
12	11.15	you respect the organization that produced the innovation?
14	9.67	you have condifence in the individual proposing the innovation to you?
36	8.41	the innovation may require more parent participation in the school program?
32	7.66	the teacher may be the one who has to "sell" the innovation to the principal?
35	7.45	the innovation may change the working relationship between teachers and principals?
44	7.09	the innovation gets good publicity?
2	-6.22	the innovation saves money?
43	5.65	the innovation may require time for preparing the staff to use it?

Factor #6 was labeled Operational Implementation Concerns. Table 13 presents the marker items for this factor. This factor is similar to Factor #2 in that it is concerned with the effects of the implementation of the innovation or organizational aspects of the setting. The difference is in the nature of the organizational characteristics being considered. In Factor #2, the concern was with the "addition of resources." This factor, on the other hand, focuses on the operational or process aspects of the organization (e.g., "working relationships," "past system," "existing class schedules," "present setup"). Therefore, the characteristic of the innovation being considered is: What changes in the existing organizational relationships and procedures will the innovation necessitate? This factor accounted for 2.4 percent of the variance.

As a summary of the factor interpretation, it appears that the concerns of consumers are expressed quite clearly by these factors. Factors #1 (Student-User Concern) and #4 (Consumer Report Rating) are focused directly on the intent, objectives, and "hard" facts about the innovation. Factors #2 (Additional Resource Requirement), #3 (Organized Resistance Potential), and #6 (Operational Implementation Concerns) are focused on those aspects of the innovation that have a potential effect on the context in which it may be implemented. The remaining factor, Factor #5 (Credibility), is a concern not about the content, "hard" facts, nor the possible effects the innovation may have when implemented. It is concerned about the "aura" of respectability or credulousness that is attached to the innovation via the development organization or the individual(s) presenting it at the time.

In conclusion, it can be stated that the cross products technique has resulted in an interpretation of the data that has ideally combined the observable aspects of the innovation, the concerns relative to the effects of implementing or even trying the innovation, and, most significantly, the differentiated patterns of individual consumer concerns. As previously mentioned, the order of the factors relative to variance accounted for provides some interesting hypotheses. Due to the fact that further correlational analyses will be performed with the data, no extensive generation of hypotheses is to be made at this time. Future reports on this research effort will provide greater analysis of the interrelationships of these factors with themselves and with other variables.

Interpretation of the POII Five-Factor Cross Products Solution

This section of the chapter will present the findings from the factor analysis of the POII items. First, there will be a brief general discussion of the images; then, each one will be interpreted relatively independent of the others. Each factor interpretation will consist of: (1) a table presenting the marker items of that factor, (2) a general descriptive interpretation based only on the content of the items, and (3) a statement concerning the amount of common variance that was accounted for by that factor.

TABLE 13

ICQ Factor #6
Operational Implementation Concerns

ITEM	RANKED FACTOR LOADINGS	ITEM CONTENT
6	17.13	the innovation may point out some flaws in the past system?
2	7.91	the innovation saves money?
35	7.04	the innovation may change the working relationships between teachers and principals?
8	6.38	the innovation can be put into practice on a step-by-step basis?
46	5.38	the innovation cannot be adjusted to fit existing class schedules?
11	5.02	the innovation fits smoothly into the present setup?
36	5.02	the innovation may require more parent participation in the school program?
47	4.96	the innovation may require a structural change within the organization?
25	4.85	the innovation has been used successfully in school districts like yours?
5	4.53	the innovation may help the student get a job?
39	4.17	the innovation may require new uses of existing space?
49	4.11	the innovation may require that time be spent in daily or weekly planning.
29	-3.65	the innovation may require skills not present in the existing staff?

In a previous discussion of the interpretation design and the selection of the "best" factorial description, it was stated that the four-factor rotated cross products solution had been selected as the "best" representation of the item factorial structure. Table 14 shows the complete rotated factor matrix with corresponding loadings. Items negatively associated with the factor are identified by a negative sign in front of the respective loading. The marker items in each factor are highlighted by parentheses around the respective loading. The interpretations of these factors are based on the content of the marker items.

Several terms will be used in the interpretation of the factors: Factor, image, and practitioner or person. The term factor refers to the set of items and their respective loadings as given on Table 14. The term image refers to the synthesis of the content of the marker items in the factor. At times the term "image" is used to discuss the total set of marker items and at other times it is used to focus on a specific subset of the marker items that reflect an idea. The terms practitioner, person, and other third person terms are used interchangeably. These latter terms refer to the hypothetical individual type that is being described by the image and factor. No assumption is made that an individual respondent is discretely identified by a single factor. However, it is assumed that other individual characteristics are correlated with these images and that a respondent's identification with the factor and image can be quantified via his factor score. Therefore, the interpretations at this point represent simply a descriptive analysis of hypothetical individuals (i.e., practitioners, persons, etc.) through a synthesis of the content of the marker items (i.e., images) on a given factor.

Image #1 was labeled the Dynamic Professional Bureaucrat. Table 15 presents the marker items of this first image. This factor can be characterized as an image of an educational practitioner who is a concerned, hard-working, dedicated educator. He is dynamic, in the sense that he is competitive, and he enjoys leadership and responsibility. He is professionally oriented to education in that he keeps abreast of current developments and prepares himself for the tasks for which he is responsible. On the other hand, this individual is somewhat dependent on his employing organization to guide his actions. This is substantiated by the items that reflect his adherence to and faith in bureaucratic policies and rules. In sum, the image portrayed by this factor is one of an educational practitioner who perceives himself to be a perfect fit between professional responsibility and bureaucratic or organizational concerns.

Another possible interpretation of this factor is that it represents the socially desirable image of the educational practitioner. The image is of the educational practitioner who is professional, energetic, creative, well-prepared, and aggressive, while at the same time, loyal to the formal (i.e., policies and rules) educational organization in which he is employed.

TABLE 14

Four-Factor Orthogonally Rotated Matrix for the Professional-Organizational Image Inventory

ITEM NO.	POII FACTORS			
	#1	#2	#3	#4
1	-0.60	(10.91)	(5.14)	-1.61
2	7.29	(5.25)	(5.56)	-1.03
3	-0.41	(6.65)	-0.67	1.04
4	3.54	(11.00)	1.42	-0.04
5	(16.52)[a]	2.58	-0.30	(4.14)
6	(14.55)	2.55	-1.34	(4.07)
7	(13.57)	2.65	0.79	2.94
8	(18.01)	-0.83	3.10	(4.09)
9	(18.17)	3.57	-1.03	3.93
10	(17.14)	1.93	-1.15	2.54
11	(-11.87)	-2.10	3.20	(3.99)
12	(14.77)	(5.17)	-1.57	2.47
13	-9.39	0.07	(5.69)	0.71
14	4.64	(-5.02)	(5.78)	3.75
15	0.62	2.15	(9.48)	2.83
16	10.85	-2.21	2.47	3.10
17	-4.45	(-6.23)	3.77	2.08
18	(-14.87)	-0.60	0.49	1.82

TABLE 14, Continued

ITEM NO.	POII FACTORS #1	#2	#3	#4
19	0.37	0.43	0.18	(12.91)
20	-7.56	0.53	-0.56	3.10
21	(-13.57)	0.02	1.95	2.65
22	(-14.52)	0.74	1.02	1.07
23	6.70	-1.91	2.25	0.92
24	-4.24	1.43	(6.38)	-1.51
25	0.82	0.20	(6.01)	-0.16
26	3.81	4.10	(6.16)	-2.95
27	(-15.56)	-2.58	1.42	-0.45
28	10.76	3.79	1.86	2.19
29	-6.87	2.70	2.57	3.65
30	5.30	1.28	0.20	(5.01)
31	8.39	(6.60)	4.22	3.87
32	-6.27	-1.42	(8.60)	0.80
33	-11.34	2.18	1.42	2.26
34	-11.41	-0.56	3.57	-0.59
35	-3.98	-3.91	(9.30)	0.78
36	-1.60	1.35	2.89	(6.95)
37	(-13.25)	1.42	-0.39	1.23
38	-10.03	4.44	0.44	2.22
39	-10.33	-3.48	-0.54	(3.96)

TABLE 14, Continued

ITEM NO.	POII FACTORS #1	#2	#3	#4
40	-9.96	-0.40	3.50	1.79
41	-2.20	0.70	0.71	-0.32
42	-1.01	(7.53)	-0.37	2.33
43	5.73	-3.38	-1.91	(6.47)
44	(-12.57)	0.91	-0.41	2.48
45	(17.15)	2.45	-0.10	2.26
46	(12.72)	(-6.18)	1.97	3.24
47	-6.65	-1.18	-1.03	(6.31)
48	0.75	-5.20	(5.78)	(4.26)
49	(16.11)	0.19	1.10	-1.26
50	-5.42	0.84	1.91	1.77

[a] The parentheses ( ) around a given loading indicate a high loading on that factor.

TABLE 15

POII Image #1
The Dynamic Professional Bureaucrat

ITEM	RANKED FACTOR LOADINGS	ITEM CONTENT
45	16.89	I keep abreast of current developments in my professional field.
9	16.41	I enjoy working in situations that put me in a position of leadership and responsibility.
10	15.93	I am usually seen as a hard worker.
8	15.59	Extensive preparation is the key to success in the accomplishment of an important task.
5	14.82	Professional tools are necessary to the accomplishment of my task.
18	-14.60	To receive money for something I do well is often more important to me than to receive approval from my peers.
6	14.56	I work well in a competitive atmosphere.
21	-14.25	The problem with trying new practices is that you are expected to do the whole thing by yourself.
27	-13.97	The only kind of change I will accept is that which has been tested and proven by others to be better.
49	13.74	I often find myself working on necessary tasks related to my role after normal working hours.
12	13.70	I enjoy creating distinctively different techniques or ways of doing things.
22	-13.41	I have little faith in policies that I have not been instrumental in forming.
46	13.08	I adhere closely to the policies and rules of the organization in which I am employed.

TABLE 15, Continued

ITEM	RANKED FACTOR LOADINGS	ITEM CONTENT
7	12.75	I use most of the mechanical and electronic aides related to my professional task that are available to me.

Both interpretations result in the same overall image. The difference lies in the degree of consistency that one might hypothesize between how the practitioners viewed themselves and other behavioral acts that could be suggested to reflect the same image. An example would be: Do other individuals (i.e., observed behavior) perceive that the individual(s) who loads high[6] on this factor exhibit(s) the traits identified through the content? If this factor is purely a socially acceptable response, the factor scores may very well not correlate with observed behavior. On the other hand, if the image correlates with observed behavior it is not the image that changes, but the relationship of the image with observed behavior. Due to the hypothetical nature of these factors, it is necessary to investigate further to resolve the question as to which interpretation is more correct. This fact only lends emphasis to the use of an inductive approach to validity assessment. This factor accounted for 35 percent of the variance.

Image #2 was labeled the Adapter-Creator. Table 16 presents the marker items of this image. This factor contrasts quite dramatically with the other factors. The image that emerges through the context of the significant items is one of a practitioner who is not dependent on the organizational rules and policies, enjoys adapting or creating new approaches to accomplishing his tasks, is self-confident or possibly egotistical. Furthermore, he will rely on his own perceptions to guide his actions. Therefore, this practitioner is concerned with the more operational aspects of his task, those targeted at accomplishing a task irrespective of any organizational constraints or any product deficiencies he may perceive. Another indication that this image reflects less concern for the concrete aspects of professional-organizational functioning (e.g., rules, regulations, cost, etc.) is his willingness to take a chance on something, even if there is a good chance that it will not work. In total, this factor reflects the image of a practitioner whose basic criteria for functioning is highly pragmatic. If a task is to be accomplished, the criteria for success is: Did it work? The criteria is not constrained by organizational, time, or economic constraints. Even more specifically, the criteria this practitioner would utilize to assess the success of a task would be very personal. In this sense, the image reflects an existential position. This factor accounted for 5 percent of the variance.

Image #3 was labeled the Impoverished Practitioner. Table 17 presents the marker items of this image. The items in this factor reflect the image of a practitioner who is apparently content with the status quo. Since he is not convinced that statistical evidence is practical, he relies mainly on his own intuition in making decisions. This practitioner also feels that lack of money is the main barrier to change and if he were required to change, he would expect compensation. In addition to this rather negative outlook, he just wants to do the best he can and not be bothered by the pressures that may be around him. In fact, he avoids those pressures. This image, in sum, is reflective of a practitioner who feels that what exists now is good enough, and since it is such a

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[6]The term "loads high" refers to a high factor score on the particular factor in question.

TABLE 16

POII Image #2
The Adapter-Creator

ITEM	RANKED FACTOR LOADINGS	ITEM CONTENT
1	11.20	When trying something new, I will usually rely on my own judgments as to how it should work or be used rather than relying on the general instructions.
4	10.79	I would rather develop my own materials, given the time, than to use some pre-developed methods.
42	8.07	I try to bend the rules of the organization in which I am employed so as to match the situation.
3	6.69	I often try something new even if there is a good chance that it will not work.
2	6.13	I very seldom use a new idea or product without altering it to meet my needs.
31	-5.80	When a decision has to be made, I find it most efficient to go through the standard channels or procedures.
46	-5.59	I adhere closely to the policies and rules of the organization in which I am employed.
17	-5.24	Administrators are better qualified than nonadministrative personnel to evaluate work performance.
12	5.01	I enjoy creating distinctively different techniques or ways of doing things.
38	4.82	I find I can accomplish more working alone than working with my colleagues on a problem.
14	-4.51	I find that it is best to pool my judgments with my superiors rather than making decisions on my own.
48	-4.22	I accomplish much more if I work in an environment where there are standard regulating procedures.

TABLE 16, Continued

ITEM	RANKED FACTOR LOADINGS	ITEM CONTENT
33	-12.01	Often, my ideas are reinterpreted by my superiors so that I do not receive credit for them.
34	-11.76	Because my training was basically in general principles and not in techniques, I often find it difficult to relate to the technical aspects of proposed changes.

TABLE 17

POII Image #3
The Impoverished Practitioner

ITEM	RANKED FACTOR LOADINGS	ITEM CONTENT
24	9.68	Statistical evidence may be important, but it is not practical for the decisions I have to make each day.
26	9.55	Though I seek for information, I often rely on my own instincts and judgments rather than insisting on hard evidence.
32	8.27	I just try to do a good job and avoid all the pressures around me.
35	7.52	My approach to innovations is most often to play it slow and sure.
15	7.36	The main barrier to change is not a lack of good, new ideas, but gaining funds to support those ideas.
13	5.12	If change related to my task requires extra time on my part, I would expect compensation.

hassle to change and the money isn't there anyway, why bother? In other words, this practitioner feels rather impoverished both in psychic energy to challenge the pressure of change and in monetary power to carry out that change.

This factor accounted for 5 percent of the variance.

Image #4 was labeled the Economic Bureaucrat. Table 18 presents the marker items of this image. This factor portrays the image of an educational practitioner who is closely related to the institutional or bureaucratic concerns of his employing organization. He is concerned with the more concrete (tangible) aspects of his profession, such as economic and organizational efficiency, hard evidence for decision-making, and regulating procedures. These concerns also reflect a dependency on the structure of the organizational procedures to guide his activity. The economic aspect of this image is indicated in items such as 19 and 47.

Another characteristic of the image that comes through in the content of the items is one of a rather cautious, pragmatic approach to change. This is reflected in items such as 39 and 30. The cautious nature of the image is also exhibited by this person's desire to pool his judgments rather than to make decisions on his own. Overall, this image tends to reflect basic bureaucratic functionary concerns. This individual would consider the organizational processes as being very essential aspects of the educational process, vis-a-vis his professional-organizational functioning. This factor accounted for 3 percent of the variance.

The interpretations presented have analyzed and synthesized the content of the marker items of the factors from the viewpoint that each factor represents a hypothetical image of educational practitioners. Another viewpoint that will be discussed in this summary section is that these five empirically derived constructs could be viewed as underlying dimensions of all practitioners. Before presenting a discussion of this latter viewpoint, a summary of the five interpretations is given.

The four factors do reflect discrete images through the content of their respective marker items. The Dynamic Professional Bureaucrat is basically a socially acceptable and/or mean response of a professional educator. The Economic Bureaucrat and the Impoverished Practitioner have the element of dependency in common. The dependency is on conditions external to them as being major factors in guiding their actions. For the Economic Bureaucrat, organizational procedures, structure (e.g., policies, budget, rules, etc.) and money are his guideposts for action. For the Impoverished Practitioner, money, his own position in the power structure, and other conditional concerns play a major role in shaping his actions. In contrast, the Adapter-Creator reflects a more independent image. The Adapter-Creator does not seem to be highly concerned with either bureaucratic concerns nor professional standards.

As has been stated, these interpretations view the factors as images of specific individuals. Possibly a more useful interpretation would be to interpret the factors as dimensions of an overall functioning style. If

TABLE 18

POII Image #4
The Economic Bureaucrat

ITEM	RANKED FACTOR LOADINGS	ITEM CONTENT
19	10.32	Education should be run more like a business.
36	7.42	Timing is the most important fact in all decisions I am called upon to make.
16	7.16	When faced with a decision, I tend to rely primarily on hard evidence related to the alternatives.
43	7.33	I find it is always better to rely on research-based evidence rather than on intuition judgment if the research is available.
46	6.54	I adhere closely to the policies and rules of the organization in which I am employed.
39	6.49	I am dismayed when I see people using new practices that have no research evidence to support them.
48	6.61	I accomplish much more if I work in an environment where there are standard regulating procedures.
30	5.82	Even if things are going well, people still try to change them.
14	5.74	I find that it is best to pool my judgments with my superiors rather than making decisions on my own.
35	5.69	My approach to innovations is most often to play it slow and sure.
47	5.46	The economic efficiency in any practice is as important as the moral implications of the practice.

this were the case, then the interpretations would be altered to reflect a more unidimensional viewpoint. Examples of changes in labeling would be: "Orientation to Social Acceptability" for the Dynamic Professional Bureaucrat, "Creativeness Orientation" for the Adapter-Creator, "Powerlessness" for the Impoverished Practitioner, and "Economic Bureaucratic Orientation" for the Economic Bureaucrat.

Further analysis and comparisons with other variables are necessary to clarify validity of one interpretation over the other.

Summary

Chapter Two has presented the problem, design, analysis, and findings of the first of a series of steps being taken to empirically identify the underlying structure (dimensions) of three domains of the diffusion process. These domains are: (1) the innovation, (2) the client, and (3) the strategy used to gain the acceptance of the innovation by the client.

Through the use of survey techniques of data collection and multivariate modes of analysis, two of the domains mentioned above were explored. The two domains were: (1) the perceived importance of innovation characteristics and (2) perceived individual client professional and organizational behavior in a context relevant to change.

Fifty (50) items for each domain were generated from a conceptual framework of *a priori* constructs. These items with some other demographic items made up the questionnaire administered to a representative sample of educational practitioners in varying roles and situations. The analysis of the data resulted in a six-factor description of the innovation characteristics and a four-factor description of the individual client differences. The labels of the innovation characteristics are:

1. Student-User Concern Orientation
2. The Additional Resource Requirements
3. The Expectation of Organized Resistance
4. The Credibility of the Source
5. The Operational Implementation Requirements
6. The Consumer Report Rating

These factors collectively accounted for 63 percent of the variance. The labels of the individual client factors are:

1. The Dynamic Professional Bureaucrat
2. The Adapter-Creator

3. The Impoverished Practitioner

4. The Economic Bureaucrat

These factors collectively accounted for 48 percent of the variance. This effort to date indicates that factors of innovations and clients can be determined empirically. This fact opens up the possibility of a considerable amount of investigation concerning interrelationships of these factors and others. Subsequent reports of this research effort will deal with the interrelationships of these factors.

Chapter Three

SUMMARY OF PROGRESS

Introduction

This interim report contains the results of research concerning the empirical structure of the diffusion process. This research is based on the proposition that persons responsible for implementing research and development products do not now have access to reliable information on factors that affect the acceptance of an innovation. If conceptualizations that have been documented through previous discussions and research can be systematically and empirically analyzed (identified and interrelated), the factors that influence innovation adoption processes can be made available to change advocates for use in formulating diffusion strategies.

Objectives

The objectives of the four-year research effort are sequential. In other words, if one is not adequately accomplished, then it would not be feasible to attempt the next one. The objectives are:

1. To determine if dimensions of the diffusion process can be identified empirically

2. To identify these dimensions and their interrelationships

3. To relate these dimensions to innovation adoption behavior

4. To assess the utility of this research-based information for assisting the decision-maker when formulating a strategy to gain acceptance and/or utilization of an innovation

This interim report has dealt with part of the first objective only: the empirical identification of the underlying dimensions of innovation characteristics and client characteristics.

Methods and Procedures

Initially, a conceptual framework of the diffusion process was constructed to organize the existing literature while at the same time guiding the research explained in this report. The framework consists of three elements of domains.

These are: (1) the innovation, (2) the client or consumer of the innovation, and (3) the tactic domains. The formulation of diffusion tactics and strategies should consider concerns of the initiator or advocate of the innovation and the potential response of the client or consumer. Each domain is conceived as having certain underlying dimensions or characteristics. These characteristics are assumed to influence the adoption of an innovation. No systematic effort has been made to influence the adoption of an innovation.

To date, diffusion researchers have made no systematic effort to empirically document the existence of these characteristics in all three domains. Also, the multiplicity and complexity of the existing present conceptions makes them of little use to decision-makers when they are formulating strategies. Therefore, this research effort uses the conceptual framework to collect the existing knowledge in a given domain and organize it for empirical assessment.

The research effort is presently conducted through two modes of inquiry: a survey mode and a case study mode. The survey mode is designed to collect data through representative samples, using highly generalized instrumentation so as to determine the existence of general underlying dimensions of a given domain of the framework. The case study mode, on the other hand, is a descriptive analysis of a particular innovation being implemented so as to provide an assessment of the conceptual framework and accompanying factors in explaining adoption behavior. Therefore, the two modes of inquiry are highly complementary. The survey mode refines the empirical nature of the conceptual framework while the case study mode provides a "reliability check with reality."

Chapter Two of this report presented the research effort of the survey mode in identifying dimensions of the innovation and client domains. This research was accomplished by generating an instrument of fifty (50) items for each domain from concepts in the literature. These instruments were administered to a sample of clients representative of national norms. The data from each of the instruments were analyzed through the use of factor analytic technigues. Descriptive interpretations of the factors based on the content of rank-ordered marker items is the final information given for the survey mode.

No presentation of any case study application is provided in this report. Subsequent reports in the overall research effort will include these case studies.

Progress Summary of Findings

The research within this report is an initial attempt to empirically identify dimensions of the innovation diffusion process in the context of educational settings. The findings must be considered preliminary and exploratory. Much more analysis and replication must take place before a great deal of confidence can be placed in these results. Subsequent reports on this particular effort will refine and give additional support and clarification to the constructs discussed.

The findings to date are presented in two categories: (1) the empirical identification of dimensions of innovation characteristics, and (2) the empirical identification of dimensions of individual client differences.

Innovation Characteristics Domain

A six-factor raw score cross products solution was selected as the most parsimonious description of the domain while accounting for an acceptable amount of the variance (63 percent). The magnitude of the item loadings on each factor formed the basis for the factor interpretation and description. Each of the following factors are identified and described:

Student-User Concern Orientation Factor. This factor accounted for 39 percent of the variance in the domain. The content of the items may reflect the respondents' desire to answer items in a socially acceptable manner. The effect of the innovation on the student and his ability to learn was of paramount importance in this factor. The compatibility of the innovation with existing circumstances and its potential effect on various users is part of this factor.

Additional Resource Requirements Factor. Accounting for 13 percent of the variance, this factor emphasized the need for additional building space, staff, equipment, and supplies when adopting an innovation. Retraining of staff and making better use of existing resources is also included in this factor.

Organized Resistance Potential Factor. As in the previous factor, the content of this factor is focused on the adopting unit (e.g., teachers, the school, the district, etc.). The community, as represented by the general public, is included in the factor. The concern is for the organized resistance to the innovation usually present whenever new ideas are implemented. This factor remained remarkably constant and consistent throughout the data analyses. Three percent of the variance was accounted for by this factor.

Consumer Report Rating Factor. This factor identifies a concern for assurance that the innovation can deliver what its advocates promise. Evidence of successful use in other districts, exact cost figures, and congruence between goals of the innovation and values of the community are examples of the items that loaded on this factor. This factor accounted for 3 percent of the variance.

Credibility Factor. This factor of perceived credibility of the innovation contains items on the organization that produced the innovation, the person advocating adoption of the innovation, and the degree of parental participation required by the innovation. Implementation aspects of innovation adoption such as time and money seemed to be less important in this factor than in the next factor. This factor accounted for 3 percent of the variance.

Operational Implementation Concerns Factor. Challenges posed to the way of conducting day-to-day educational activities is the concern of this factor. Class schedules and working relationships among teachers and between teachers and principals are examples of relationships that may have to be changed if

an innovation is introduced. Three percent of the variance was accounted for by this factor.

Overall, these six factors did parsimoniously describe the *a priori* constructs initially used to represent the domain of innovation characteristics that would be perceived as having varying importance to educational practitioners.

Individual Client Characteristics Domain

A four-factor raw score cross products solution was selected as the most parsimonious description of this domain while accounting for an acceptable amount of the variance (48 percent). The magnitude of the item loadings on each factor formed the basis for the factor interpretation and description. Each of the following factors are identified and described.

The Dynamic Professional Bureaucrat. This factor accounted for 35 percent of the variance. The items that loaded relatively high on this factor reflected an image of an individual who is a perfect fit between the demands of the profession and bureaucratic regulations. This hypothetical individual can be characterized as an educational practitioner who is a concerned, hard-working, dedicated educator.

The Adapter-Creator. This factor accounted for 5 percent of the variance. The interpretation of this factor contrasts quite dramatically with the other factors. The image that emerges through the content of the items is one of a practitioner who is not dependent on the organizational rules and policies, enjoys adapting or creating new approaches in the process of accomplishing his tasks, is self-confident and possibly egotistical or simply an inner-directed type.

The Impoverished Practitioner. This factor accounted for 5 percent of the variance. The items in this factor suggest the image of a practitioner who is apparently content with the status quo. He shuns statistical evidence, relies on intuition to guide his actions, feels that lack of money is the cause of no change, and simply tries to do a good job and avoid pressure. In sum, this hypothetical individual seems to lack both the psychic energy and monetary resources to function in his role.

The Economic Bureaucrat. This last factor accounted for 3 percent of the variance. The characterization of this image is one of an educational practitioner who is very concerned with the comparatively concrete aspects of his role, such as economy, efficiency, timing, hard evidence, policies and rules, and regulating procedures. With these types of concerns being primary to him, he is cautious in his approach to change.

These four factors did parsimoniously describe the individual client domain and are heuristic enough to provide a considerable amount of hypothetical relationships. Further analysis of these factors in relation to the innovation characteristics domain and other demographics should prove interesting.

Implications for Educational Change

Any lengthy discussion of implications would be premature in this progress report. However, a few points will be mentioned for consideration.

The survey mode looked at two of the three basic domains of the diffusion process conceptual framework in Chapter One: (1) perceived importance of innovation characteristics and (2) patterns of differences in individual client perceptions concerning their professional and organizational functioning.

The results indicated that clients' perceptions of innovation characteristics can be described in terms of six factors. The factors have been previously explained. For persons concerned with the implementation of innovations in educational settings, the implication of this finding is that clients will be directly (overtly) or indirectly (covertly) looking at a given innovation relative to how it aligns with factors similar to the ones identified in this report. This fact, then, behooves individuals concerned with introducing and/or implementing innovations to carefully analyze the innovation so as to be prepared to deal with the reactions of the clients to various perceived characteristics of that innovation.

The result of the survey mode also suggests that there are patterns of behavior that are established by educational practitioners. Four patterns of behavior imply differential reactions to innovation diffusion. The implication for persons concerned with the acceptance and utilization of innovations in education is that educational practitioners do differ in their professional and organizational behavior and that this may affect their acceptance of particular or general aspects (characteristics) of the innovation. This implication would suggest that persons dealing with change in educational settings should consider the individual's patterns of behavior when he is attempting to understand and/or gain the adoption of innovations.

Future Activities

The identification of factors for the domain of innovation characteristics and the domain of client characteristics as specified in this progress report permits the next phase of the program to be initiated: the intercorrelation of the factors with respondent demographics such as age, geographic setting, and experience. Measures of the respondent's change orientation and professionalism orientation in addition to other variables will also be correlated with the factors in each of the two domains. Hopefully, some of the demographics highly related to the factors will be observable and useful to change advocates in identifying conditions of adoption settings and characteristics of clients that are most susceptible to particular strategies and tactics for diffusing innovations.

The next data collection activity will identify underlying dimensions in the domain of diffusion tactics in much the same manner as the previous two domains. The mapping of this third domain completes the diffusion process conceptual framework as originally conceived. Future activities in the survey

research mode will establish the external validity of these factors for particular innovations. Following this field application of the data, an attempt will be made to translate these research findings into a form useable by change advocates formulating diffusion strategies for innovations.

In addition to the survey mode of inquiry, there will be two reports concerning case studies of the installation of two products being developed at CVTE. Some data has been gathered relative to the installation of the Comprehensive Career Education Model (CCEM). Data will be available in the fall of 1973 to complete the case study of that installation process.

Another case study of an installable system-type innovation, Operation Guidance, is being conducted. These case studies will assist in assessing the utility of the dimensions for explaining variation in the innovation adoption process. The dimensions will be used to categorize barriers and facilitators of the adoption process.

Program plans are being made to translate the factors resulting from the survey mode and the conceptual framework into a handbook or guide designed for decision-makers concerned with installing innovations into educational settings.

GLOSSARY

ADOPTION. A decision to make full use of a new idea as the best course of action available. (Rogers and Shoemaker, 1971)

ADVOCATE. An individual or group of individuals who accepts or is assigned the responsibility to initiate the acceptance of an innovation.

CLIENT SYSTEM. The unit that adopts the innovation being diffused. In this study, the client system is made up of six LEA project sites.

CONCEPTUAL FRAMEWORK. A set of mutually consistent dimensions interrelated by logic, based in fact, and ordered at systematic levels of generality.

CONSUMER. An individual or group of individuals who is the object of some attempt to gain his/their acceptance of an innovation.

DIFFUSION. The (a) acceptance (b) over time (c) of some specific item-an idea or practice-(d) by individuals, groups, or other adopting units linked (e) to specific channels of communication (f) to a social structure and (g) to a given system of values or culture. (Katz, et al., 1963)

DIMENSION. One of a set of coordinates containing sufficient sub-dimensions to distinguish one aspect of the diffusion process from all others.

FACTOR. A hypothetical construct that can be identified empirically from perceptions of respondents.

IMAGE. A characterization of an individual client factor based on the content of the marker items in the respective factor.

INNOVATION. A research-based educational product perceived as new by a user.

INSTRUMENTAL TARGET POPULATION. A class of individuals who are expected to use a product to influence the actions of an ultimate target population.

LEA. The local education agency.

LINKER. Communication between two parties directly or through a third medium (i.e., mass or personal). (Bhola, 1965)

MARKER ITEM. Items within a given factor that are designated as representative of the content of the factor due to the relative magnitude of their loadings on that factor.

ULTIMATE TARGET POPULATION. A class of individuals affected by the outcomes of a given product.

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APPENDIX A

Sample Questionnaire

The Center for Vocational and Technical Education

Innovations Characteristics Questionnaire

INSTRUCTIONS:

Individuals in positions such as yours are frequently asked to evaluate a number of innovations and recommend their acceptance to others. We would like to know the characteristics of innovations which you consider to be important when you evaluate an innovation. Your opinions will be pooled with others for a group response to identify those characteristics which are most important to decision makers in general. In the analysis, we are not interested in your answers as an individual; rather, we are interested in the group responses as a whole. Records of your name will be destroyed by December 1972. Your responses to these questions will be held in strict confidence; no individual responses will be identified.

The following scale will be presented for each item in the questionnaire:

1. Not Important (NI)
2. Slightly Important (SI)
3. Moderately Important (MI)
4. Rather Important (RI)
5. Very Important (VI)

You will be asked to rate a wide range of characteristics of innovations on this five-point scale. We would like to know how important these characteristics are to you when making a decision to support, accept, or reject an educational innovation. Circle the response which most accurately describes the importance of the innovation characteristic to you.

For example, the item, "HOW IMPORTANT TO YOU IS IT THAT: the innovation may allow for a more closely managed school system?" may be rated as NI (not important), SI (slightly important), MI (moderately important), RI (rather important), or VI (very important). Should you decide to rate it as being "Very Important" to you in evaluating an innovation, you would circle the appropriate answer as follows:

HOW IMPORTANT TO YOU IS IT THAT:

- the innovation may allow for a more closely managed school system? NI SI MI RI VI

If you have difficulty responding to any of the characteristics, feel free to write comments on the back of the pages. These comments will be taken into consideration when summarizing the results of this study.

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	Not Important	Slightly Important	Moderately Important	Rather Important	Very Important		
HOW IMPORTANT TO YOU IS IT THAT:							
1. the superintendent of schools may be against the innovation?	NI	SI	MI	RI	VI	☐	
2. the innovation save money?	NI	SI	MI	RI	VI	☐	10
3. the innovation may improve students' attitudes toward school?	NI	SI	MI	RI	VI	☐	
4. teachers may object to the innovation?	NI	SI	MI	RI	VI	☐	
5. the innovation may help the student get a job?	NI	SI	MI	RI	VI	☐	
6. the innovation may point out some flaws in the past system?	NI	SI	MI	RI	VI	☐	
7. the innovation may help the student learn faster?	NI	SI	MI	RI	VI	☐	15
8. the innovation can be put into practice on a step-by-step basis?	NI	SI	MI	RI	VI	☐	
9. the innovation may teach the student about himself?	NI	SI	MI	RI	VI	☐	
10. the principal may be against the innovation?	NI	SI	MI	RI	VI	☐	
11. the innovation fit smoothly into the present set-up?	NI	SI	MI	RI	VI	☐	
12. you respect the organization that produced the innovation?	NI	SI	MI	RI	VI	☐	20
13. the innovation may help the student learn additional skills and ideas?	NI	SI	MI	RI	VI	☐	
14. you have confidence in the individual proposing the innovation to you?	NI	SI	MI	RI	VI	☐	
15. the general public may object to the innovation?	NI	SI	MI	RI	VI	☐	
16. the innovation may require a request for outside funds?	NI	SI	MI	RI	VI	☐	
17. the innovation may change the working relationships among teachers?	NI	SI	MI	RI	VI	☐	25
18. the innovation provide evidence of its success?	NI	SI	MI	RI	VI	☐	
19. the consumer know exactly how much the innovation will cost in the long run?	NI	SI	MI	RI	VI	☐	
20. you are not the one who will be responsible if the innovation fails?	NI	SI	MI	RI	VI	☐	
21. the innovation be consistent with existing organizational policy?	NI	SI	MI	RI	VI	☐	

22.	the innovation may require additional building space?	NI	SI	MI	RI	VI	☐
23.	the students can help in the development of the innovation?	NI	SI	MI	RI	VI	☐
24.	the innovation may require additional equipment?	NI	SI	MI	RI	VI	☐
25.	the innovation has been used successfully in school districts like yours?	NI	SI	MI	RI	VI	☐
26.	the goals of the innovation match the community values?	NI	SI	MI	RI	VI	☐
27.	the innovation may require additional supplies?	NI	SI	MI	RI	VI	☐
28.	the innovation may get bad publicity?	NI	SI	MI	RI	VI	☐
29.	the innovation may require skills not present in the existing staff?	NI	SI	MI	RI	VI	☐
30.	funding may be available only for the initial stages of the innovation?	NI	SI	MI	RI	VI	☐
31.	the innovation be consistent with the traditional subject matter areas?	NI	SI	MI	RI	VI	☐
32.	the teacher may be the one who has to "sell" the innovation to the principal?	NI	SI	MI	RI	VI	☐
33.	the innovation may require retraining of existing staff?	NI	SI	MI	RI	VI	☐
34.	the users believe that the innovation will succeed?	NI	SI	MI	RI	VI	☐
35.	the innovation may change the working relationships between teachers and principals?	NI	SI	MI	RI	VI	☐
36.	the innovation may require more parent participation in the school program?	NI	SI	MI	RI	VI	☐
37.	the innovation could be tested on a small scale before it is completely installed?	NI	SI	MI	RI	VI	☐
38.	the innovation can be installed quickly?	NI	SI	MI	RI	VI	☐
39.	the innovation may require new uses of existing space?	NI	SI	MI	RI	VI	☐
40.	the teachers can help in the development of the innovation?	NI	SI	MI	RI	VI	☐
41.	parents may object to the innovation?	NI	SI	MI	RI	VI	☐
42.	the developers of the innovation guarantee that it will do what they say it will?	NI	SI	MI	RI	VI	☐
43.	the innovation may require time for preparing the staff to use it?	NI	SI	MI	RI	VI	☐
44.	the innovation get good publicity?	NI	SI	MI	RI	VI	☐
45.	the innovation may require additional staff	NI	SI	MI	RI	VI	☐
46.	the innovation cannot be adjusted to fit existing class schedules?	NI	SI	MI	RI	VI	☐

47. the innovation may require a structural change within the organization? NI SI MI RI VI ☐ 55

48. the innovation does not go over the existing budget? NI SI MI RI VI ☐

49. the innovation may require that time be spent in daily or weekly planning? NI SI MI RI VI ☐

50. students may object to the innovation? NI SI MI RI VI ☐

Please list the types of innovations which came to mind as you responded to these items: ☐☐ 60

_____

_____

_____

What types of innovations have you been involved in implementing during the last five years: ☐☐

_____

_____

_____

_____

_____

PLEASE PROCEED TO THE OCCUPATIONAL OPINION SURVEY.

Occupational Opinion Survey

INSTRUCTIONS:

On the following pages are a series of questions about various aspects of your occupation. We are interested in your opinions about situations which may arise in your daily activities.

We are trying to study the pressures and conditions with which most decision makers have to work. In the analysis, we are not interested in your responses as an individual. Rather, we are concerned with the opinions of the group as a whole. Your answers will be kept strictly confidential. Records of your name will be destroyed by December 1972. This research will be presented as a group analysis and no organization or participant will be identified.

We would like you to respond on the basis of feelings toward each statement. For instance, if you strongly agree with a statement, you would indicate so by circling the letters SA (strongly agree). If you strongly disagree, you would circle SD (strongly disagree). If you are unsure, or if you feel the question does not apply to you, you would circle U (uncertain).

Please try to answer each item as frankly as you can. Your first impression is usually best, so do not spend too much time on any one item. If you have difficulty with any of the items, or would like to supplement your answer, please feel free to comment on the questionnaire. These comments will be taken into consideration when summarizing the results of this study.

Again, the scale is as follows:

SD Strongly Disagree
D Disagree
U Uncertain
A Agree
SA Strongly Agree

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[X] [X]

1. When trying something new, I will usually rely on my own judgments as to how it should work or be used rather than relying on the general instructions. SD D U A SA ☐ 65

2. I very seldom use a new idea or product without altering it to meet my needs. SD D U A SA ☐

3. I often try something new even if there is a good chance that it will not work. SD D U A SA ☐

4. I would rather develop my own materials, given the time, than to use some pre-developed methods. SD D U A SA ☐

5. Professional tools are necessary to the accomplishment of my task. SD D U A SA ☐

6. I work well in a competitive atmosphere. SD D U A SA ☐ 70

7. I use most of the mechanical and electronic aides related to my professional task that are available to me. SD D U A SA ☐

8.	Extensive preparation is the key to success in the accomplishment of an important task.	SD	D	U	A	SA	☐	
9.	I enjoy working in situations which put me in a position of leadership and responsibility.	SD	D	U	A	SA	☐	
10.	I am usually seen as a hard worker.	SD	D	U	A	SA	☐	
11.	If change related to my task is suggested, my primary concern is how much does it cost.	SD	D	U	A	SA	☐	75
12.	I enjoy creating distinctively different techniques or ways of doing things.	SD	D	U	A	SA	☐	
13.	If change related to my task requires extra time on my part, I would expect compensation.	SD	D	U	A	SA	☐	
14.	I find that it is best to pool my judgments with my superiors rather than making decisions on my own.	SD	D	U	A	SA	☐	
15.	The main barrier to change is not a lack of good, new ideas, but gaining funds to support those ideas.	SD	D	U	A	SA	☐	
16.	When faced with a decision, I tend to rely primarily on hard evidence related to the alternatives.	SD	D	U	A	SA	☐	80
17.	Administrators are better qualified than non-administrative personnel to evaluate work performance.	SD	D	U	A	SA	☐	☐☐☐☐☐☐☐2
18.	To receive money for something I do well is often more important to me than to receive approval from my peers.	SD	D	U	A	SA	☐	10
19.	Education should be run more like a business.	SD	D	U	A	SA	☐	
20.	I will usually comply with a school board or legislative change, whereas change suggested by superiors I am willing to question.	SD	D	U	A	SA	☐	
21.	The problem with trying new practices is that you are expected to do the whole thing by yourself.	SD	D	U	A	SA	☐	
22.	I have little faith in policies which I have not been instrumental in forming.	SD	D	U	A	SA	☐	
23.	When I make a decision, I consider the risk involved to myself as well as organizational goals.	SD	D	U	A	SA	☐	15
24.	Statistical evidence may be important, but it is not practical for the decisions I have to make each day.	SD	D	U	A	SA	☐	
25.	People consider me easy going.	SD	D	U	A	SA	☐	
26.	Though I seek for information, I often rely on my own instincts and judgments rather than insisting on hard evidence.	SD	D	U	A	SA	☐	
27.	The only kind of change I will accept is that which has been tested and proven by others to be better.	SD	D	U	A	SA	☐	

28. When I work with other people, I prefer it to be in an informal manner. SD D U A SA ☐ 20

29. Knowing the right people in the organization is more important than rational discussions when I am trying to get a decision to go my way. SD D U A SA ☐

30. Even if things are going well, people still try to change them. SD D U A SA ☐

31. When a decision has to be made, I find it most efficient to go through the standard channels or procedures. SD D U A SA ☐

32. I just try to do a good job and avoid all the pressures around me. SD D U A SA ☐

33. Often, my ideas are reinterpreted by my superiors so that I do not receive credit for them. SD D U A SA ☐ 25

34. Because my training was basically in general principles and not in techniques, I often find it difficult to relate to the technical aspects of proposed changes. SD D U A SA ☐

35. My approach to innovations is most often to play it slow and sure. SD D U A SA ☐

36. Timing is the most important fact in all decisions I am called upon to make. SD D U A SA ☐

37. I find compromise difficult in most situations. SD D U A SA ☐

38. I find I can accomplish more working alone than working with my colleagues on a problem. SD D U A SA ☐ 30

39. I am dismayed when I see people using new practices which have no research evidence to support them. SD D U A SA ☐

40. Very seldom do I have the resources to accomplish the tasks related to my role. SD D U A SA ☐

41. If a position is open in our organization and a qualified professional person is not available, it should be permissable to hire a less qualified individual. SD D U A SA ☐

42. I try to bend the rules of the organization in which I am employed so as to match the situation. SD D U A SA ☐

43. I find it is always better to rely on research-based evidence rather than on intuition judgment if the research is available. SD D U A SA ☐ 35

44. When I have put in a day's work, I most often do not concern myself with work-related problems in the evening. SD D U A SA ☐

45. I keep abreast of current developments in my professional field. SD D U A SA ☐

46. I adhere closely to the policies and rules of the organization in which I am employed. SD D U A SA ☐

47. The economic efficiency in any practice is as important as the moral implications of the practice. SD D U A SA ☐

48. I accomplish much more if I work in an environment where there are standard regulating procedures. SD D U A SA ☐ 40

49. I often find myself working on necessary tasks related to my role after normal working hours. SD D U A SA ☐

50. The best way for me to advance myself in my present position is to frequently suggest changes. SD D U A SA ☐

51. There is a receptivity to budgeting for materials and equipment required for existing and new programs. SD D U A SA ☒

52. The administration is aware of and interested in many of the newest educational concepts, such as modular scheduling, team teaching, programmed instruction, etc. SD D U A SA ☐ 45

53. Administrator-initiated conferences with special area teachers are held to discuss curriculum revision. SD D U A SA ☐

54. There is adequate supportive supervision in the various subject matter departments of schools. SD D U A SA ☐

55. Adminstrators are supportive of improved educational programs in all areas of the school. SD D U A SA ☐

56. Released time and money are provided for professional workshops and conferences. SD D U A SA ☐

57. There is continued assessment of community and student needs as a basis for curriculum change. SD D U A SA ☐ 50

58. Departmental meetings should be held for the purpose of evaluating and revising curriculum. SD D U A SA ☐

59. The board of education supports improvements in educational programs. SD D U A SA ☐

60. Administrators encourage teacher-initiated conferences to discuss curriculum and other concerns. SD D U A SA ☐

61. I think that my profession, more than any other, is essential for society. SD D U A SA ☒ 55

62. I make my own decisions in regard to what is to be done in my work. SD D U A SA ☐

63. We really have no way of judging each other's competence. SD D U A SA ☐

64. I am my own boss in almost every work-related situation. SD D U A SA ☐

65. The professional organization doesn't really do too much for the average member. SD D U A SA ☐

66. A problem in this profession is that no one really knows what his colleagues are doing. SD D U A SA ☐ 60

67. I systematically read the professional journals. SD D U A SA ☐

68.	I regularly attend professional meetings at the local level.	SD D U A SA ☐	
69.	Some other occupations are actually more important to society than is mine.	SD D U A SA ☐	
70.	My colleagues pretty well know how well we all do in our work.	SD D U A SA ☐	
71.	Other professions are actually more vital to society than mine.	SD D U A SA ☐	65
72.	I don't have much opportunity to exercise my own judgment.	SD D U A SA ☐	
73.	There are very few people who don't really believe in their work.	SD D U A SA ☐	
74.	The dedication of people in this field is most gratifying.	SD D U A SA ☐	
75.	Most of my decisions are reviewed by other people.	SD D U A SA ☐	
76.	There is not much opportunity to judge how another person does his work.	SD D U A SA ☐	70
77.	Most people would stay in the profession even if their incomes were reduced.	SD D U A SA ☐	
78.	My own decisions are subject to review.	SD D U A SA ☐	
79.	It is encouraging to see the high level of idealism which is maintained by people in this field.	SD D U A SA ☐	
80.	Although I would like to, I really don't read the journals too often.	SD D U A SA ☐	
81.	My fellow professionals have a pretty good idea about each other's competence.	SD D U A SA ☐	75
82.	If ever an occupation is indispensible, it is this one.	SD D U A SA ☐	
83.	I believe that the professional organization(s) should be supported.	SD D U A SA ☐	
84.	The importance of my profession is sometimes over-stressed.	SD D U A SA ☐	
85.	People in this profession have a real "calling" for their work.	SD D U A SA ☐ [X]	80
86.	Teachers should conduct classes without assistance and discourage others from helping.	SD D U A SA ☐	[3]
87.	I find that individualized instruction using behavioral objectives is valuable in helping the student succeed.	SD D U A SA ☐	10
88.	I do not work well enough with others to make differentiated team teaching work.	SD D U A SA ☐	

89.	I think the use of behavioral objectives with individualized learning experiences should help students develop to their potential.	SD D U A SA ☐	
90.	Early occupational education may stimulate a better attitude toward school work in later years.	SD D U A SA ☐	
91.	Vocational education can do little to alleviate the problems of disadvantaged people.	SD D U A SA ☐	
92.	Use of differentiated team teaching would allow a more varied content in lessons.	SD D U A SA ☐	15
93.	I think there's no harm in starting occupational preparation for young school children.	SD D U A SA ☐	
94.	I accept the idea that individualized instruction using behavioral objectives allows students to experience success more often.	SD D U A SA ☐	
95.	Schools can't do much to develop positive attitudes toward work.	SD D U A SA ☐	
96.	I'm convinced that differentiated team teaching is a waste of time.	SD D U A SA ☐	
97.	Vocational teachers can make a real contribution to occupational education at the elementary level.	SD D U A SA ☐	20
98.	I would greatly dislike being a member of a differentiated teaching team.	SD D U A SA ☐	
99.	I believe it is more important to work with an entire class than to spend a lot of time with individuals.	SD D U A SA ☐	
100.	I believe that increased emphasis on adult vocational programs would eventually reduce inner-city unemployment.	SD D U A SA ☐	
101.	Students can benefit little from occupational education in the elementary grades.	SD D U A SA ☐	
102.	Teaching teams allow a teacher to spend more time developing creativity, responsibility, and habits of inquiry in students.	SD D U A SA ☐	25
103.	I uphold the differentiated team teaching concept as permitting a natural exchange of ideas.	SD D U A SA ☐	
104.	We now have more vocational programs than we need for the disadvantaged.	SD D U A SA ☐	
105.	There is no need in the elementary curriculum for the addition of occupational education.	SD D U A SA ☐	
106.	I say that differentiated team teaching is asking too much of established teachers.	SD D U A SA ☐	
	PLEASE PROCEED TO THE LAST SECTION,	☒	30
	BIOGRAPHICAL INFORMATION	☒	

Biographical Information

INSTRUCTIONS:

The following information will be used as group information for statistical analyses. Please check or complete the appropriate response for each item.

Center Use Only

1. Age: _____ ☐☐

2. Sex: ☐
   _____ Male
   _____ Female

3. Marital Status: ☐ 35
   _____ Single
   _____ Married
   _____ Divorced
   _____ Other

4. a. How many brothers and/or sisters do you have that are older than you? _____ ☐☐
   b. How many brothers and/or sisters do you have that are younger than you? _____ ☐☐

5. Type of Area in Which You Spent the Majority of your Childhood: ☐ 40
   _____ Rural (5,000 population or less)
   _____ Town (more than 5,000 and less than 50,000 and not within 25 miles of a city of more than 50,000)
   _____ Suburban (more than 5,000 and less than 50,000 and within 25 miles of a city of 50,000 or more)
   _____ Urban (more than 50,000)

6. Income Level of Your Present Family (include both salaries if married): ☐
   _____ Less than 10,000
   _____ 10,000 - 12,999
   _____ 13,000 - 15,999
   _____ 16,000 - 18,999
   _____ More than 19,000

7. Educational Level (indicate highest level): ☐
   _____ Certificate
   _____ Bachelor's Degree
   _____ Master's Degree
   _____ Specialist's Degree
   _____ Doctoral Degree

8. Major Area Studied for Highest Degree: ☐☐
   _____ Agriculture and Home Economics
   _____ Arts and Humanities
   _____ Biological Sciences
   _____ Business and Administration
   _____ Education (General)
   _____ Engineering
   _____ Math or Physical Sciences
   _____ Social or Behavioral Sciences
   _____ Vocational Education
   _____ Professional (Dentistry, Medicine, Optometry, Pharmacy, Veterinary Medicine, Law, etc.)
   _____ Other (Specify)

9. Percentage of Time Spent Per Year in Travel Related to Your Position: ☐ 45
   _____ 0- 5% (0-3 weeks)
   _____ 6-10% (4-6 weeks)
   _____ 11-15% (7-8 weeks)
   _____ 16+% (9 weeks +)

10. Percentage of Time Spent Per Year in Travel Not Related to Your Position: ☐
   _____ 0- 5% (0-3 weeks)
   _____ 6-10% (4-6 weeks)
   _____ 11-15% (7-8 weeks)
   _____ 16+% (9 weeks +)

11. Number of Years Experience in Your Present Role and Situation: _____ ☐☐

12. Number of Years Total Experience in Your Profession: _____ ☐☐ 50

13. In relation to your profession, how many times have you changed schools, school systems, or organizations? ☐
   _____ 0-1
   _____ 2-3
   _____ 4-5
   _____ 6-7
   _____ 8-9
   _____ 10+

14. Size (i.e., student population) of Undergraduate College or University in which You Received Your Certification or Bachelor's Degree: ☐
   _____ Less than 5,000
   _____ 5,000 - 9,999
   _____ 10,000 - 14,999
   _____ 15,000 - 19,999
   _____ More than 20,000

15. Size (i.e., student population of College or University in which You Received Your Highest Graduate Degree: ☐
   _____ Less than 5,000
   _____ 5,000 - 9,999
   _____ 10,000 - 14,999
   _____ 15,000 - 19.999
   _____ More than 20,000
   _____ Does not apply

16. Present Position (check principal position(s)): ☐☐ 55
   _____ Teacher (specify subject area _____)
   _____ Principal (elementary or secondary)
   _____ Central Administrative (superintendents, assistant superintendents, and directors)
   _____ State Legislator
   _____ State Vocational Education Board Member
   _____ State Advisory Council Member
   _____ SDVTE Professional Staff (director and other professional personnel)
   _____ Teacher Educator (specific area _____)

THANK YOU AGAIN FOR PARTICIPATING IN THIS RESEARCH EFFORT.

APPENDIX B

A Priori Categories and Respective Items

For the Innovations Characteristics Questionnaire

APPENDIX B

A PRIORI CATEGORIES AND RESPECTIVE ITEMS
FOR THE INNOVATIONS CHARACTERISTICS QUESTIONNAIRE

COGNITIVE LEARNING

7 -the innovation may help the student learn faster?

13 -the innovation may help the student learn additional skills and ideas?

ATTITUDE

3 -the innovation may improve students' attitudes toward school?

9 -the innovation may teach the student about himself?

STUDENT OCCUPATIONAL PREPARATION

5 -the innovation may help the student get a job?

REPUTATION

6 -the innovation may point out some flaws in the past system?

28 -the innovation may get bad publicity?

44 -the innovation may get good publicity?

GROUP SOCIAL VALUES

26 -the goals of the innovation match the community values?

ORGANIZATIONAL CHANGE

46 -the innovation cannot be adjusted to fit existing class schedules?

47 -the innovation may require a structural change within the organization?

31 -the innovation be consistent with the traditional subject matter areas?

11 -the innovation fit smoothly into the present setup?

21 -the ' -ovation be consistent with existing organizational policy?

35 -the innovation may change the working relationships between teachers and principals?

17 -the innovation may change the working relationships among teachers?

36 -the innovation may require more parent participation in the school program?

ACCEPTANCE

1 -the superintendent of schools may be against the innovation?

10 -the principal may be against the innovation?

32 -the teacher may be the one who has to "sell" the innovation to the principal?

15 -the general public may object to the innovation?

41 -parents may object to the innovation?

50 -students may object to the innovation?

4 -teachers may object to the innovation?

INVOLVEMENT

40 -the teachers can help in the development of the innovation?

23 -the students can help in the development of the innovation?

CREDIBILITY

14 -you have confidence in the individual proposing the innovation to you?

12 -you respect the organization that produced the innovation?

25 -the innovation has been used successfully in school districts like yours?

18 -the innovation provides evidence of its success?

ASSURANCE OF SUCCESS

20 -you are not the one who will be responsible if the innovation fails?

34 -the users believe that the innovation will succeed?

42 -the developers of the innovation guarantee that it will do what they say it will?

TRIALABILITY

37 -the innovation could be tested on a small scale before it is completely installed?

8 -the innovation can be put into practice on a step-by-step basis?

PERSONNEL NEEDS

29 -the innovation may require skills not present in the existing staff?

45 -the innovation may require additional staff?

33 -the innovation may require retraining of existing staff?

EQUIPMENT AND SUPPLIES

24 -the innovation may require additional equipment?

27 -the innovation may require additional supplies?

SPACE

39 -the innovation may require new users of existing space?

22 -the innovation may require additional building space?

TIME

38 -the innovation can be installed quickly?

43 -the innovation may require time for preparing the staff to use it?

49 -the innovation may require that time be spent in daily or weekly planning?

FINANCES

2 -the innovation saves money?

19 -the consumer knows exactly how much the innovation will cost in the long run?

48 -the innovation does not go over the existing budget?

16 -the innovation may require a request for outside funds?

30 -funding may be available only for the initial stages of the innovation?

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[a]The item numbers represent the respective numbers on the final instrument.

APPENDIX C

A Priori Client Images and Constructs

1. *A Priori* Categories and Respective Items for the Professional-Organizational Image Inventory (POII).

2. POII *A Priori* Constructs and Respective Items.

APPENDIX C

1. A Priori Categories and Respective Items for the Professional-Organizational Image Inventory (POII).[a]

Image #1

	31	When a decision has to be made, I find it most efficient to go through the standard channels or procedures.
	46	I adhere closely to the policies and rules of the organization in which I am employed.
	17	Administrators are better qualified than nonadministrative personnel to evaluate work performance.
	48	I accomplish much more if I work in an environment where there are standard regulating procedures.
(-)	50	The best way for me to advance myself in my present position is to frequently suggest change.

Image #2

	24	Statistical evidence may be important, but it is not practical for the decisions I have to make each day.
	49	I often find myself working on necessary tasks related to my role after normal working hours.
(-)	38	I find I can accomplish more working alone than working with my colleagues on a problem.
	6	I work well in a competitive atmosphere.
	3	I often try something new even if there is a good chance that it will not work.

[a]The item numbers represent the respective numbers on the final instrument. The negative (-) and positive (+) signs identify the *a priori* directional relationship of the item to the sub-scale.

Image #3

8 I try to bend the rules of the organization in which I am employed so as to match the situation.

(-) 41 If a position is open in our organization and a qualified professional person is not available, it should be permissible to hire a less qualified individual.

42 Extensive preparation is the key to success in the accomplishment of an important task.

27 The only kind of change I will accept is that which has been proven to be better.

45 I keep abreast of current developments in my professional field.

Image #4

29 Knowing the right people in the organization is more important than rational discussions when I am trying to get a decision to go my way.

26 Though I seek for information, I often rely on my own instincts and judgments rather than insisting on hard evidence.

10 I am usually seen as a hard worker.

28 When I work with other people, I prefer it to be an informal manner.

9 I enjoy working in situations that put me in a position of leadership and responsibility.

Image #5

25 People consider me easygoing.

(-) 44 When I have put in a day's work, I do not concern myself with work-related problems in the evening.

35 My approach to innovations is most often to play it slow and sure.

5 Professional tools are necessary to the accomplishment of my task.

7 I use most of the mechanical and electronic aides related to my professional task that are available to me.

Image #6

33 Often, my ideas are reinterpreted by my superiors so that I do not receive credit for them.

32 I just try to do a good job and avoid all the pressures around me.

30 Even if things are going well, people still try to change them.

34 Because my training was basically in general principals, and not in technique, I often find it difficult to accept arguments for new practices.

21 The problem with trying new practices is that you are expected to do the whole thing by yourself.

Image #7

47 The economic efficiency in any practice is as important as the moral implications.

11 If change related to my task is suggested, my primary concern is how much does it cost.

15 The main barrier to change is not a lack of good, new ideas, but gaining funds to support those ideas.

40 Very seldom do I have the resources to accomplish the tasks related to my role.

19 Education should be run more like a business.

Image #8

1 When trying something new, I will usually rely on my own judgments as to how it should work or be used rather than relying on the general instructions.

12 I enjoy creating distinctively different techniques or ways of doing things.

2 I very seldom use a new idea or product without altering it to meet my needs.

4 I would rather develop my own materials, given the time, than to use some pre-developed methods.

22 I have little faith in policies that I have not been instrumental in forming.

Image #9

36 Timing is the most important factor in all decisions I am called upon to make.

18 To receive money for something I do well is often more important to me than to receive approval from my peers.

13 If change related to my task requires extra time on my part, I would expect compensation.

37 I find compromise difficult in most situations.

23 When I make a decision, I consider the risk involved to myself as well as organizational goals.

Image #10

39 I am dismayed when I see people using new practices that I know have no empirical evidence to support them.

16 When faced with a decision, I tend to rely primarily on hard evidence related to the alternatives.

14 I find that it is best to pool my judgments with my superiors rather than making decisions on my own.

43 I find it is always better to rely on research-based evidence rather than on intuition judgment if the research is available.

20 I will usually comply with a school board or legislative change, whereas change suggested by superiors I am willing to question.

APPENDIX C

2. POII *A Priori* Constructs and Respective Items.

Construct #1 (Professionalism Orientation)

	8	Extensive preparation is the key to success in the accomplishment of an important task.
	42	I try to bend the rules of the organization in which I am employed so as to match the situation.
	45	I keep abreast of current developments in my professional field.
(-)	41	If a position is open in our organization and a qualified professional person is not available, it should be permissible to hire a less qualified individual.
(-)	47	The economic efficiency in any practice is as important as the moral implications of the practice.

Construct #2 (Employee-Bureaucratic Orientation)

	9	I enjoy working in situations that put me in a position of leadership and responsibility.
	17	Administrators are better qualified than nonadministrative personnel to evaluate work performance.
	31	When a decision has to be made, I find it most efficient to go through the standard channels or procedures.
	32	I just try to do a good job and avoid all the pressures around me.
	33	Often, my ideas are reinterpreted by my superiors so that I do not receive credit for them.
	46	I adhere closely to the policies and rules of the organization in which I am employed.
	19	Education should be run more like a business.
	48	I accomplish much more if I work in an environment where there are standard operating procedures.
(-)	50	The best way for me to advance myself in my present position is to frequently suggest changes.

Construct #3 (Rationality of Decision-Making)

(-) 1 When trying something new, I will usually rely on my own judgments as to how it should work or be used rather than relying on the general instructions.

14 I find that it is best to pool my judgments with my superiors rather than making decisions on my own.

16 When faced with a decision, I tend to rely primarily on hard evidence related to the alternatives.

20 I will usually comply with a school board or legislative change, whereas, change suggested by superiors I am willing to question.

22 I have little faith in policies that I have not been instrumental in forming.

23 When I make a decision, I consider the risk involved to myself as well as organizational goals.

(-) 24 Statistical evidence may be important, but it is not practical for the decisions I have to make each day.

(-) 26 Though I seek for information, I often rely on my own instincts and judgments rather than insisting on hard evidence.

27 The only kind of change I will accept is that which has been tested and proven by others to be better.

(-) 29 Knowing the right people in the organization is more important than rational discussions whin I am trying to get a decision to go my way.

(-) 36 Timing is the most important fact in all decisions I am called upon to make.

39 I am dismayed when I see people using new practices that have no research evidence to support them.

43 I find it is always better to rely on research-based evidence rather than on intuition judgment if the research is available.

Construct #4 (Internal Motivation)

6 I work well in a competitive atmosphere.

10 I am usually seen as a hard worker.

(-) 13 If change related to my task requires extra time on my part,

I would expect compensation.

(-) 18 To receive money for something I do well is often more important to me than to receive approval from my peers.

25 People consider me easygoing.

(-) 30 Even if things are going well, people still try to change them.

(-) 35 My approach to innovations is most often to play it slow and sure.

(-) 37 I find compromise difficult in most situations.

(-) 38 I find I can accomplish more working alone than working with my colleagues on a problem.

28 When I work with other people, I prefer it to be in an informal manner.

(-) 40 Very seldom do I have the resources to accomplish the tasks related to my role.

15 The main barrier to change is not a lack of good, new ideas, but gaining funds to support those ideas.

(-) 11 If change related to my task is suggested, my primary concern is how much does it cost.

(-) 44 When I have put in a day's work, I most often do not concern myself with work-related problems in the evening.

49 I often find myself working on necessary tasks related to my role after normal working hours.

Construct #5 (Change Orientation)

2 I very seldom use a new idea or product without altering it to meet my needs.

3 I often try something new even if there is a good chance that it will not work.

5 I would rather develop my own materials, given the time, than to use some pre-developed methods.

5 Professional tools are necessary to the accomplishment of my task.

7 I use most of the mechanical and electronic aids related to my

professional task that are available to me.

12 I enjoy creating distinctively different techniques or ways of doing things.

(-) 21 The problem with trying new practices is that you are expected to do the whole thing by yourself.

(-) 34 Because my training was basically in general principles and not in techniques, I often find it difficult to relate to the technical aspect of proposed changes.

APPENDIX D

Data Collection Sites

APPENDIX D

DATA COLLECTION SITES

STATE	SUBURBAN SCHOOL DISTRICT	URBAN SCHOOL DISTRICT	RURAL SCHOOL DISTRICT
Kansas	Unified School District 261 (Haysville)	Wichita	Unified School District 460 (Hesston)
	Unified School District 260 (Derby)		Unified School District 309 (Nickerson)
			Unified School District 398 (Peabody)
Ohio	Oregon School District	Toledo	Licking County School District (Newark)
	Sylvania School District		Morgan Local Schools (McConnelsville)
			Union County Schools (Marysville)

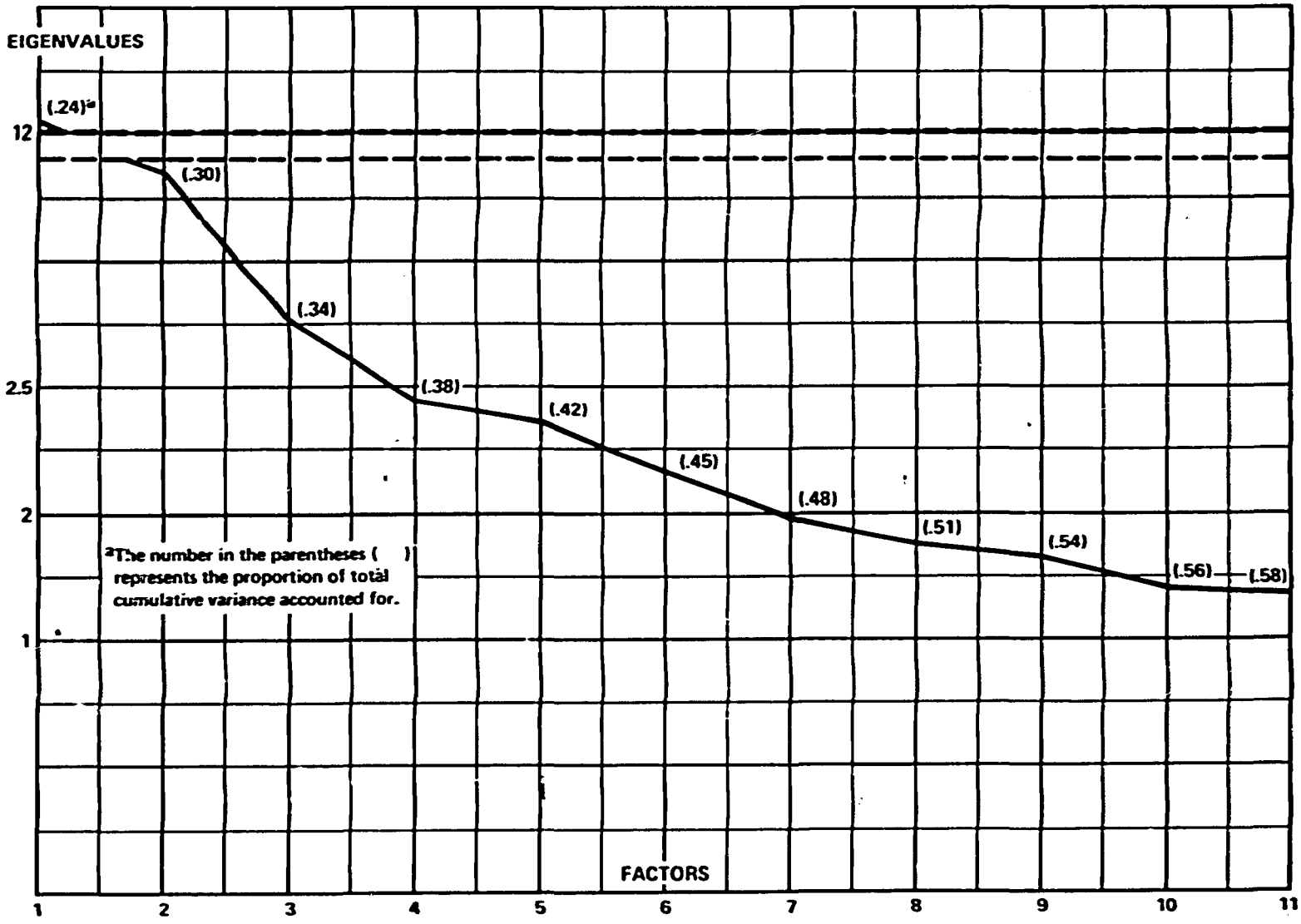
APPENDIX E

Chart of the Eigenvalues for the

Principal Component of the ICQ Data

APPENDIX E

Chart of the Eigenvalues for the Principal Component Solution of the ICQ Data



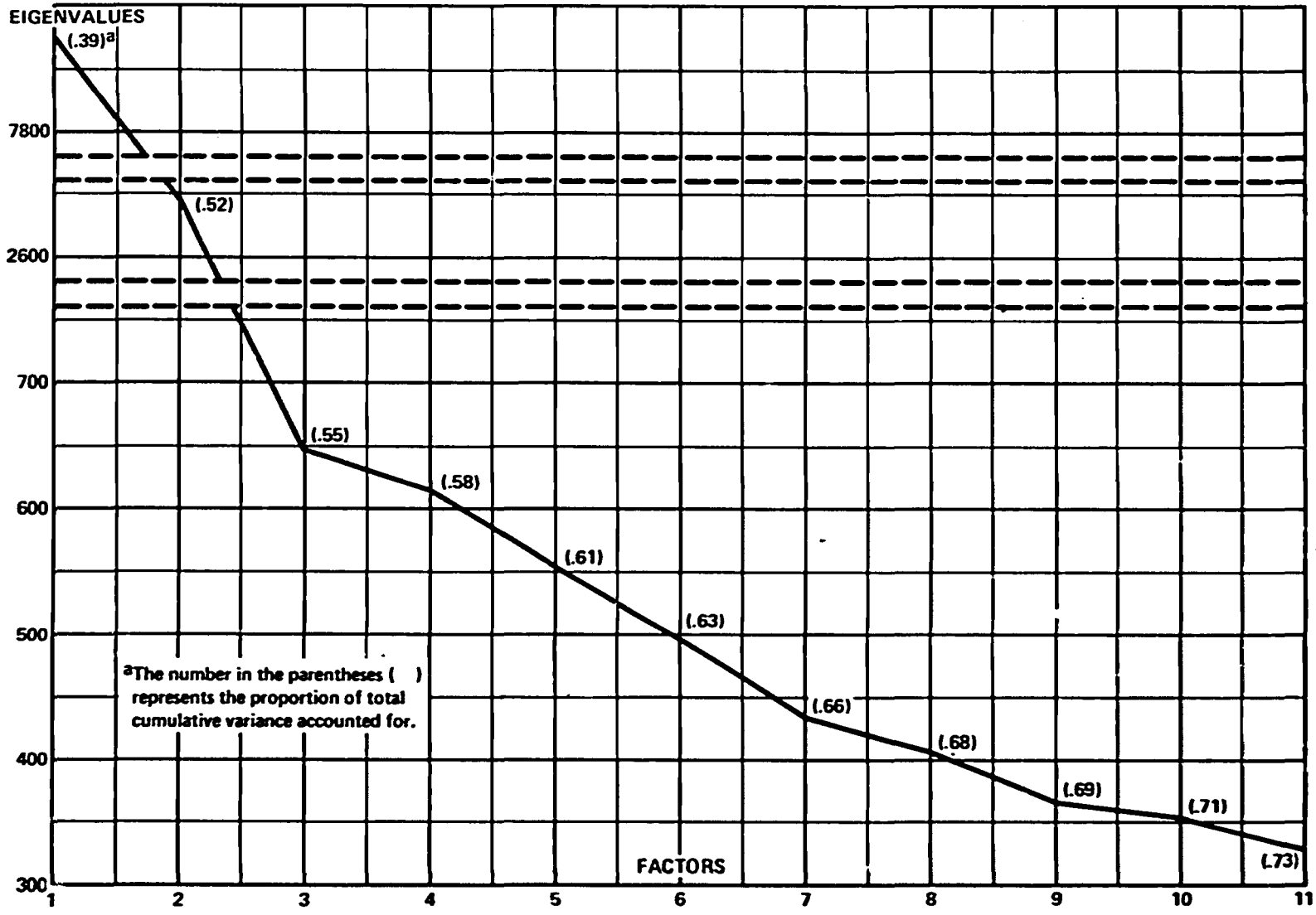
APPENDIX F

Chart of the Eigenvalues for the

Cross Products Solution of the ICQ Data

APPENDIX F

Chart of the Eigenvalues for the Cross Products Solution of the ICQ Data



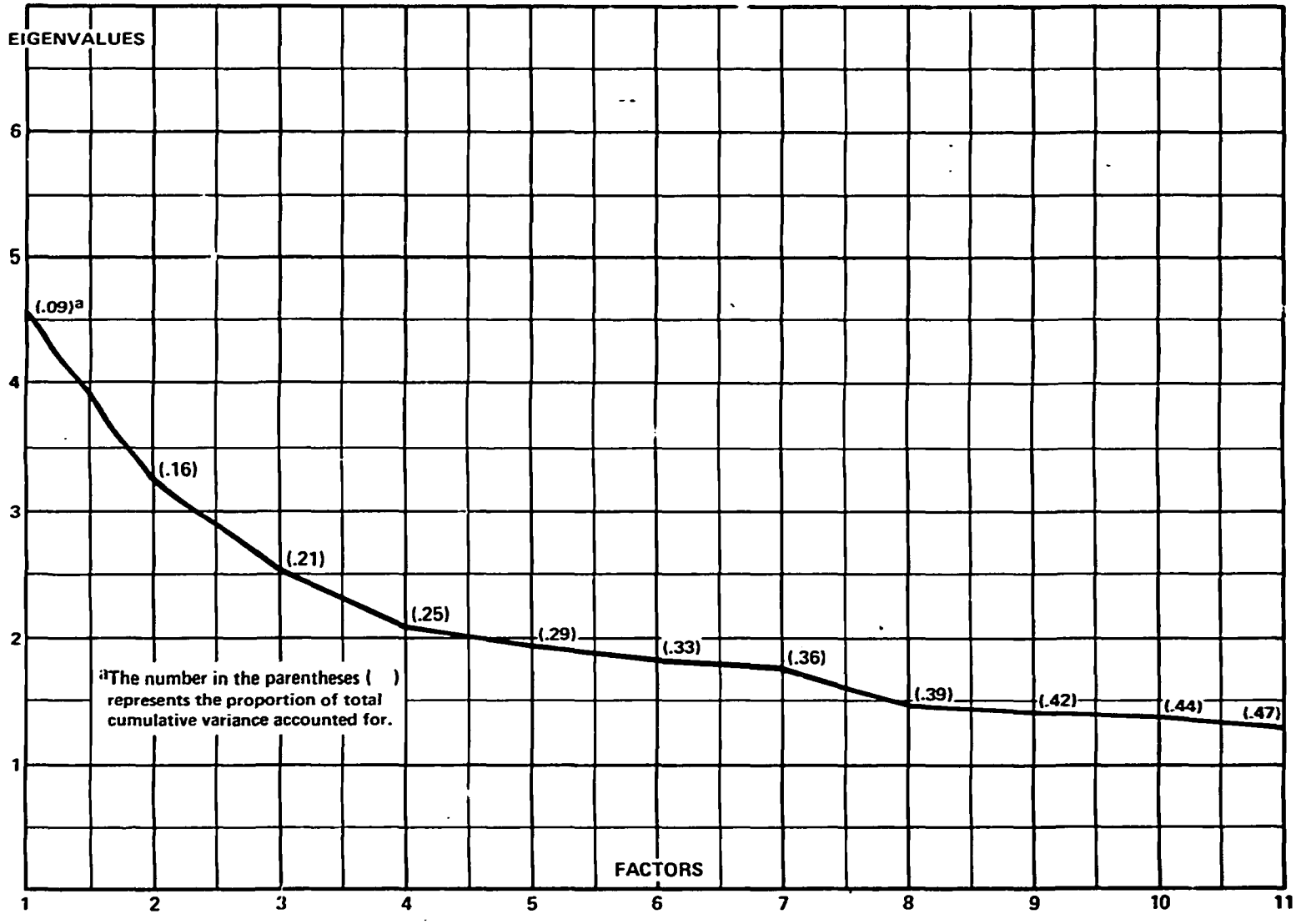
APPENDIX G

Chart of the Eigenvalues for the

Principal Component Solution of the POII Data

APPENDIX G

Chart of the Eigenvalues for the Principal Component Solution of the POII Data



APPENDIX H

Chart of the Eigenvalues for the

Cross Products Solution of the POII Factors

APPENDIX H

Chart of the Eigenvalues for the Cross Products Solution of the POII Factors