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A STUDY OF MANAGERIAL BEHAVIOR

by

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CHAPTER I. INTRODUCTION

Problem to be Studied and its Importance

This thesis is an attempt to study role behavior with emphasis upon the relationships among determinants of role behavior and the relationships of determinants to role behavior itself.

A substantial volume of literature exists in the area of role theory. Much of it deals with role in terms of society as a whole or of specific groups, such as role prescription or definition, role expectation, role conflict, selection of role players and types of roles. A search of the literature in the area of role theory prevails a need for the investigation of role behavior. The concept of role behavior is usually dismissed as individual adaptation to what is socially prescribed or expected. Some sociologists suggest that role behavior does not correspond exactly to the role prescription, but is affected by personality characteristics and personal experiences. Very little discussion may be found on what personality characteristics affect role behavior. Moreover, with some exceptions such as the work by Gross and others (33), the manner in which these personality characteristics are related to each other and to role behavior is almost unexplored. Neiman and Hughs, after a review of some eighty sources where

the concept role appeared, stated that there are few, if any, predictive studies of human behavior involving the concept role (65, p. 149).

Dewey (25), Mead (61), Thomas (85) and others have tried to explain human behavior in general. Some are concerned with role in terms of its effect on personality development. The emphasis is placed more on the influence of role playing on personality than personality on role behavior. The problem faced in this thesis is how to establish connection between theories of role and theories of human behavior. The former is mainly concentrated in the realm of social system and the latter in the realm of personality system. Role behavior can be considered as articulation between personality system of the role player and the social system where the role he is playing is located (73). The complexity of the problem arises due to the variation of the personality system from individual to individual even within the same social system.

Structurally the society can be considered as being composed of complimentary roles each of which is a brick of the entire construction of the society. The process of the society is composed of role behaviors of its members. Thus, to the sociologists, role behavior, what roles are actually played, is at least as important as what should take place or what is expected to take place in the society.

The "role" chosen for study in this dissertation, that of manager in a business firm, is relatively well-defined. Since the focal point of this study is not to explore in detail the concept role as such, but to identify factors which determine role behavior and how these factors are related to each other, the selection of a relatively well-defined role is considered to be adequate.

The Objectives

The objectives of this thesis are as follows:

- (1) To delineate the theoretical concepts which appear relevant to the explanation of the role behavior of managers in the farmer cooperatives and to construct causal models employing the selected concepts.
- (2) To demonstrate the application of the path analysis in testing the adequacy of the models constructed and also the procedure of modifying the models based on the results of path analysis.
- (3) To make recommendation on measures needed for testing models.

Thesis Outline

The remaining chapters of this thesis are arranged as follows: The second chapter consists of a review of literature. The third chapter contains the theoretical framework of the thesis. In the third chapter role theory and theories of

human behavior in general will be integrated in order to provide the theoretical orientation for exploration of role behavior in general. The theoretical concepts will be defined and the theoretical models will be presented. The models will be further developed to apply to the empirical setting of this thesis which is role behavior of managers in farmer cooperatives. The fourth chapter contains methodology. The current notion of cause will be discussed in this chapter prior to presentation of a causal methodological approach employed for the study, path analysis. Sampling and field procedure of the study will also be included. The measures of variables in the operational models will be presented at the end of the fourth chapter. The fifth chapter will include the results of the use of path analysis and its application to testing models and also discussion of the modifications of the models based on the results of the path analysis. The sixth chapter will include discussions and recommendations on improved concept measures needed for the variables used in the models constructed in this thesis. The seventh chapter will be the summary.

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CHAPTER II. REVIEW OF LITERATURE

The main purposes of the review of literature are (1) to determine what work, both theoretical and empirical, has been done in the area of concern, (2) to identify the problem area, (3) to provide a basis for the theoretical framework, (4) to provide insights into methods and procedures that will assist in operationalization of concepts and (5) to provide a basis for interpreting the findings.

To serve those purposes more effectively, the review of literature for this thesis has been integrated in relevant areas of the succeeding chapters.

CHAPTER III. THEORETICAL FRAMEWORK

Introduction

The objectives to be achieved in this chapter are: (1) to identify the concepts which are proposed as the theoretical determinants of human behavior and to identify these concepts in terms of role behavior; (2) to develop causal models of role behavior with the determinant concepts; and (3) to extend the application of causal models to the case of managers in farmer cooperatives.

Human Behavior

In order to achieve the above objectives human behavior in general must be discussed first, since role behavior is a type of human behavior.

Human behavior to be studied in this thesis is assumed to be:

- (1) learned (66),
- (2) social by virtue of subjective meaning attached to it and by virtue of taking account of others (73, 92),
- (3) goal-oriented (73, 77, 79),
- (4) adaptive in the sense that human behavior is to satisfy the needs of the organism and to meet the demands of the environments (5),

- (5) communicative due to human ability to deal with symbols (5, 11),
- (6) and cumulative as sequence of adjustments to constantly changing environment (5, 79).

In order to explain and predict human behavior, an understanding of how an individual makes his decision is of prime importance.

Human behavior may be stated as consisting of a succession of adjustments which mainly depend upon the requirements of the particular circumstances (79). According to Thomas (85), an adjustment effort should be preceded by decision to act or not to act. Furthermore, such decision should be preceded by definition of the situation. By definition of the situation, Thomas refers to judging the situation and making decisions on what adjustive effort to take.

Other authors convey the same idea by using different terms. Bohlen and Beal (11) look at human behavior from the point of view of a unit act, the smallest unit of human behavior. A unit act consists of (1) stimulus received, (2) interpretation of stimulus and circumstances it was received and (3) response or action. The second phase, interpretation of stimulus and the circumstances under which it was received, can be considered essentially the same as Thomas' definition of the situation.

Mead (61) uses the term 'perception' in the similar manner as definition of the situation. According to Mead, human behavior can be divided into four stages: impulse, perception, manipulation and consummation. Perception refers to the manner in which various aspects of the environment become involved in the organization of behavior after receiving a stimulus. Mead points out that perception should not be regarded simply from the standpoint of the presence of material, but that perception is a process of sensing the attitude of others toward the response the actor himself is about to give and sensing the imagery of the result of the response.

Newcomb (66) points out that overt behavior is preceded by perceptual behavior which is "sizing-up" the situation in terms of various things that might be done about it. To perception, Newcomb attributes three active processes at work; omitting, supplementing (adding details in one's mind) and structuring or organizing. Structuring or organizing is providing integrated meaning to the situation.

Berelson and Steiner (5) indicate that human behavior is differentiated from sheer motion since it takes environment into account.

Rogers (77) states that behavior is postulated as a reaction to the field as perceived.

While it may be termed differently by many scholars of human behavior, there appears to exist consensus on inclusion of the "definition of the situation" stage in the process of human behavior in order to decide the course of action.

One way to understand human behavior may be to follow a person all day. Even so, it is nearly impossible to observe what is taking place in one's mind when overt action does not necessarily reveal it. Thus, instead of trying to trace the process of human behavior empirically, the alternative approach is to attempt to comprehend how the definition of the situation takes place theoretically and identify the determinants involved in defining the situation. Definition itself is very difficult, if not impossible, to be learned by the investigator, therefore an alternative is to study the determinants and nature of their operation as determinants in the process of defining the situation.

Again the review of literature shows a variety of terms employed by different authors referring to similar ideas. The approach used here will be to review various authors' ideas and try to integrate these into a set of concepts which will serve as determinants in defining the situation.

Definition of the situation is assumed to be a thinking process. In thinking, which is reflective and problem solving, past experience and knowledge are the sources to suggest solution (24). Ideas of other authors to be reviewed shortly

may be interpreted as modifications of Dewey's idea on thinking. Dewey's idea appears to place emphasis on a single individual rather than on an individual in interaction with others, while some other authors place emphasis mainly upon individuals in social environment.

Bohlen and Beal (11) list seven determining factors in the definition of the situation; symbolic skills, past experience, beliefs, present goal, value system, attitude and norms as expectations of referents. Symbolic skill, that is ability to deal with symbols, enables one to organize past experience into an integrated set of beliefs. Past experience refers to the involvement of oneself with phenomena at varying degrees of recency and intensity, while belief includes what was organized out of both direct and indirect experiences by symbolic skills. Beliefs are propositions about the universe which are believed to be true, at least by the individual. One's beliefs may include some knowledge; knowledge may be defined as a set of scientific explanations of relations between phenomena established by the scientific method (11). Value system provides a foundation for an individual's attitudes toward social or non-social objects. An immediate goal is set to provide the direction of behavior even temporarily. An immediate goal may be changed or may become means for future goals. Norms or expectations of referents are taken into

consideration as long as behavior is social, that is, taking account of significant others. Norms of a group to which the individual belongs also provide a part of the source for one's value system.

Shibutani (79) uses a rather inclusive term 'meaning' referring to a selectively stable orientation toward environments. His 'meaning' includes what is referred by various terms such as sentiment, attitude, concept formation, fixations, stereotype, and object cathexes. To Shibutani, past experience is also important, since through past experience expectation becomes fixed in one's mind. Knowledge is considered by him as order or rules with which men act. Symbolic skill is also considered as necessary for one's orientation toward environments.

The above are included in the seven factors proposed by Bohlen and Beal (11). In addition, Shibutani suggests that self-conception is important, since a man tries to live up to the standard of what he thinks he is. He also comments that a man can define the situation from a collective standpoint because he has acquired the perspective shared in his group(s) and he sees himself from the standpoint of his group(s). Shibutani summarizes his point of view as follows:

The comprehension of what a man does requires a record of his definition of the situation, the kind of creature he believes himself to be and the audience before which he tries to maintain his self respect (79, p. 279).

The three concepts, (1) the definition of the situation, (2) self-perception and (3) reference groups included in the above quotation are inter-locking. Specific definitions of the situation are carried out with reference to both self-perception and reference groups, which according to Shibutani provide the general definition of the situation.

According to Newcomb (66), biological capacities set the limit to human behavior and previous learning in response to social influences provides the guide for individuals. The biological capacities and social influences are considered to be independent variables, while human behavior is the dependent variable. By social influence, Newcomb means expectations of other individuals and other social environmental factors. Motives, attitudes and other factors are the intervening variables. Motives are analyzed into two components; drive and goal. One has to have a drive to direct the behavior toward the goal. Presence of goals in human behavior is agreed upon by different authors. Drive is expressed as needs to be satisfied by Berelson and Steiner (5), Roger (77) and designated as interests by Parsons and Shils (73). Newcomb did not spell out what are other social environmental factors.

To Thomas (85), the key factors in defining the situation are the experiences of belonging to a multiplicity of groups. An individual becomes acquainted with group norms

through those experiences. Group norms provide the individual with a major source of the value system one acquires and at the same time make him aware of what expectations are placed upon him.

Mead (61) places emphasis on familiarity with a stimulus as product of past reactions in selective perception, i.e. defining the situation, in order to eliminate disturbances upon receiving a stimulus.

Rogers (77) regards human behavior as the organism's endeavour to satisfy present needs and states that emotion accompanies and facilitates such goal-oriented behavior.

Parsons and Shils (73) deal with human behavior from the point of view of systems of actions. Systems of action are characterized by three other systems; personality system, social system and cultural system. Motivational properties of personality system provide motivational orientations which are categorized as cognition, cathexis and evaluation. This may be restated as cognitive orientation depends upon past experience and knowledge, cathectic orientation upon needs or interests and evaluative orientation upon a value system. Conditions of the system of interaction (the social system) should be noted, for the conditions are imposed upon participants of interaction. The cultural system has two significant

elements in the system of action. It offers objects of orientation and sources of value-orientations (which are internalized¹ value standards in the personality system). Value orientation is a general attitude toward a class of objects irrespective of specific environments. Specific attitudes are derived from general attitudes, and are applied to specific objects in the environment.

Parsons and Shils point out that properties of the system of actions, which especially refer to facilities, place limitations on the actor's behavior. Facilities are those features of the situation instrumentally important to the actor. Facilities are not part of personality characteristics. Only their instrumental value is subjected to change depending on the particular actor's perception of facilities and definition of facilities in terms of their instrumental values. Facilities may be taken as part of the situation to be perceived and defined as objects in the situation and not as a determinant of the definition of the situation. Accordingly, in this thesis, facilities are not included as a factor, i.e. a determinant of the definition of the situation.

¹A criticism has been made upon Parsons' point of view by Dennis Wrong (100). Yet, Parsons and Shils have considered varying degree of internalization, they did not state that all the men reach perfect internalization of cultural values (see 73, p. 20).

In all, eleven general concepts concerning human behavior may be noted. None of the selected authors named all the eleven concepts explicitly. However, by the use of different terms, the following concepts are included in most of the authors. The eleven concepts are; (1) symbolic skill, (2) past experience, (3) knowledge, (4) value system, (5) attitude, (6) sentiment, (7) norms, or expectations of referents, (8) needs or motives, (9) goal, (10) self-evaluation, and (11) biological capacities.

In order to postulate causal linkages, if any, among these concepts, each term has to be defined, and relationships among them have to be discussed. In order to undertake such a task which will finally lead to construction of causal role behavior models, it is considered desirable to associate the above concepts with role theory or theories of role at this point of the discussion.

Role

Biddle and Thomas (6) point out that "role theory" is actually theories of roles. Role theory does not refer to any grand theory of role as such. Such a theory does not exist. According to Biddle and Thomas, role theory, as commonly designated, includes single hypotheses, sets of logically related hypotheses and sets of logically as well as topically related hypotheses.

Neiman and Hughes (65) delineated three classifications after they reviewed various definitions of the concept 'role'. First, the definitions in terms of dynamics of personality development include role as the basic factor in the process of socialization (e.g. Mead (60)) and role as culturally determined behavioral pattern (e.g. Linton (56), Sarbin (78)). Second, there are functional definitions in terms of society as a whole referring to role as an embodiment of social norms (e.g. Stouffer (82)). Third, there are functional definitions in terms of specific groups referring to role as a set of group expectations of an occupant of a position in the group. Since the focus of this study is upon a role in a group, a business organization, the third definition appears applicable.

Levinson (55) classifies the variations of definitions of role differently. In order to further clarify the term role used in this thesis, it appears desirable to review his classification. Levinson delineates three types of formal organizational roles; (1) role as the structurally given demands, (2) role as the member's orientation or conception of the part he is to play in the organization; and (3) role as the actions of the member individual, seen in terms of their relevance for the social structure. Newcomb and others (67) point out that social prescription and individual adaptation do not necessarily match in role playing.

Levinson proposes to label each of the three clearly distinguished types rather than use the term 'role' in three different ways. The first is called role demands; often named role prescription or expectation by other writers. The second is labeled as personal role-definition, which is mainly the role expectations perceived by the role player himself. The third is role performance; role behavior or enactment to some other writers.

Since the focus of this thesis is an individual's adaptation to what is prescribed or expected, the term 'role' is used in the first sense (33, 35, 55, 66). Role is a set of behaviors which is expected of every one as an occupant of a particular position regardless of who he is. Newcomb (66) points out that role is strictly a sociological concept; it purposely ignores the individual, psychological factors. This use of the term 'role' is justified at least in this study, since 'role behavior' is used to express behavior of an individual within the context of his position in a group.

The above three definitions of role will be differentiated by three different terms; they are role expectations, role definition (by the role-player) and role behavior. Role and role expectation may appear interchangeable but may be differentiated in the following manner: Role is more general; it is a set of behavioral standards prescribed by

the group to the position. Role expectation, on the other hand, may be specified by "who" expects and of "whom" it is expected in terms of the counter position in role relationships.

The discussion will turn to individual concepts which are relevant to role behavior. Before applying selected concepts which are determinants of human behavior, to role behavior and discussing them one by one, some discussion on role behavior and position appears in order.

Role behavior

There are three overlapping concepts available; they are role behavior (e.g. Newcomb (66)), role performance (e.g. Biddle and Thomas (6), Levinson (55)) and role enactment (e.g. Sarbin (78)). Newcomb defines his term role behavior as one's behavior determined by his assumption that he is perceived by others as the occupant of a position which he and they define in terms of shared norms (66, p. 328). Here, behavior includes performance (or act), perception, thought and sentiment.

Sarbin's role enactment refers to verbal and motoric performance, posture and gait, styles of speech and accent, the wearing of certain forms of dress and costume, the use of material objects, etc. (78). Role enactment, so defined, is more inclusive than role behavior.

Role performance is used for overt behavior, classified as action by Biddle and Thomas (6). They agree with Newcomb (66) in taking role performance as a phase of role behavior. In this study, the emphasis is placed upon the performance, overt, verbal or motoric phase of role behavior as defined by Newcomb.

In terms of occupational roles, Levinson (55) points out different ways of dividing role behavior for a position. He defines role behavior as those aspects of the total stream of behavior that are structurally relevant. There arise two questions; which aspects are structurally relevant or irrelevant and where are the boundaries? There are two conceptions of social structure presented by Levinson (55). The narrow conception of social structure limits the boundaries in terms of concrete work tasks and normative requirements, while the broader conception of social structure takes account of latent as well manifest structure. In this study, the narrow conception of social structure will be used.

It is contended that role behavior in a given position varies from individual to individual. Besides empirical data available in the literature, this point is discussed by Parsons and Shils (73) and by Newcomb (66) respectively.

Parsons and Shils state that:

An important feature of a large proportion of social roles is that the actions which make them up are not minutely prescribed and that a certain range of variability is regarded as legitimate. Sanction are not invoked against deviance within certain limits. This range of freedom makes it possible for actors with different personalities to fulfill within considerable limits the expectations associated with roughly the same roles without undue strain (73, p. 23).

Newcomb also tries to explain why role behavior varies:

Role behavior is personally motivated, and because they are in part determined by self-perception which are never fully shared, no two individuals ever take the same roles in identical ways (66, p. 332).

Newcomb adds differences of constitutional make-up among individuals to the above point.

Based on the above quotations, it appears legitimate and meaningful to study variation of role behaviors.

Since overt role behavior (role performance) will be the main concern in this study, some features of role performances should be considered at this point in relation to discussion on variation of role behavior presented above.

Biddle and Thomas (6) point out that adequacy of performance may be accounted for in terms of quality, amount, frequency or rate, and that complexity of performance may be measured in terms of extensiveness, contingentness and sequence length. In this thesis, the adequacy of performance in terms of quality will be the major concern.

Position

Position was most frequently denoted as a unit of social structure (6). Some authors have a notion that a category of individuals may fill the same position. The notion of "category of individuals" assumes a more or less close fit of individuals, no matter who they may be, to the role prescription associated with the position.

For the concept 'position' in this thesis, the notion of "category of individuals" is not applicable, because the individual's adaptation to the role prescription is the question. However, whether individuals occupying the same position can be classified into one category in terms of overt behavior is an underlying problem in this thesis. In this thesis, Sarbin's definition that position is an organized system of role expectations will be used (78, p. 224). Here, position refers to a unit of social structure into which an occupant is assigned to fulfill a set of role expectations associated with the unit.

Biological capacities

Biological capacities, which Newcomb (66) calls constitutional factors, are born characteristics. They set the limit to human behavior.

Newcomb considers biological capacities in the following context:

The first fact to be kept in mind is that man is an animal and always remains so....

Man's biological nature also provides him, at any given stage of development, with biological capacities, with upper limits beyond which he cannot go. Some of these limits are common to all humans; some are determined by the stage of growth which has been reached; and some are governed by a person's individual gifts. Thus, no man can breathe oxygen from water or fly like an eagle; no child can run like adult sprinter....

The fact that man is an animal thus means that he is forever dependent upon give-and-take with an environment which must provide the necessary conditions, and forever limited by capacity beyond which he cannot go... Social influences profoundly affect the ways in which human bodies behave, as we shall see, but human bodies never cease to be animal (66, pp. 47-48).

Human behavior to be studied in this thesis is assumed to be within the human physiological capacities of all the adults studied. Roles which can be performed by only those with special biological gifts, such as a professional singer, will be excluded from consideration.

Within the biological capacities, there is the problem of variation of innate intelligence. Innate intelligence sets upper limits to human behavior, e.g. human behavior involves defining the situation, a mental process. In this study, innate intelligence is accounted for, not as a separate variable, but by an indirect indicator, that is, amount of formal education. Thurstone defines intelligence as 'ability

of the individual to engage in abstract reasoning' (86, p. 41). In educational institutions, individuals learn symbols and how to manipulate them. Wechsler points out:

Practically all studies show that educational attainment (as measured by number of years of school attendance) and intelligence rating (as measured by test score) correlate to a relatively high degree. The correlation ranges in most cases from about .60 to .80 (93, p. 105).

Based on this order of correlation, it is assumed that the amount of formal educational training will account for a major degree of intelligence. It is recognized that variation in the amount of formal education does not necessarily reflect variation of innate intelligence alone. Formal educational training will be discussed as part of past experience in the next section.

Past experience

Past experiences in this study refers to past experiences of playing a particular role and past educational training.

Past experiences include symbolic as well as overt behavior. Quality of past experiences varies by recency and intensity (11), and depends upon unique conditions under which role playing was learned or experienced (66).

Impact of past experiences of playing a role upon role behavior appears to be more or less indirect. As Sarbin (78) points out, through past experiences, the individual learns role expectations and past experiences give the individual

necessary response patterns in role playing. Sarbin illustrates an experiment using hypnosis where those who were hypnotized before tend to get hypnotized easier, or in other words tend to play the role of hypnotized persons easier, than those who never experienced hypnosis before. One gains knowledge through past experiences and training, and at the same time modifies or possibly enriches his symbolic skill through past experiences and training.

One's sentiment toward his position and the role he plays is a product of satisfactions he receives from the past experiences of playing the role. Attitudes are residues of past experiences (78).

Past experiences of playing a particular role includes overt as well as symbolic behavior of an individual in the context of having been an incumbent of the position. Past educational training refers to formal training one received in educational institutions. Relevance of formal training to the role is assumed in two major senses; the first is the symbolic skill one learns through formal educational training and the second is knowledge one receives through formal educational training which he may be able to apply to specific situations of playing a particular role.

Knowledge

Knowledge as used in role theory refers to knowledge which facilitates one's role playing in the position one

occupies in a group. Newcomb and others (67) label knowledge as a resource input. Interaction in a group is affected partially by resource input which includes a member's knowledge and any skills in interacting with others that are relevant to the group's immediate situation.

Gross and others (33) use the term knowledge to extend to 'knowledge of sanctions', and Krech and others (52) talk about knowledge of roles. In other words, knowledge used by Gross and others and by Krech and others refers to one's awareness of role expectations and of sanctions attached to role behavior. Here the term 'knowledge' refers to scientific explanations of relationships between phenomena (11), with which a role player deals in his role behavior.

Symbolic skill

Symbolic skill has its importance in decision making on future events in the process of one's role playing. According to Bohlen and Beal (11), symbolic skill is used to organize past experiences and so project into the future to determine if alternative means available in the past are still available, and acceptable or preferred. One can organize his course of action, without immediately experiencing the actual action, by the use of symbols and formulate the course of action based upon symbolic organization of judgements made on past experiences.

It is recognized that one obtains and may increase symbolic skill by learning from past experiences and formal educational training. It may be said that by the use of symbolic skill one "digests" his past experiences into knowledge. Without symbolic skill, knowledge is unconceivable. Symbolic skill is a means and knowledge a product, which in turn may enrich symbolic skill. Thus, in this thesis, symbolic skill will be integrated in knowledge, even though one may argue that knowledge and symbolic skill are not the same but facilitating each other.

Value and value orientation

For Kluckhohn and others (49), value is a conception of the desirable which influences the selections from available modes, means and ends of action and it places things, acts, ways of behaving, goals of action in the approval-disapproval continuum. Kluckhohn and others emphasize that value is a conception, therefore it is not directly observable. The "should" statements, according to Kluckhohn and others, are only manifestations of values. Regardless, of whether a person takes the position of Kluckhohn and others takes the concept "value" as strictly theoretical or not, value can be at least inferred from "should" statements or the way objects are placed on the approval-disapproval continuum.

Kluckhohn and others further point out:

What "must be done" is usually closely related to what is believed to be the "nature of things"; however, beliefs about "what is" are often disguised assumptions of "what ought to be" (49, p. 410).

An individual may employ "is" statements when he actually means "should" statements. Value-orientation is a both normative and existential concept (49). Kluckhohn and others define value orientation as follows:

A value orientation may be defined as a generalized and organized conception, influencing behavior, of nature, of man's place in it, of man's relation to man, and of the desirable and nondesirable as they may relate to man-environment and interhuman relations (49, p. 411).

The concept value orientation includes those values which may be beliefs, from the point of view of a particular individual. (The part of one's beliefs which can be called knowledge is dealt separately, for those beliefs, called knowledge, are scientifically tested propositions about the universe.) Thus, concept 'value orientation' appears to be more adequate to be used for the research purpose than concept 'value'.

Shibutani points out that attitude reflects values. He states:

Each person is characterized by a distinct set of behavioral tendencies and much of the consistency in his inclination to act arises from the fact that he is oriented toward a unique set of values (79, p. 318).

When values are considered in terms of role playing, according to Parsons and Shils (73) the value system provides the

basis for need-dispositions of the individual role-player and components of role expectations in the social system. 'Need-disposition' is a concept combining what others may call needs and attitudes. Parsons and Shils define this term as:

Need-disposition, we have said, are tendencies to orient and act with respect to objects in certain manners and to expect certain consequences from these actions. The conjoined word need-disposition itself has a double connotation; on the one hand, it refers to a tendency to fulfill some requirement of the organism, a tendency to accomplish some end state; on the other hand, it refers to a disposition to do some thing with an object designed to accomplish this end state (73, pp. 114-115).

In short, both needs and attitudes arise in an individual based on and in concordance with a set of values he acquired. In the social system, the value system provides the standard for role expectations. What one role player expects from a complementary role player is based upon the value system.

Values are also relevant to one's choice of position. According to Newcomb and others (67), one seeks for the position where one's complementary role players will have similar values on a broader range of objects than those objects essential to his position.

In this thesis, the concern will be with value orientation toward the objects relevant to a particular role. 'Value orientations toward objects relevant to a particular role' refers to, based on Kluckhohn's definition, a generalized and organized conception of objects and relationships of objects, of man's relationships to them and of man's

relationships to other men, and of the desirable and undesirable of those relationships which are assumed to be relevant to a particular role.

Attitude

Attitude is an individual's tendency to act based upon his beliefs and values (11). Then, in role theory, attitudes are an individual's tendency or predispositions to conduct his role behavior based upon his knowledge and values relevant to a particular role. One acquires certain tendencies or predispositions to act through one's experiences as a participant in culture where one acquires beliefs and values.

Attitudes can be analyzed from different points of view and may be conceptualized as having different dimensions. Krech and others (52) point out that in role behavior, attitude toward oneself is crucial. Attitude toward oneself is influenced by self-evaluation, which are beliefs and values applied to oneself. Attitudes toward others, such as complementary role players, are also important.

Newcomb (66) divides attitudes in two parts, the behavioral part and the perceptual part. In the behavioral part, attitudes toward others is conceptualized as predispositions wanting to respond to them and be responded to by them in certain ways. The perceptual part is conceptualized as predispositions to perceive others in certain ways. Newcomb states:

No one has a completely different set of attitudes toward other people for each of his different role relationships. On the contrary, such attitudes are rather highly generalized. A person tends to classify and perceive other people in the same ways and to have similar attitudes toward them, in many different kinds of role relationships... After all, there is a common element in all role relationship - one's self (66, p. 457).

Cameron (15) has an objection to the idea of considering attitudes as determinant of role behavior. He considers attitudes as being an aspect of role behavior, for role is behavioral organization which operates under definable conditions and involves stable predictable attitudes. Even agreeing with him, considering attitudes as an aspect of role behavior, one can still hypothesize attitudes as being a determinant of the other aspect of role behavior, overt role behavior.

Bohlen and Beal (11) analyze attitudes in terms of four dimensions. They are: (1) direction - for or against, positive or negative, support or rejection of a given concept or stimulus; (2) degree - variation in direction, very favorable to very unfavorable variation, (3) intensity - degree of conviction with which an attitude is held, (4) salience - position of specific attitude within individual's constellation or structure of attitudes.

Types and dimensions of attitudes suggested by various writers may be summarized as follows:

Attitudes in Role Playing

<u>Types</u>	<u>Dimensions</u>			
	Direction	Degree	Intensity	Salience
Toward objects other than oneself				
Perceptual				
Behavioral				
Toward oneself				
Perceptual				
Behavioral				

Attitude toward oneself as a player of a particular role and attitudes toward others and objects relevant to the role are closely linked together. One may reveal the other, or vice versa. The 'hand-in-hand' (66) relationship between these two types of attitudes may be understood by reviewing some literatures where formulation of self-image is discussed.

James (45) points out that a man has as many social selves as there are individuals about whose opinion he cares and that the particular social self of a man is his image in the eyes of his own set, which exalts or condemns him as to confirm or not to certain requirements. In other words, his own set consists of complimentary role players who are referents or reference groups regardless whether they involve reciprocal immediate behavior with the individual in the immediate situation. One has an image of self for each role one plays rather than for each position he occupies, since

each position has a set of roles for one to play (62). Since attitude toward self is formulated through one's interaction, actual or vicarious, with significant others, and objects involved in playing a particular role, attitude toward self as a player of the role arises with attitudes toward others.

In this thesis, the concern with attitudes will be limited to (1) value-expressive attitudes (47) and (2) attitude toward a goal to which a particular role behavior is directed.

(1) value-expressive attitudes A dilemma arises when an investigator tries to differentiate between values and attitudes. Krech and others state:

... same value may lead different persons to develop different - even opposing - attitudes... The functional relation between a single value and the attitudes of the individual is influenced by all his other cognitions, values, and attitudes, by his wants, and by his group affiliations. Because of this we should not expect to find a single, univocal relation (52, p. 193).

After making efforts to differentiate attitudes and values, both Hobbs (40) and Warland (90) arrived at an arbitrary differentiation for the analysis purpose. Values are related to a general class of phenomena and attitudes are related to specific instances or subjects of this general class (40, 90). The more specific instances are, the harder it is to see the correspondence between attitudes and values. On the other hand, preferences placed on a general class of phenomena

will tend to express values placed on that class of phenomena. Such preferences will have the value-expressive function of attitudes. Katz states:

While many attitudes have the function of preventing the individual from revealing to himself and others his true nature, other attitudes do have the function of giving positive expression to his central values and to the type of person he conceives himself to be (47, p. 164).

In operationalization, statements of value-expressive attitudes will be integrated with statements of values and beliefs into value-orientations.

(2) attitude toward a goal (motivational orientation toward a goal) Specific attitudes toward specific instances of a general class of phenomena may be rooted from the values placed on the general class of phenomena. However, preference ("desiredness") of a specific instance does not necessarily mean "desirableness" of all the members of that class, or vice versa. Then it is meaningful to deal with attitude toward a specific instance, here a certain goal, separately from value orientations toward a general class of phenomena.

Attitude toward a certain goal is defined as state of readiness to be motivated to act toward a certain goal (66). It will be labeled as motivational orientation toward a certain goal, and will be discussed in relation to its related concepts, motives and motivation.

For Weber as quoted by Shibutani (79, p. 182), motives refers to what appears to the actor himself and to an observer as adequate grounds for the conduct in question. That is, motive is the reason why one is acting in a certain way as comprehended by the actor himself and the observer. Shibutani (79) defines motive as consciously avowed objectives which provide direction, unity and organization to a succession of movements. For Weber and Shibutani, motive is not what instigates behavior but what makes behavior intelligible and directional. According to Biddle and Thomas (6), motive refers to covert tendencies to engage in behavior. This is labeled as motivational orientation or attitude by others. Newcomb (66) uses motive, like Shibutani, in referring to objectives or personal goals, in contrast to shared goals.

Referring to role theory, Newcomb (66) points out that one counts on motive satisfaction in role playing, for in role playing players operate with more or less shared frame of reference, consequently they can anticipate others' response to some degree. Thus, one may choose a role according to one's estimation of the possibility of obtaining satisfaction and conduct role behavior accordingly to ensure satisfaction. Different individuals may have different combinations of motives even though they play the same role.

It appears that some concensus prevails in the use of 'motive' as the term referring personal objectives or goals

to be achieved. At the same time the term 'motive' implies the reason why one is doing what he is doing.

Motives may vary from individual to individual even for the same overt behavior. In order to make any prediction from motives to behavior, an investigator needs to know the motives of each individual. Such motives may be unique to one individual, even the individuals overt behavior may appear similar to others overt behavior. A further difficulty is the question whether the individual himself is always aware of his motives.

Referring to the social system framework, Krech and others (52) point out that role players have to have motivation to perform the role. Motives, as discussed above, are personal objectives or goals to be attained, and motivation is the intention to act. Intention to perform the role (motivation) stems out of the personal goals or objectives that playing the role will provide him the opportunity to satisfy motives (66). In order to play a role, motivation is necessary regardless of what the personal motives are.

In research, the concept 'motivation' also poses some difficulty, since motivation is considered to correspond to a bodily state or condition (66) which is of temporal nature. Thus, in this study, the concept of motivational orientation is used to account for motivation. Motivational orientation is defined as state of readiness to be motivated to act

toward a certain goal. Under this definition, motivational orientation is taken as attitude toward a certain goal, which is a relatively persistent preference toward a goal (66).

The concern here is role behavior in a certain social system rather than various behaviors of a specific individual. A certain goal toward which motivational orientation is directed is the goal (or one of the goals) to be attained by the social system, part of role expectations of a particular role-player.

Parsons and Shils state:

Motivational orientation within the personality system might vary among different individuals who conform equally with the same set of expectations. But in the analysis of the social system, particularly in its descriptive analysis, we need be concerned only with the motivational orientation toward the specific set of role-expectations and toward the role itself and may tentatively disregard the "rootedness" and repercussions of this orientation in the rest of the personality system of the actors involved (73, p. 196).

Shibutani is also concerned with motivational orientation toward a professed goal:

... the fact remains that many persistent efforts are directed toward announced objectives, and this should not be ignored in the construction of a theory of motivation. There are shared assumptions in each culture concerning the reasons for various categories of activity, and once a person locates what he is about to do within such a framework, his sensitivities and selections are circumscribed by group expectations (79, p. 184).

The significance of studying motivational orientation is pointed out by Newcomb as follows:

Whatever the states of drive originally connected with a person's motivated behavior toward a goal, if he is not predisposed to direct his behavior toward it, that fact in itself is of the utmost significance. In any case, the drive states now connected with the goal are not identical with those originally connected with it. And so whatever the states of drive, past or present, involved in behavior directed toward a goal, we can for most social-psychological purposes deal with attitude in its own right. Once this point has been made, we are free to consider motivated behavior in its long-run aspects - that is, in terms of persistent attitudes (66, p. 146).

Sentiment

Sentiment is the feeling one has toward an object. When it is applied to role playing, it will be regarded as feelings toward one's position and role to be played. One way to study sentiment in role playing is to approach it through role satisfaction.

When one obtains satisfaction in role playing, it is assumed that he becomes more and more attached to the position he occupies and the role he plays. Thus, role satisfaction is taken as an indicator of sentiment toward the role one plays.

Job satisfaction is discussed in relation to occupational role by Krech and others (52). According to them, what is usually called job satisfaction has four bases: (1) satisfaction with the material rewards of the job; (2) satisfaction

with the work, (3) satisfaction with the company as an organization and (4) satisfaction with other individuals one is working with.

Krech and others (52) also point out that an individual tends to select an occupation which he believes will meet his requirements and whose requirements he believes that he can meet. Meeting one's own requirements in playing a role is a basis for obtaining satisfaction. Hartley and Hartley (35) suggest that satisfaction offered by available roles have a profound impact on the comfort and effectiveness of the individual. If it has an impact on effectiveness, it would have effects on one's role behavior.

Role satisfaction, which will be considered as an indicator of sentiment, refers to emotional gratification one obtains in playing a particular role.

Role expectation

In role theory, norm is often expressed as role prescription or role expectation. In this thesis, role expectation is dealt with in relation to individual role behavior. Adequacy of role behavior is to be evaluated in reference to role expectations.

Homans (43) points out that norm refers to an idea in the minds of the members of a group, an idea that can be put

in the form of a statement specifying what the members or other men should do rather than what is vaguely defined as a behavior expected under certain circumstances in the group.

Sarbin (78) points out that a person cannot enact a role for which he lacks knowledge of role expectations, which one must acquire through experience. How then does role expectation come about? According to Shibutani (79), each position that continues to be recognized by the members of a group contribute in some way to the purposes of the group; the contribution represents its function. Common beliefs concerning its functions represents part of the group's system of norms.

How does one come to know the "common belief", then?

Simplifying the complex situation of learning Sarbin states:

The organizing of the individual actions is a product of the perceptual and cognitive behavior of person A upon observing person B. B performs one or a number of discrete acts which A observes and organizes into a concept of a role. On the basis of the conceptualization of the actions of B, A expects certain further action from B. This expectation is covert, and is the equivalent of saying "locate or name the position of the other." Once having located or named the position of the other, A performs certain acts which have been learned as belonging to the reciprocal position; then actions are conceptualized as A's role ... B could be a role player whose actions are not involved in the reciprocal immediate behavior with A (78, p. 225).

In addition to these points described by Sarbin, Gullahon and Gullahon (34) suggest additional points regarding the process of acquiring role expectations. Before entering the

position, ego is engaged in role definition. As one becomes an incumbent, he must achieve some conclusion regarding the total configuration of expectations defining the specific position. To do this Ego indulges in what Mead (60) calls taking the role of others, then adopts the perspective of the significant alters. The role is defined as the union Ego achieves between his own definition and role expectation of the alters as perceived by the Ego (34). This point enforces the statement made by Newcomb and others (67) on the influence of past experience in acquiring role expectations. Definition or role before entering the position has a great deal to do with one's past experience, and this also creates the variation in ideas of role expectations among different individuals who may take the identical position.

Some authors propose types of role expectations, Linton (56) and Sarbin (78) emphasize "rights and duties". Rights are, according to Sarbin, 'role expectations in which the actor of the role anticipates certain performance from the actor of the reciprocal role' (78, p. 225). Duties are 'role expectations in which the actor of a role anticipates certain performances directed toward the actor of the reciprocal role' (78, p. 225).

For Parsons and Shils (73), the important dichotomy is "qualities and performances". The "positive vs. negative" dichotomy is discussed by Newcomb (66) and Biddle and Thomas

(6). Biddle and Thomas also include a covert and overt dichotomy; covert expectation is labeled as norms and overt expectations as demands. However, this dichotomy is more likely to represent the two extremes of a continuum depending upon each player's individual observation. It is associated with what Sarbin (78) calls intentional instructions (orally or with written forms) vs. incidental, or informal learning in acquiring role expectations.

The above listed dichotomies, (except that overt-covert may be a continuum rather than a dichotomy), are not in conflict among themselves. The summary is presented in the following:

Types of Role Expectations

	Qualities				Performances			
	Positive		Negative		Positive		Negative	
	Overt	Covert	Overt	Covert	Overt	Covert	Overt	Covert
Rights								
Duties					X ¹			

¹The type of role expectation in the cell with X mark is to be of major concern in this thesis.

The state of role expectations itself has a great deal to do with how an individual acquires the role expectations and how the individual behaves accordingly. Newcomb (66) points out that inadequate role expectations make a role player unsure about his role behavior or leave him with

conceivable latitude for more spontaneous individual expression. Cottrell (21) delineates factors involving individual adjustment to sex-age role. These items may be taken as factors relative to how close one can meet role expectations in one's role behavior. They are as follows:

- (1) explicitness of definitions,
- (2) consistency in the response and expectations exhibited to the individual by the members,
- (3) compatibility with other roles,
- (4) discrepancy between the abilities of the individual and those required,
- (5) realization of the goals set by the group,
- (6) degree of contact with other players,
- (7) immediate circumstances.

Gross and others (33) suggest segmentation of role expectations, which will be of use when the actual study of role expectations takes place. According to Gross and others, role segmentation refers to the classification of a group or set of expectations that individuals may hold for an incumbent of a specific position. Role sector refers to the unit of role segmentation; a set of expectations applied to the relationship of a focal position to a single counter position.

Another approach to role expectations is from the outsider's point of view, what Newcomb (66) calls the objective function. The objective function of a role is role expectations

of an incumbent of a position as perceived by a third part who is knowledgeable about the position and the counter positions such as a sociologist. The objective function depends upon some shared assumption on the part of group members concerning contribution made by the incumbent of the position.

In this thesis, the objective function of a particular set of role expectations defined by a knowledgeable will be used to evaluate adequacy of role performances.

Present goal

Role behavior is behavior an individual exhibits in the context of role relationships with others. It may be a cooperative behavior, which is the type of role behavior mainly concerned in this thesis. A cooperative role relationship presupposes shared goals and the essence of it is mutually facilitated behavior induced by the recognition of a common goal (67). The goal mentioned above is a mutually recognized and shared goal rather than a personal one. A personal goal may coexist or be in conflict with the shared goal. In this thesis, the goal is assumed to be organizationally given and shared at a given time by role players in the organization.

An organizational goal will be taken into consideration as the phenomena toward which motivational orientation is

directed, and as the standard of achievement against which role behavior will be evaluated, since a shared goal is part of role expectations.

Even though the individual's performances will be evaluated in regard to an organizational goal, selection of means to attain such a goal may be left to each individual. Selection of means to a goal will involve the issue of rationality in human behavior, and there may be a unique set of rational means to each goal. Therefore, an assumption on the goal has to be made first, before rationality of means used to reach the assumed goal can be discussed. Discussion on rationality will be presented later in relation to the particular role chosen for this thesis, managerial role in a farmer cooperative, along with the assumption of the goal.

Facilities

Parsons and Shils define the term 'facilities' as follows:

... those features of the situation, outside of the actual actions entailed in the performance of role itself, which are instrumentally important to the actor in the fulfillment of the expectations concerning his role.

... objects of orientation which are actually or potentially of instrumental significance in the fulfillment of role-expectations (73, p. 199).

Facilities become a part of one's conception of reality only when their existences are perceived in a certain way by the individual. In this sense, facilities are the relevant

objects in situations which are perceived through individual personality determinants. Any facility will be an importance in one's role behavior as long as it is perceived to be existent and relevant by the individual. Complementary role players, social objects, equipment used in role playing, non-social objects, rewards and punishments and interpersonal communication systems are all considered to be facilities.

Knowledge of facilities is important in one's role behavior. However, availability of facilities in the real world is usually limited. What is usually left to the individual is whether he perceives the existence of certain facilities which are given by the system and how he evaluates these facilities.

Relevance of sanctions to one's role behavior is different from relevance of other facilities to one's role behavior because sanctions are associated with the result of one's role behavior while other facilities are instrumental. The instrumental facilities are used not after the completion of behavior, but during the process of behavior. Gullahorn and Gullahorn discuss sanctions as follows:

... That is, Alter's positive sanctions reinforce certain aspects of Ego's role behavior, whereas his negative sanctions tend to modify other role responses. Alter's reactions thus provide feedback enabling Ego to redefine his role and to assess what Homan would term the balance of rewards and investments resulting from continued status incumbency. Such information also influences Ego's commitment to adequate role performance (34, p. 36).

In other words, sanctions are feedbacks of Ego's behavior and they enable Ego to redefine his role.

Facilities are considered to be part of the situation and will not be included in the models used in this thesis which will include only determinants of the definition of situation.

Swanson (84) points out the needs of developing primitive concepts to describe the very situation at the time when a particular action took place. In other words, the lack of a set of concepts to describe how the actual situation was defined is an unsolved problem in the social science. Recognizing this, no attempt will be made in this thesis to solve this problem.

In summary, concepts to be included in the causal models will be as follows:

Role behavior -- behavior an individual exhibits in the context of role relationships with others.

Past experience -- direct involvement of an individual as a player of a particular role in the past.

Past formal educational training -- formal educational training one received in educational institutions in the past. Its amount is also assumed to be an indirect indicator of innate intelligence which is defined as ability to engage in abstract reasoning.

Knowledge -- scientific explanations of relationships between phenomena which are assumed to be relevant to playing a particular role.

Value orientation -- a generalized and organized conception of objects and relationships of objects, of man's relationships to them and of man's relationships to other men, and of the desirable and undesirable of these relationships which are assumed to be relevant to a particular role.

Motivational orientation -- a state of readiness to be motivated to act in order to attain a goal.

Role satisfaction -- gratification an individual obtains from being an incumbent of a position in a group, playing the role assigned to the position, rewards given for his playing the role and the others with whom he holds role relationships.

Causal Models

Introduction

Models will be constructed to present causal relationships. The current notion of causation will be discussed in the chapter on methodology. First, relationships between determinants and their relationships to role behavior will be discussed. Secondly, models will be constructed in such a way that they can be applied to role behavior in general;

later they will be modified so they may be specifically applied to managers of retail farm supply business, farmer cooperative in this thesis.

The models to be constructed are limited in terms of the following conditions:

- (1) One-way causation is assumed as far as the associations of variables in the models are concerned; every association in the models is assumed to be asymmetric. The exception is the relationship between the ultimate independent variables in a model. The ultimate independent variables in a model are not dependent upon other variables in the same model and they may be correlated with each other through totality of unknown variables which are not included in the model (98).
- (2) The models are assumed to be closed, including random errors in the models besides selected variables; variables which are not included are assumed to be uncorrelated residual factors.
- (3) Relationships are assumed to be linear and additive; typological dependency is not included in the model.
- (4) States of variables except past experiences are assumed to be those at time T ; states of variables

after role behavior at time T are not accounted so that the problem of feedback will not be considered in the models.

Argument may arise as to the significance of conducting such a restricted exploration. Interdependency and feedback are just as subject to assumptions as a one-way effect; and as far as empirical "demonstratability" of interdependency and feedback is concerned, it is not possible yet to demonstrate that "A's change affects B, and/or B's change affects A" (interdependency) and "A's change affects B, consequently B's change affects A" (feedback) just as much as "A's change affects B" (asymmetric). However, it is my conviction that this should not prevent the social scientists from exploring interdependency, feedback or causation on the theoretical level.

On the assumption of one-way effect, one can argue that interdependency is also conceivable. Fendrich states that:

Even though the variables are interdependent, this does not mean that the dominant flow of effects cannot be estimated. One variable may start the process and have stronger effects on the other variables (29, p. 968).

At the present stage of development in social science, the notion of causation appears to be best discussed entirely on the theoretical level, as Blalock points out (7). However, the statistical tools now available provide a researcher with legitimacy to explore the causal relationships in terms of

goodness of fit of the empirical data to models of causal relationships, even though he may not claim or establish "correctness" of his models with empirical data.

Caution should be taken as to generality of the models which are postulated in this thesis. Generality of any model cannot be claimed until sufficient replications of testing are conducted on various cases of role behavior. There are major factors which may not permit any one model to be claimed as the adequate model for role behavior in general. The first factor is uniqueness of a particular role chosen to test the models. One model may be more adequate than the others as far as a particular role is concerned.

The second factor may be types of role players. If typologies of role players can be developed, then alternative models can be more carefully inspected in terms of direction of the relationships of variables in the models and alternative arrangements of variables in the models. Thus, tests of models performed on a group of individuals confounded, for example in terms of value orientation, will serve to reject generality of a model if a negative result is obtained. It is recognized that if the individuals are classified into types, a model, which might be rejected for generality, may show adequacy as far as a particular type of individuals is concerned.

Models constructed in this thesis will be applied to the data obtained from a group of individuals who might be classified into some types. Regardless what conclusions may be drawn from the data analysis, they are subject to further clarification upon application of models to different types of roles and to individuals who may be classified upon the development of typologies of some of personal traits.

Concepts used in the models will be first discussed in relation to their causal relationships with other concepts in the model. Then postulated causal relationships will be integrated into causal models.

Value orientation (VO)¹

Value orientations consist of beliefs, values and value-expressive attitudes, and are organized as a generalized conception of the universe and of the desirable and undesirable placed on relationships between man and objects in environments and between men.

(1) past experience (PE) —————> value orientation (VO)

Association between past experiences and value orientations may be thought of as more of 'patterning' of one's value system than quantitative changes. Through past experiences, one adopts a certain system of values. The value

¹The abbreviated notations will be used for concepts in the models.

system is influenced by the unique life history of the individual (52). Yet, it is hard to deny the possibility that values placed on certain objects or relationships between objects will change as one experiences with the objects and gains more familiarity through experiences with them.

(2) past educational training (PT) \longrightarrow value orientation (VO)

The relationship between past formal educational training and value orientation may be suggested based on Kluckhohn's (49) definition of value orientation. Value orientation according to Kluckhohn includes an organized conception of nature, man's place in it and of man's relation to man. Existential elements in value orientation along with normative elements are affected by what and how much an individual learns about the universe in educational institutions. The amount of training an individual receives in educational institutions will be expected to have some effect on one's conception of the universe and "desirableness" he will place on objects and relationships of objects.

(3) knowledge (K) \longrightarrow value orientation (VO) or (VO \longrightarrow K)

It is difficult to separate values and beliefs in an individual, since "what should be" can become "what is" or vice versa to the individual (49). Within one's beliefs, some of them may be knowledge. This suggests that any change

in knowledge may affect values, and the reverse may also be conceivable. If an individual increase knowledges about an object, he may either increase or decrease the value he places on the object. On the other hand if his value (desirableness) placed on an object increases, he may become more interested in obtaining further information on the object.

It is to be noted that two-way arrows may be used in the causal models subjected to path analyses. However, Wright (98), the originator of path analysis, does not suggest the use of two-way arrow in such a case as between value and knowledge. According to Wright, the arrows in a causal scheme will be used as follows:

1. $X \leftarrow A$ (causation)

2. $X \leftarrow A$ (correlation through a known common cause)
 $y \leftarrow$

3. $X \leftarrow$ (correlation through totality of unknown causes) (98, p. 249)
 $y \leftarrow$

4.¹ $X \leftarrow$ (a relation of causation complicated through unknown common causes)
 $y \leftarrow$

As shown above, \leftarrow does not strictly mean interdependence, which is assumed to be the case between value and knowledge. According to Wright's notation, \leftarrow is used to indicate

¹The fourth type is not included in any path diagram due to the definition. \leftarrow is used in the path diagram only between variables which do not depend upon any other variable within the same diagram.

unexplored correlation. Thus, for the case of interdependence, it is considered to be more appropriate to have two alternative models in order to maintain consistency of notations between theoretical models and path diagrams which are models subject to path analyses. Thus, one model includes knowledge (K) \longrightarrow value orientation (VO), and an alternative model includes value orientation (VO) \longrightarrow knowledge (K). The reason for having alternative models is to determine which model shows a better fit with the data. "Alternative" in the entire thesis means "either case is possible". Adequacy of one does not reject adequacy of another. Its meaning is different from the same term used in hypothesis testing; the issue in model testing is which fits better rather than which will be rejected.

Knowledge

Knowledge is defined as a set of scientific explanations of relationships between phenomena in the universe (11).

(1) past experience (PE) \longrightarrow knowledge (K)

As one experiences some objects, he may have more opportunities to gain knowledge about them. When it is said that one gains familiarity with objects through experiences, it refers to, at least to some extent, getting to know the nature of the objects and relationships of the objects. If the nature of objects and relationships of the objects are

scientifically validated, they become knowledge. It is postulated that if one has more experiences with objects, one is likely to increase knowledge about the objects. The objects of concern are those relevant to a particular role.

(2) past formal educational training (PT) \longrightarrow knowledge
(K)

Past formal educational training bears its importance to knowledge in two closely related aspects; (1) acquiring basic knowledge and (2) acquiring symbolic skill.

Through formal education an individual acquires a great deal of knowledge, especially general knowledge. Accumulation of general knowledge will prepare an individual for acquiring more specific knowledge of objects relevant to a particular role. His comprehension of specific knowledge is often dependent on his general knowledge of the class of objects.

Formal education also provides training for individuals to acquire symbolic skills. In this thesis, amount of formal education is assumed to account for innate intelligence (93). Intelligence is the ability to engage in abstract reasoning (86). Acquiring knowledge is a process of abstract reasoning.

With the assumption that the amount of formal educational training accounts for the amount of general knowledge and

intelligence, it is postulated that the amount of formal education one has affects the amount of specific knowledge one acquires for a particular role.

Motivational orientation (MO)

Motivational orientation is defined as state of readiness or tendency to be motivated to act in order to attain a goal. It is an attitude toward a goal with an emphasis on motivational component of attitude (52, 66).

(1) past experience (PE) —→ motivational orientation
(MO)

Attitude is residue of past experiences (78). Tittle and Hill (87) found that the degree of correspondence between attitude and behavior was high when the criterion behavior was patterned. Patterning of behavior takes place during the process of experiencing the behavior over certain length of time with repetition. Patterning of behavior is past experience with a role. It is postulated that past experience affects motivational orientation, i.e. attitude of motivational characters, and the latter affects role behavior.

(2) past educational training (PT) —→ motivational
orientation (MO)

Formal educational training has been said to train individuals in the use of symbols besides providing with general knowledge. In role behavior where manipulation of symbols, or thinking, plays a very important part, the amount

of past formal educational training will affect an individual as to his readiness to engage in symbolic manipulation. It is postulated that amount of formal educational training affects one's motivational orientation in engaging in mental activities which are essential for a particular role.

(3) knowledge (K)——→motivational orientation (MO)

(4) value orientation (VO)——→motivational orientation
(MO)

Motivational orientation, as an attitude, is based on one's beliefs and values (11). Part of one's beliefs may be knowledges if they are scientifically validated propositions. Value orientation of concern will be those toward general classes of phenomena to which the goal object and means may belong to as specific instances of those classes. Knowledge of concern in this thesis will be knowledge of objects and relationships of objects which will facilitate an individual in playing a particular role in order to attain a goal.

Knowledge, in relation to motivational orientation, may make the individual feel more confident about playing the role. Knowledge of alternative means to attain a goal and knowledge of the goal may make an individual feel more favorable and ready to act toward the goal.

Shibutani (79) suggests that inclination to act arises due to the fact that one is oriented toward a unique set

of values. Values canalize motivational orientation (49), and become standards to motivational orientation (73).

Kluckhohn states:

Values and motivation are linked, but only rarely do they coincide completely. Values are only an element in motivation because a standard is not a value unless internalized... Where there is commitment to a values- and there is no value without some commitment - its actualization is in some sense and to some degree "wanted", ... (49, p. 400).

Given a specific instance of a class of objects as a goal, one may be more inclined to become motivated to attain the goal if one is better acquainted with the nature of the objects and its relationships with other objects and if one evaluates highly the class of the objects.

It is postulated that change in one's knowledge of means and a goal will affect one's motivational orientation toward attainment of the goal. It is also postulated that change in one's value orientation toward general classes of objects where means and the goal are specific instances will affect motivational orientation.

(4) role satisfaction (RS) \longrightarrow motivational orientation
(MO) or (MO \longrightarrow RS)

Parsons and Shils point out the relationship between motivation and cathectic attachment as follows:

Motivation (or motives) ... may be conceived as denoting certain more or less innate systems of orientations involving cognition of and cathectic attachment to certain means and goal objects... (73, p. 111).

Being a relatively persistent state of readiness to be motivated, motivational orientation involves "cognition of and cathectic attachment to certain means and goal objects". Attachment to certain means and goal objects may be extended to attachment to a role which involves those means and goals. Then, motivational orientation is postulated to involve cathectic attachment to a role, i.e. role satisfaction. "Involvement" here can be interpreted as, that change in one affects the other and vice versa.

A more direct suggestion to the issue is found in Krech and others (52), based on their review of studies on workers' satisfaction in organization.

There are some indication that the degree to which work provides for the satisfaction determines the acceptance of the organizational goal (52, p. 400).

Motivational orientation toward an organizational goal will develop a certain degree of acceptance of the goal on the part of the player of a role. How much a worker accepts the organizational goal(s) will influence how much he will be ready to act in order to achieve the goal. Then, if an individual perceives the role as satisfying, this enforces the motivational orientation toward an organizational goal through accepting the goal.

Role satisfaction

Role satisfaction is defined as gratification one obtains from playing a particular role. The sources of gratification

are (1) the role itself, (2) membership of a group, (3) other role players of the group and (4) reward given for his playing a role.

(1) past experience (PE) \longrightarrow role satisfaction (RS)

Familiarity with a role, gained by the increasing amount of past experience with it, may provide a more sound basis for an individual's satisfaction obtained in role playing. It is recognized that an individual who stays longer in a position does not necessarily increase role satisfaction, nor does it imply that he is highly satisfied with it. He may be holding a position, because he has no other alternatives or because it is a comparatively better one though not a satisfactory one. On the other hand, there may be a type of individuals who keep occupying the same positions, because they have been satisfied with their positions and their roles. It is recognized that both types of individuals may be confounded in the sample. However, so far as the choice of occupation is voluntary and an individual is free to change his job if he wishes to do so, it may be postulated that amount of past experience with a particular role has an effect on satisfaction one obtains from the role he plays.

(2) value orientation (VO) \longrightarrow role satisfaction (RB)

Individuals try to avoid any value conflict prior to occupying a position in a group (35, 52). Once he begins

to play the role, evaluation of self as a particular role player becomes important for an individual to obtain gratification from his role (66).

Newcomb states:

When a person has a favorable attitude toward his own membership in a group, he is predisposed to find motive satisfactions in belonging to it. There are many kinds of such satisfactions, but three are of particular importance. First, there is the satisfaction of doing attractive or necessary things that one can do only as a group member - such as playing quartet music, or conversing about special hobbies or interests or getting help in warding off some danger. Secondly, being with people whom one knows and likes is a distinct source of satisfaction... And thirdly, one probably finds some gratification in being recognized by outsiders as being a member of one group or another (66, p. 631).

An individual sees his role and his membership of a group in reference to his value system and develops a certain attitude toward that part of self as a player of a particular role. Theoretically, self evaluation is "hand-in-hand" (66) with values and attitudes toward others and environments, since one acquires self evaluation and attitude toward himself through interacting with others. Satisfaction from role itself and membership is found not solely through himself as a player of the role but through his experiences with role tasks and with other members. Therefore evaluation will be extended not just to himself as a player but to other players of the group and role tasks. If one values his role highly and is recognized by others favorably as a

player of a particular role, he is more likely to obtain satisfaction from the role he plays. It is postulated that value orientation toward objects relevant to a particular role affects one's role satisfaction.

Role behavior (RB)

Role behavior is defined as behavior one exhibits in the context of role relationships with other role players. Overt, motoric or verbal, actions will be the central concern.

(1) past experience (PE) \longrightarrow role behavior (RB)

Past experience will have indirect effects on role behavior through its effects on knowledge, value orientation, motivational orientation and role satisfaction. The direct effect of past experience is to "sensitize" an individual to stimuli, and provide him with response patterns (25, 52, 61). Through past experiences, an individual constructs an image of the universe and becomes tuned to familiar stimuli. The cognition of the situational factors depends upon one's past experiences with similar situations. So far as definition of the situation is necessary before actual action, familiarity with similar or same stimuli gained through past experience in playing the same role is postulated to affect one's role behavior. The amount of past experience is taken as an indicator of such familiarity.

(2) past formal educational training (PT) —→ role
behavior (RB)

Formal educational training is assumed to account for innate intelligence which is defined as ability to engage in abstract reasoning (86). If particular role behavior involves abstract reasoning, past educational training may be postulated to have a direct effect on one's role behavior as well as indirect effects through other personality variables.

Defining the situation involves cognition of situational factors. Cognition is affected by intelligence in terms of the accuracy and amount one can cognize (52). Thus, the amount of formal educational training may influence one's definition of the situation and consequently role behavior.

(3) value orientation (VO) —→ role behavior (RB)

Value orientation not only sets standards to one's predisposition to act, it becomes a guideline during the process of action. One acquires values through interaction (73), and values are built into the structure of personality as value orientation. Values one places on self as a player, on other players (66) and on other relevant objects to the role will guide the individual to select the course of his action to preserve or enhance his value orientation. It is postulated that value orientation affects one's behavior both directly and indirectly via some other variables. Some other

variables included in the models are motivational orientation, knowledge, and role satisfaction through which value orientation indirectly affects role behavior.

(4) knowledge (K)————→role behavior (RB)

Newcomb and others (67) suggest the importance of 'resource input' in interaction. 'Resource input' refers to technical knowledge and skills. Some knowledge becomes values to an individual and gives guidance to one's behavior as "desirable". Some knowledge may directly affect behavior as means to a selected goal, and facilitate an individual to carry behavior in order to attain a goal. It is postulated that amount of knowledge relevant to a particular role affects one's role behavior.

(5) motivational orientation (MO)————→role behavior (RB)

Krech and others (52) suggest that the effectiveness of a group in attaining a goal is determined by the degree to which the members of the group is motivated to work for it. Achievement of a goal depends on adequacy of individual role players' behavior toward a group goal. Krech and others quoted a study by Fourierzos, Hutt and Guetzkow where measures of productivity showed significant inverse relations with amount of self-oriented behavior (52, p. 478). Self-oriented behavior was defined as that behavior directed primarily toward satisfaction of personal needs regardless of the effect on attainment of the group goal.

For an individual role player, role behavior is his way to satisfy his personal motives (66). If the complementary role expectations give the basis to ensure the possibility to satisfy each individual player's motives, whatever they may be, each player of a role will be predisposed to play the role as adequately as possible according to the expectations. It is postulated that motivational orientation toward an organizational goal will affect adequacy of role behavior to attain the goal. Attainment of the goal is a major role expectation.

(6) role satisfaction (RS) —→ role behavior (RB)

In the same study quoted above, Krech and others found that self-oriented behavior correlated negatively with measures of member satisfaction.

Hartley and Hartley (35) point out that satisfaction offered by available roles as well as demands of social role prescriptions have a profound impact on the comfort and effectiveness of the individual in role playing. Effectiveness of the individual in role playing will determine adequacy of role behavior to attain a goal.

It was pointed out earlier that part of one's role satisfaction is based on the tasks one performs. Newcomb (66) also suggests that taking a role may be, at first, only a means of obtaining satisfaction of one's motives but that means often becomes ends; taking the role becomes itself a

source of satisfaction. Then, the more an individual is satisfied in his role, he is more likely to engage in adequate role behavior. It is recognized that the reverse can be also stated, but in the present scheme, role behavior is the dependent variable of concern. Thus, it is postulated that the role satisfaction affects adequacy of one's role behavior.

In the framework of this thesis, the following relationships are postulated to be indirect. Role satisfaction (RS) is indirectly affected by past formal educational training (PT) and by knowledge (K) through value orientation (VO), and motivational orientation (MO). No direct causal relationships were postulated between role satisfaction and formal educational training and between role satisfaction and knowledge. It is also postulated that the amount of past experience with a role (PE) and the amount of past formal educational training (PT) are not related to each other.

Integrating the postulated causal relationships, the following alternative models can be constructed (Figure 1).

Role Behavior of a Manager in Farmer Cooperatives

After discussing role behavior in general and constructing general models of role behavior, the discussion will now focus on a particular role behavior of concern in this thesis. That is role behavior of a manager in a farmer cooperative.

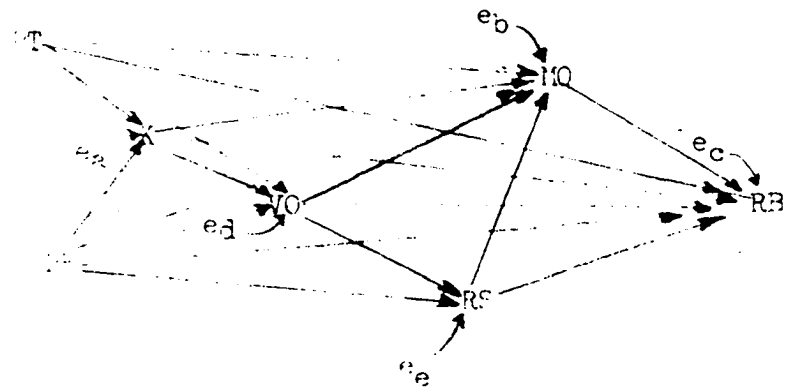


Diagram 1 (model 1)

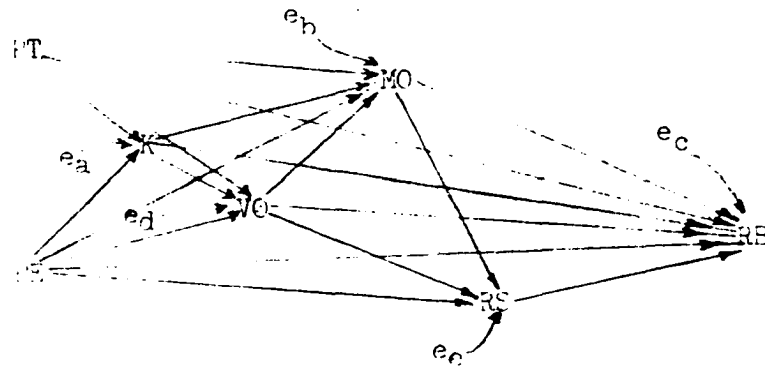


Diagram 2 (model 2)

Figure 1. Models for RB

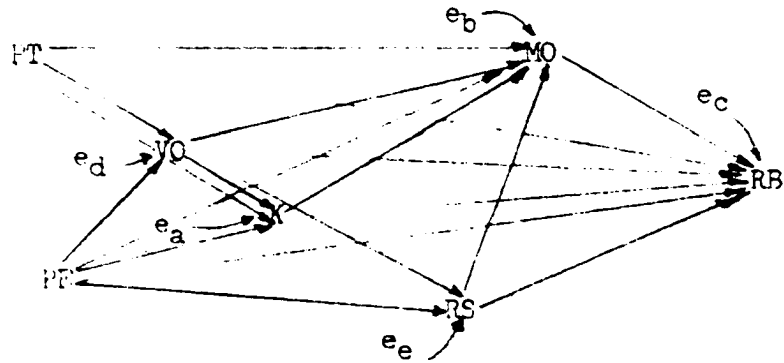


Diagram 3 (model 3)

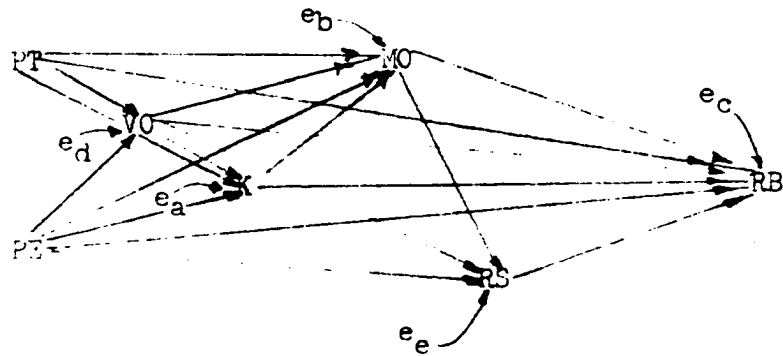


Diagram 4 (model 4)

Figure 1 (continued)

operational models for the role will be developed based on the following discussion on the managerial role in the farmer cooperatives and making appropriate modifications, if necessary, on the general models so that they can be applied to the particular role behavior of concern.

Farmer cooperatives

As far as the primary interest of this thesis is concerned, the manager's role behavior is taken as but one example out of many types of role behavior in the society. Yet, some knowledge of farmer cooperatives will certainly be of necessity in order to pursue the type of inquiry intended in this thesis. The farmer cooperatives concerned in this thesis are those for farm supplies in Iowa. Managers used in the sample are limited to single managers in each cooperative.

The primary function of the local farm supply businesses can be considered as that of retailing to farmers and providing them with various related services. Farmers and local farm supply businesses depend on each other. Farmer cooperatives are one of several types of businesses found in rural America.

Phillips (74) defines cooperatives as a type of business organization owned and controlled by those who are its patrons.

Nourse (69) delineates three parties from whose respective view points economic activities are organized in a so-called free enterprise economy such as found in the United States in contrast to a socialistic economy. Each of the three parties tries to maximize his own economic reward. The three parties can be labeled as the capitalists (stock owners), the employees and the patrons (contributors of materials or users of outputs). In the case of farmer cooperatives, all "the capitalists" are also the patrons.

Individual farmers may join together and form a group to achieve efficiencies of scale for selling products or for buying supplies. One way to achieve these is to form a farmer cooperative. Members of the group share: (1) the costs needed for the activities of selling or buying, (2) the ultimate decisions regarding the activities, (3) risks involved and (4) the benefits. By joining other farmers, the individual farmer can achieve a large scale for selling and buying without changing the scale of his own farming operation (74).

Farmer cooperatives may be distinguished from non-cooperative cooperation in three aspects (74). First, ownership of cooperatives belongs to patrons, not the capitalists as such. Second, the purpose of organizing a farmer cooperative is for an individual patron to achieve his economic goal of maximizing return to his own firm, farming operation,

rather than to the cooperative itself as a whole. The average net revenue per patron is more important than the total net revenue of the cooperative (74). Third, following from the second aspect, benefits of the patrons should be emphasized, not those of its members as capital contributors. Patrons are entrepreneurs of individual firms of which the cooperative may be considered as a part. The cooperative gives its member farmers control over more resources, and consequently should increase their net firm income. In summary, the farmer cooperative is a multi-firm plan (74) which is a type of formal business organization.

After a rather extensive review of literature on organization, Warren (91) points out that most authors define an organization as a system, and that a formal organization as a system is structured and organized to achieve specific goal(s). Then, it can be stated that a farmer cooperative is a business organization, a formal organization, and a system which is structured and organized to achieve maximization of the economic returns to each of its individual association firms. The individual's role behavior of central concern in this study is that of an incumbent located in a formal organization for business, a social system. The next question is what relation the above bears on the problem of explaining role behavior.

As stated earlier, a system itself is not a subject of analysis in this thesis. This thesis is concerned with individual role behavior in a certain social system, an organization for business, specifically a farmer cooperative. Loomis' definition of social system indicates what should be known about the social system in relation to the problem dealt with in this thesis.

The social system is composed of the patterned interaction of members. It is constituted of the interaction of a plurality of individual actors whose relations to each other are mutually oriented through the definition and mediation of a pattern of structured and shared symbols and expectations (57, p. 4).

What orients individual members in the system is crucial in explaining the individual's behavior in the context of being an incumbent of a position in a social system. Role expectations are provided by the social system where one is located, while other determinants of role behavior may be acquired through occupying various positions and playing various roles in one's life.

A discussion on role expectations in farmer cooperatives will be presented later with a discussion of managerial role behavior.

Thus far the discussion on role behavior and its determinants was limited to role behavior in general. Before applying these concepts to managers in farmer cooperatives, the goal of managerial behavior will be discussed.

Human behavior is assumed to be goal-oriented. Goal-oriented behavior refers to behavior which is consciously motivated toward attainment of some state of affairs. An individual has a variety of needs to be satisfied (58), and these needs may be considered as formulated into goals for his behavior. The concern here will be limited to an organizationally expected goal of managerial behavior. Such a goal might be only a means to attain some other personal goals.

Hobbs (40) employed Weber's ideal type approach using a rational model of man in studying behavior of managers of farm firms. The basic postulate in the use of a rational model of man is that if a man is rational, he is more likely to attain his goals. In this thesis, the ideal type approach will also be taken. The advantage of using an ideal type of a rational model of man is stated by Weber as follows:

... the construction of purely rational course of action...serves the sociologist as a type... By comparison with this it is possible to understand the ways in which actual action is influenced by irrational factors of all sorts,... in that they account for the deviation from the line of conduct which would be expected on the hypothesis that the action were purely rational (92, p. 12).

Rationality is to be understood in terms of human behavior. Shibutani states the relationship between rationality and logic as follows:

Rationality involves an appreciation of the relations of means to ends. Logic consists of nothing more than the rules for ascertaining the appropriate procedure for arriving at rational conclusions - a systematization of rules that make thinking a more effective instrument of adjustment... Logical procedures are shaped by the rebuffs and approvals received from one's audience as he seeks to justify his reasoning (79, p. 189).

Rationality is an individual's conscious choice of the most efficient means to accomplish specified ends. Logic comes into the picture when others express doubt and the individual has to convince others in regard to the appropriateness of his choice of means to accomplish ends by efforts of testing ideas and their presentation (79).

If a manager is rational, then he will choose the most efficient means available to attain his goals. Choice of means to attain a goal is a process of defining the situation, which includes means at his disposal, and determining the course of action to take.

The organization selected for the study is a business organization. So far as a business organization is organized to attain some goal(s), success of management refers to some level of goal attainment (12, 72). Then, the question arises as to what the goal(s) are in a business organization such as farmer cooperatives.

Parsons suggests:

For the business firm, money return is a primary measure and symbol of success and is thus part of the goal structure of the organization (72, p. 68).

Phillips also points out:

The economic conditions for most efficient organization of production in the individual business are usually specified in terms of a single goal - to make the business as profitable as possible (75, p. 21).

In classical economic theory, the goal of an "economic man", an ideal type, is assumed to be the maximization of profit. The hypothetical rational "economic man" is oriented toward the attainment of the maximization of profit and has the characteristics to be able to always select the most efficient means for the attainment of this goal. An orientation toward any other end besides the maximization of profit interferes and competes with attainment of the maximization of profit. The individual's characteristics - his values, attitudes, sentiments and beliefs - are excluded from consideration in the assumption of classical economic rationality (40, 81).

The classical economic rationality of an "economic man" has faced criticisms and more realistic views of economic rationality have been developed. Major criticisms are the absolute setting of profit maximization as the goal and exclusion of the individual characteristics in both selection of means and selection of goals.

Simon states:

...it appears probable that however adaptive the behavior of organisms in learning and choice situations, this adaptiveness falls far short of the ideal of 'maximizing' postulated in economic theory. Evidently

organisms adapt well enough to 'satisfice' they do not in general 'optimize'... Because of the psychological limits of the organisms (particularly with respect to computational and predictive ability) actual human rationality can at best be an extremely crude and simplified approximation to the kind of global rationality that is implied, for example, by game theoretical models (81, p. 243).

What Simon implies appears to be that actual human beings will rather select a satisficing point of profit making and satisficing means to attain such a goal, while in the classical economic theory a rational man will select maximization of profit as the single goal. Choice of goals and means is satisficing when it allows an individual to take his personal characteristics and environments into account. A satisfactory level of profit making is different from maximization, but what is desired in both cases is profit. In the one case the desired level would be a specified amount of profit and in the other it would be the maximum possible profit.

A satisficing level of profit may be associated more with volume or size of sales which is expected to give that level of profit by management.

Parsons (71) emphasizes rationality in terms of an empirical goal, which means an "actualizable" goal. The term maximization itself connotes the extreme point which is so absolute and hypothetical that one may not even know when and whether he reaches it or not. Weber's zweckrational is

rationality for the successful attainment of 'actor's own rationally chosen ends' (92, p. 115), and includes the notion that the actor may choose ends as well as means rationally.

It is also recognized among sociologists (40, 58, 92) that human behavior tend to be oriented toward multiplicity of goals which are ranked as to primacy or importance according to his value system and situational factors.

If one is able to choose a primary goal, at a given time, taking personal and situational factors into consideration, one may be able to avoid a choice of a primary goal which may conflict with lower ranked goals or at least may be able to minimize such conflicts by choosing a certain goal. Such a choice of goal can be achieved by defining the situation and accordingly by "bounding" selection of goals and means. With bounded rationality, a manager may limit the immediate profit in order to attain long-run maximization of the profit.

Profit making is a major goal to at least some business organizations. What might be other goals? The following list was presented by Kohls:

The most usual listing of goals which may exist in some degree and may vary somewhat, or be in addition to the simplified profit maximization idea, would include the following:

- (1) expand or grow in size,
- (2) maintain or enhance status or power,
- (3) control the important related parts of a business-independence from the market or other firms,

- (4) survive - very few managements choose to quit,
- (5) simplify or improve the management and handling of personnel in a firm - or at least not upset a satisfactory operating situation (50, p. 12).

If business success is measured by the level of goal attainment, the primary goal of management in farmer cooperative is assumed to be some level of profit making.

Based on the discussion of theories of human behavior and the notion of bounded rationality (81), it appears that human behavior is never completely independent of individual's values, attitudes, beliefs and sentiments, and that human behavior can never be completely rational. Although it is unlikely that an ideal type can be found among actual individuals, Hobbs and others state that:

It is possible to differentiate variations in the degree of rationality of behavior, e.g. the more closely the characteristics of the individual correspond to the characteristics and action of the defined "ideal type" rationality, it is assumed the more rational his behavior will be (41, p. 28).

Then, by taking the individual characteristics into consideration, it is possible to study managerial role behavior in an economic organization such as a farmer cooperative in terms of differential degree of rationality toward a particular goal, profit making. Simon further suggests:

For the first consequence of the principle of bounded rationality is that the intended rationality of an actor requires him to construct a simplified model of the real situation in order to deal with it (81, p. 198).

One's definition of the situation is actually his 'simplified model of the real situation'. In order to study an actual individual's rational behavior, how he defines the situation is of primary importance.

The general models developed in this thesis using determinants of definition of the situation are applicable to a study of human behavior in varying degree of rationality in an economic organization. The concepts in the models will be considered with the assumption that profit making is the primary goal of managerial behavior in farmer cooperative. Profit making is considered as a continuum. The level of profit making is assumed to vary from the minimum level necessary for management to perpetuate a cooperative to the maximization of profit. The operational models will be an attempt to postulate that managerial role directed toward profit making will be more adequately performed if an individual's personal characteristics are more rationally oriented and if he is more likely to define the situation in order to select means rationally.

MO (motivational orientation toward profit making)

An individual has to be motivated toward attainment of a goal in order to direct his behavior toward the goal. Motivational orientation was defined as a state of readiness to be motivated to act toward a goal.

A rational "economic man" will have motivational orientation toward profit maximization. However, according to the assumption made on bounded rationality of the goal selection of actual individuals, motivational orientation of a manager is to be more likely oriented toward a certain level of profit making which is satisficing to him.

Motivational orientation of concern will be that toward profit making in a farmer cooperative; the extreme motivational orientation toward profit making is that toward profit maximization or infinite accumulation of profit through management, and the other extreme may be motivational orientation toward any goal(s) which may completely compete with accumulation of profit.

VO (rational value orientation toward economic ends)

Simon's idea of bounded rationality and social and psychological conception of rationality allow variation of rationality among individuals. Rationality will vary depending upon individual's evaluation of a selected goal and selection of the means to attain the goal in relation to his value orientation, i.e. values, beliefs and value-expressive attitudes.

Hobbs (40) hypothesized that rational value orientation toward an economic end is a configuration of five dimensions. His data supported the above hypothesis. Hobbs' five dimensions will be discussed briefly in the following. The detail

theoretical development of these dimensions as well as his elaborate discussion on rationality will be found in Hobbs' dissertation (40).

(1) Economic value orientation

Selection of the goals is to a great extent based on one's values. One's value on the class of the goal objects will further affect one's motivational orientation toward a specific instance of that class, a selected goal. As previously discussed in the theoretical framework for the general models of role behavior, value orientation is concerned with a relatively general class of phenomena, while motivational orientation is concerned with a specific instance of that class. Thus, a relevant value orientation will be value orientation toward economic ends which include profit making. Economic value orientation is assumed to affect one's selection of 'satisficing' point of profit and selection of means to achieve the selected degree of profit making. If an individual approaches closer to an ideal type rational economic man, he will place higher values on economic ends. The remaining four dimensions are concerned with value orientation in selecting means for economic ends.

(2) Scientific value orientation

It is suggested that rational behavior utilizes scientific criteria in the process of selecting efficient means to attain a goal (40, 71). The opposite to scientific criteria

is traditional criteria. A manager may not analyze and evaluate all alternative means by testing them himself. However, scientific information on means is available today to managers, and they may obtain it and utilize it in their decision-making.

Use of scientific information provides managers with a better basis to select efficient means to a given goal. Hobbs and others (41) report that several studies have found significant relationships between a belief in science and/or use of the scientific method and economic success in farm management. It is assumed that the same results may be found in farmer cooperative management.

(3) Mental activity value orientation

Heady and Jensen (36) point out that true management as a planning and decision-making activity, does not emphasize physical exertion. Hobbs' third dimension is on mental vs. physical activities. A manager may have variety of means at his disposal. Even with scientific information to aid him in selecting efficient means, his choice may be still influenced by the values he places on those means. Some people may value physical work as important in itself. They may feel that such activities as reading, thinking, planning and deliberating about alternatives are not important, or in fact are inconsistent with the valued "work ethic". Faced with alternatives, they will chose to engage in physical work

rather than mental activity. From Heady and Jensen's point of view, a rational man will emphasize mental activities over physical activities in management. An individual's evaluation of mental activities in contrast with physical activities will become important in his selection of means.

(4) Independent value orientation

In farm management, individuals who are most economically successful were found among innovators (41). Individuals who are willing to utilize innovation have to be independent thinkers who can make decision on choice of means without depending upon others. 'Independent of others' emphasizes the process of thinking, i.e. the problem solving procedure and arriving at a certain decision. Innovators are those who accept the culturally defined goals while rejecting the culturally defined means (62). That is, by accepting innovations, rational individuals select new means to attain a goal rather than utilize the conventional means which are culturally tied to the particular goal. Rational thinking enables an individual to choose new means if in his judgment they are more efficient for the attainment of the goal, regardless the opinions of others. The emphasis is on independent thinking, not on whether a means is new. On the dimension of independent vs. dependent value orientation, a rational man will be located toward the independent end of continuum.

In the case of managers in farmer cooperatives, independent decision making is allowed within the limits of the general policy laid down by the board of directors. Some decisions may be made jointly by the board and the manager. A rational manager is an independent thinker and decision-maker in the above contexts.

(5) Risk-taking value orientation

This dimension is concerned with risk taking on one end and risk aversion on the other end. Hobbs and others found a consensus among findings of studies conducted by Bohlen and Beal (11), Hoffer and Stangland (42), Ramsey and others (76) and Strauss (83) on the relationship between farm income and the value orientation of risk taking. These studies indicated that security or conservatism in farm operation is negatively associated with adoption of recommended practices and with gross farm income.

In this thesis, it is assumed that risk taking is associated with profit making. Theoretical rationale for this assumption is found among the points made by Hobbs and others (41, pp. 60-62) based on economic theory.

First, individuals who prefer to avoid risk will tend to have short run plans and will not consider long run futures which may lead to higher profits. These are the

individuals who settle for compromise plans rather than for plans involving risks which may offer larger profit making opportunities.

Second, certainty oriented individuals may spend too much money and time in obtaining information in order to reduce uncertainty involved in decision making. They may exceed the point of diminishing returns in the collection of information.

The third point made by Hobbs and others is the individual's reluctance to use all the capital which may be available to the firm. It may lead to a failure to employ the most efficient level of resources.

In all the three points, those individuals oriented toward risk aversion were found to be negatively associated with larger profit. Then, in the dimension of risk taking vs. risk aversion orientation, rational individual oriented toward profit making will tend to approach the risk-taking end of the continuum. While it is recognized that profit may be a curvilinear function of risk taking, it is assumed that the vast majority of managers have not reached the point of decreasing returns on risk taking. Hess and Miller (37) found that farm managers in their study who made full use of capital (both their own and external sources) had 61 percent higher income than those who rationed the capital.

Hesser and Janssen (38) reported that 64 percent of farm managers in their study were rationing the capital.

All these five dimensions will be taken into consideration in constructing the configuration of rational value orientation toward economic ends.

K (knowledge to facilitate managerial role behavior toward profit making)

The knowledge of concern will be defined as scientifically validated means and information for profit making. Knowledge will be divided into two categories.

First, knowledge of products is necessary in order to deal with the products. Managers have to be acquainted with products and their development for retail sales and for wholesale purchases. Knowledge of products will assist a manager in advising the board of directors on decisions and providing information and recommendations to customers.

Secondly, perhaps more important than product knowledge is the knowledge of management principles and practices. Phillips delineated three conditions for managers of the farm supply business (one type of which is farmer cooperative) to make the business profitable (75, p. 22). Based on the three conditions, a manager is expected to know:

- (1) how to select the best combination of goods and services to provide,

- (2) how to select the lowest possible cost combinations of inputs to provide the goods and services,
- (3) how to select the most profitable level of sales.

RS (managerial role satisfaction)

The role satisfaction of concern here will be the satisfaction an individual obtains through playing the role of manager in a farmer cooperative. According to the basis of satisfaction delineated by Krech and others (52), managerial role satisfaction of concern in this study will consist of (1) satisfaction with the material rewards of managing a farmer cooperative, (2) satisfaction with managing job itself, (3) satisfaction with the farmer cooperative one works for and (4) satisfaction with other employees and the board with which one works.

Two other determinants of managerial role behavior will be included in the operational models. They are amount of past experience of having been a manager of farmer cooperative(s) (PE) and amount of formal educational training (PT).

Now the discussion will be directed to managerial role behavior. Role behavior will be studied in terms of success in business, i.e. attainment of profit making. Adequacy of role behavior will be viewed in reference to role expectations.

Role expectation of a manager in a farmer cooperative

The question as to who defines role expectations has been discussed in the theoretical framework of the general models. Within a farmer cooperative, expectations of a manager may be held by (1) the members of the board, (2) incumbents of all the positions occupied by employees, (3) wholesalers, (4) credit sources, and (5) customers. The list may be extended to what Gross and others (33) call the "external" social system which may include people such as manager's family, as they consider him in terms of his occupational role. Since role concensus and role conflict are not the central concern of this study, an attempt will be made to identify "norms" or relatively "universal" expectations which would be more or less held by all incumbents of the manager's counter positions in most farmer cooperatives.

Argyris (2) divides organizational roles into three components: (1) formal tasks designed by organization, (2) informal tasks assigned by work groups, and (3) personal act; individual need-fulfilling self-actualizing behavior. By using Phillips' (75) definition on managerial role, the expectations of concern will be limited to the first component of the above three.

Phillips delineates phases of managerial role in farm supply business. A phase of role expectation includes multi role-sectors (see Figure 2). In Figure 2, the circles represent the role of a manager, each band represents a role sector, and each sectioned area indicates a multi-role sector, which will be called a management phase. A role sector is defined by Gross and others (33) as a set of expectations applied to the relationship of a focal position to a single counter position. The figure shows that each phase is associated with more than one counter position, more than one role sector, according to the way manager's role is segmented by Phillips (75).

Manager's position in a farmer cooperative is associated with nine management phases in its formal and exclusive sense. Its role-set, using Merton's relational term (62), includes relationships with board of directors, employees, patrons (customers), wholesalers, and possibly credit sources. Each of these relationships is accompanied with a role sector (a set of expectations).

According to Phillips (75), nine management phases in a retail farm supply business, a type of which is farmer cooperative, are as follows:

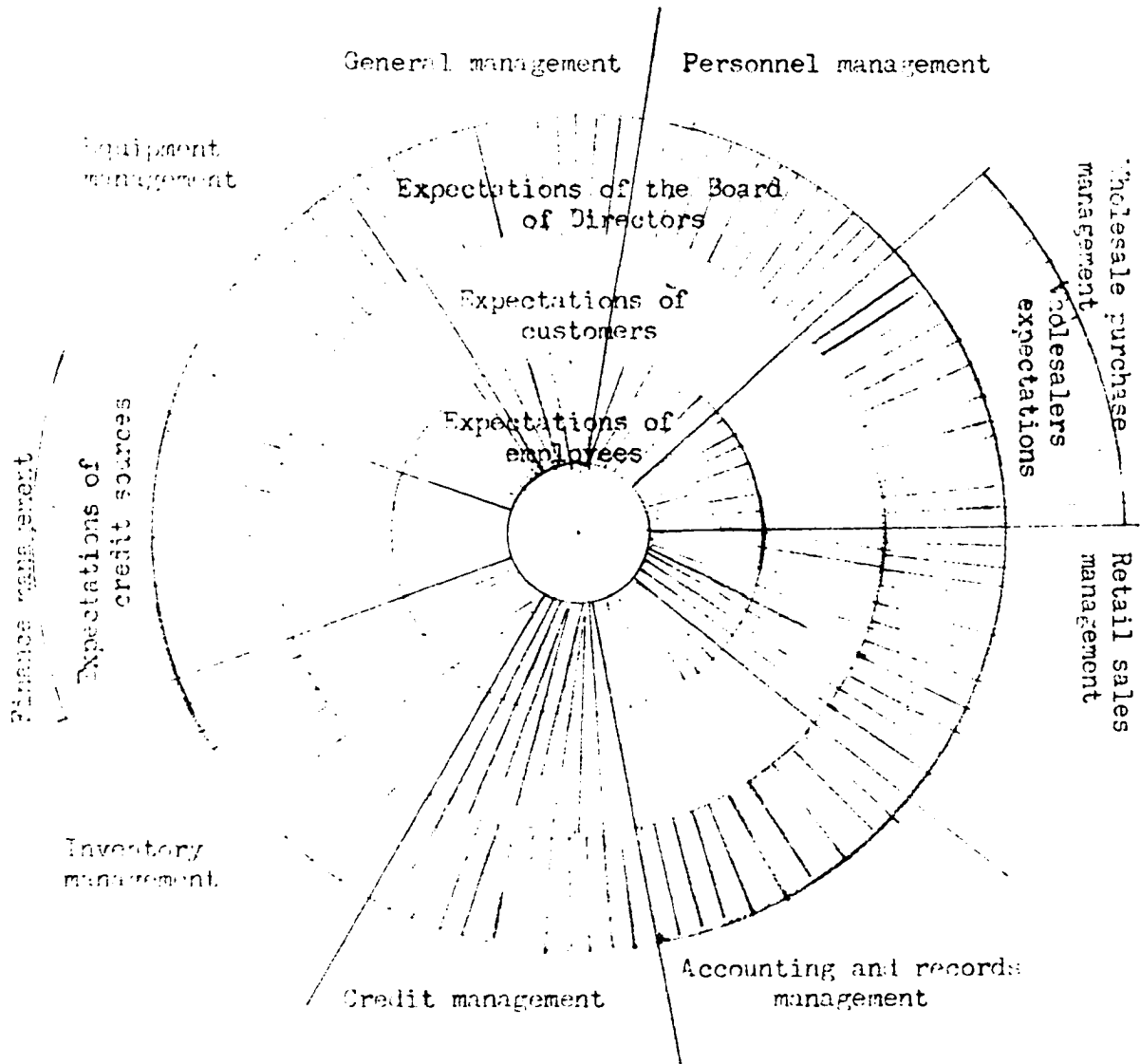


Figure 2. Phases of role expectations of a manager in a farmer cooperative¹

¹Size of phase and band does not bear any special meaning.

(1) Personnel management:

Employment of personnel, judgment on time for each employee and amount of wage and salary promotions, keeping up-to-date on wage and hour laws, withholding taxes, retirement programs, unemployment insurance, and vacation policies and plans, personnel relationships.

(2) Wholesale purchases management:

Informed as to the most useful wholesale outlets, the current and expected wholesale prices, the outlook for business conditions generally and for each commodity handled by the business, and the most desirable terms of wholesale trading, contractual integration with wholesale suppliers.

(3) Retail sales management:

Building effective sales program with effective sales techniques, calculating the best margin and pricing policy, obtaining the best balance of merchandise handled and determining the most profitable combination of services to provide his customer patrons, dealing with competition, determining the most profitable level of advertising expenditure, relationships with customers and between customers and employees.

(4) Accounting management:

Developing a system of records, providing accurate information about the business for planning decisions, developing the budgets necessary for business planning and using them effectively.

(5) Credit management:

Extending credit in the best interest of business and his customers, administering credit business.

(6) Inventory management:

Achieving the highest possible inventory turnover, yet serving the demands of customers always, hedging his inventories against price change to protect his margin, maintaining an adequate but low cost insurance program on inventories, maintaining inventory quality.

(7) Financial management:

Determining how much borrowed capital to use and how, when and where to borrow it, judging and achieving the proper balance of unallocated reserves, stock and other ownership capital, fixed interest and dividend securities and other forms of capital in the business, knowing the regulations which govern securities and the capital structure of business, adjustment for needed changes in the capital structure over time.

(8) Equipment management; being chief engineer of the plant building and equipment:

Keeping the equipment in good working order, organizing things to keep the equipment as busy as possible, knowing design, layout, insurance and depreciation procedures, and new developments in equipment.

(9) General management:

Coordinating the many different functions performed into a profitable over-all operation, planning the combination of products and services, planning the business and organizing in such a way that costs are kept down and net margins are kept up, directing and controlling the business to achieve the highest possible operating efficiency. (Based upon 75, pp. 12-14)

The above management phases of expectations are to attain the following organizationally expected goals for management:

- (1) to make the business profitable to those who own it.
- (2) to provide economic service to its customers.
- (3) to fulfill obligations to its employees, including competitive wage, interest, and rent payments.

Phillips also suggests a set of over-all management functions which, according to him, are highly interdependent. Managers are expected to perform the following functions through all the management phases:

- (1) planning; decision making with available information, evaluation in terms of desired results, careful process of thinking, looking ahead, appraising in anticipation.
- (2) organizing; grouping processes, assets and personnels, and establishing relationships among personnels, in order to make them function effectively to carry out the purpose of the business.
- (3) directing; leadership or coaching function of management, requiring management policies which are well defined and clearly understood, a consistent application of these policies.
- (4) coordinating; effective internal communication
- (5) controlling; supervisory function to assure satisfactory performance in all phases of operation; regular reports of activities and performance, clear definition of authority within well-defined policies, direct managerial decision on exceptions only rather than on routine matters, keeping informed on performance in all phases of the business; interpreting and evaluating the information and knowing when and how to take remedial action if necessary (75, pp. 9-10).

The nine management phases may be performed by nine different managers in a larger business organization, so to that extent, the nine phases are relatively mutually exclusive. The five functions cannot be divided among five different individuals, because every management phase requires more or less all of the five functions.

The above five functions expected of a manager constitute operational management. Operational management is defined as planning, directing, organizing, coordinating and controlling the business operation within its scope of basic policies

established by over-all management, which is the board of directors (91). Then, managerial role in farmer cooperative may be defined as carrying out the functions of operational management by the manager in a farmer cooperative.

RP (Role performance)

When the concept of role behavior was discussed in order to construct the general models, it was stated that performance phase, i.e. overt, verbal or motoric behavior, will be the central concern in this thesis. In the remaining part of this thesis, RP (role performance) will be used rather than RB (role behavior).

In an organization such as farmer cooperatives, a manager is expected to perform all the nine management phases himself and all the five functions in every phase of management. The manager's over-all role performance may be evaluated either by total evaluation of performances in nine management phases or total evaluation of performances of five functions or by both of these evaluations. In this thesis, manager's role performance will be evaluated in terms of total performances of the five functions. In a sense, managers will be indirectly evaluated in nine phases of management as well, for these five functions are interdependently overlaid in each of nine phases of management.

Outcome of role performance (ORP)

Evaluation of role performance as directed to profit making may be related to actual outcome of role performance; profit made through operational management. It is postulated that outcome of performance, profit, will be high if evaluation of role performance is high.

In the case of managerial performance, attainment of the goal has to be judged by the outcome rather than by performance alone. Thus, at this point, the theoretical models previously presented will be modified in order to apply to manager's role performances in a farmer cooperative.

Instead of RB alone as an ultimate dependent variable in the models, the models will include role performance (RP) and outcome of role performances (ORP).

Some role performances may be directly observed, and others may not. Sometimes, an investigator cannot afford to directly observe role performances due to shortages of time or funds or both. Role performances will be indirectly measured by verbal reports of performances. (This point will be discussed in detail later in the section on operational measures in the following chapter.) If verbal report of role performance is used rather than observed role performance, the relationship between RP → ORP may not be simple. Any aspect of performance neglected in verbal reports or not

accurately reported may confound empirical relations found. In an effort to explore the possible gap between actual performance and the verbal report of role performance and the determination of their effect on the outcome of role performance, additional arrows will be drawn to ORP from the concepts which are connected to RP.

In summary, the following concepts will be included in the operational models as applied to managers of farmer cooperatives. In view of the way the concepts were defined at the specific level, the causal relationships in the models are postulated to be positive (Figure 3).

PE: Amount of past experience of having been a manager of farmer cooperative(s).

PT: Amount of past formal educational training.

VO: Rational value orientation toward economic ends.

MO: Motivational orientation toward profit making through management in farmer cooperatives.

K: Knowledge to facilitate managerial role performances toward profit making in farmer cooperatives.

RS: Managerial role satisfaction in a farmer cooperative.

RP: Managerial role performance in a farmer cooperative.

ORP: Outcome of managerial role performances in a farmer cooperative.

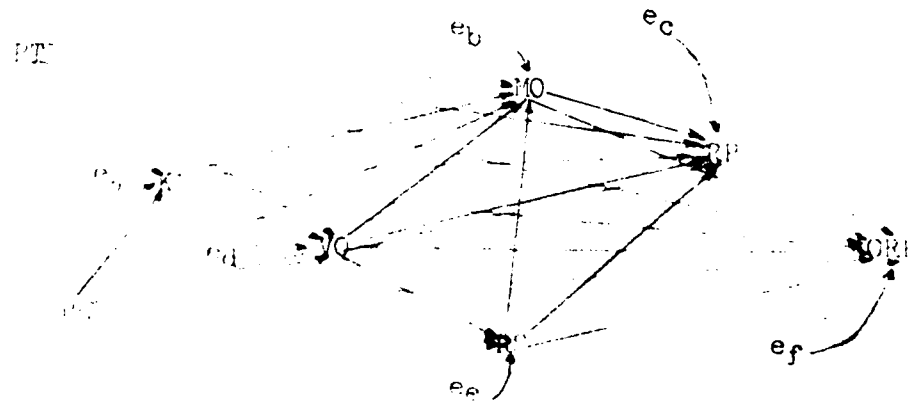


Diagram 1 (model 1)

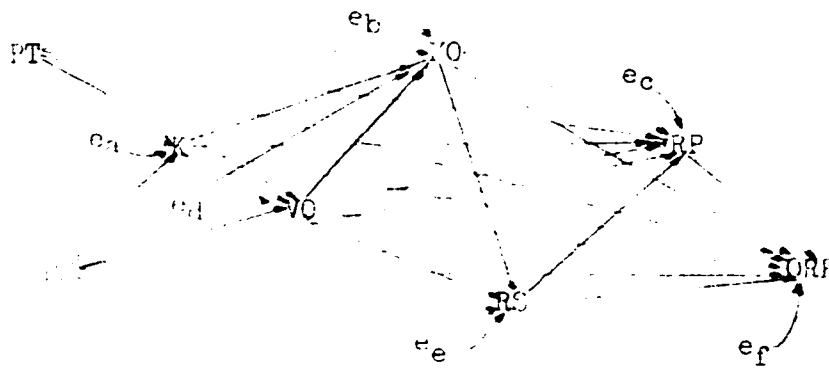


Diagram 2 (model 2)

Figure 3. Models for RP and ORP

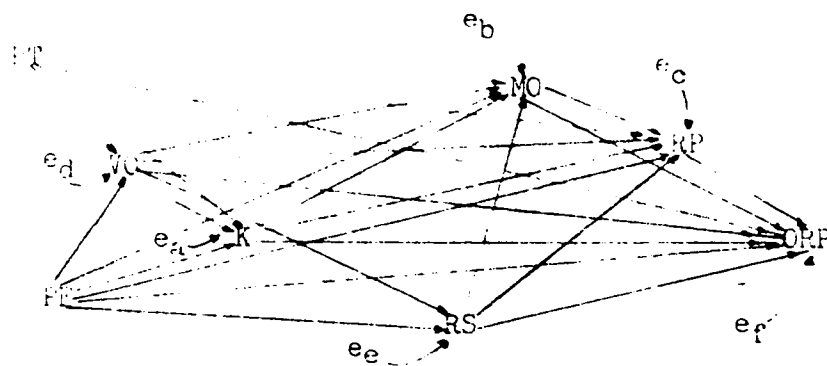


Diagram 3 (model 3)

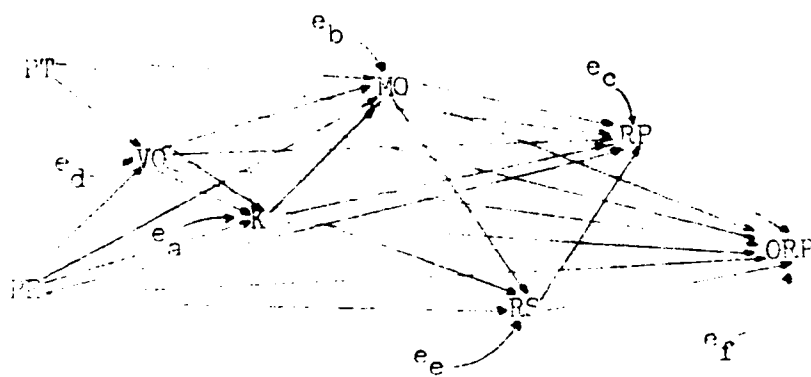


Diagram 4 (model 4)

Figure 3 (continued)

CHAPTER IV. METHODS AND PROCEDURES

Having derived the models to be tested for goodness of fit, the discussion will now turn to the methods and procedures employed in collecting the data and testing the models. The first section will present a discussion on current notion of causation. The second section will discuss path analysis, a causal analysis, which will be used to test the goodness of fit of the models. The third section of this chapter will be concerned with the methods and procedures for data collection. The fourth section will be devoted to the development of the empirical measures designed to operationalize the theoretical concepts in the models.

Current Notion of Causation

Thinking on causation, causal connection (14), has occurred for centuries. This section is not intended to review the history of philosophical arguments of causation. Rather, it is attempted to reach an understanding of what is meant by causation by contemporary social scientists such as Simon (80, 81), Blalock (7, 10) and some others. Such an understanding is necessary for presenting the causal approach used in this thesis, i.e. path analysis. Path analysis will be discussed in detail separately later in this chapter.

The index of American Sociological Review, for instance, gives an evidence of how little causal terms have been explicitly used in the past. Between 1936 and 1960, there were only two articles listed under causality. Causal terms were seldom employed by social scientists. During the recent years, between 1961 and 1965, the number increased to six, which is by no means great, considering the number of articles appearing during these years. Some declare that they can theorize without causal terms (e.g. Parsons (70)). On the other hand, the opposite position is taken by others.

According to Lerner (54), when there is a doubt as to whether the relationship between variables is symmetrical, the causal question cannot be ignored. The relationships in question may be either spurious or causal. In order to question whether the relationship is spurious or not, one has to assume causation (44). In a sense, Lerner's point can be taken as a criticism or dissatisfaction with the indiscriminate use of measures of interdependency by some social scientists. Perhaps, the desire to go beyond mere interdependence might have encouraged Hyman (44), Lazarsfeld (53), Coleman (19) and others to think of ways of identifying spurious relationships.

Blalock deals with this issue in terms of theoretical thinking. He (7) argues that purely theoretical arguments in any terms other than causal is extremely difficult. It

seems to this writer that Blalock's argument originates in the position he takes to understand reality, at least the reality perceived. Those who take the same position as Blalock's are interested in understanding the universe as on-going processes, changes taking place, rather than "snap shots" of it, even though one can say "how is it possible other than by sequences of snap shots?" It is hard to understand changes without thinking in the causal framework. Blalock proceeds as follows:

If we ever wish to understand the nature of the real world, we have to act and think as though events are repeated and as if objects do have properties that remain constant for some period of time, however short... One way of dealing with the problem is to make use of theoretical models of reality (7, p. 7).

Then, why not a causal model? To deal with a causal model, one almost has to have "the pious opinion" (7), that cause and effect are operating in the real world, even though one may not observe them empirically. One can feel a little more at ease, beyond having "the pious opinion", if one can accept that the gap between theory and operationalization is filled by agreement, convention, or epistemic correlation (68), regardless what theoretical approach one may choose to take. In this regard, Frank (32) points out that a theory is a portrait of reality created in human mind and not reality itself.

So far, essentially two types of views were presented as to the "why causation" question. The third one comes from Feuer (31), and Kaplan (46).

Kaplan associates the concept of causality not to the subject matter but to the concept of the subject matter related to a particular perspective of the inquirer. Causality is introduced only when the effect of the intervention of the inquirer is concerned.

According to Feuer, there are two types of models with which one can choose to work. One type is necessitarian models, and the other is interventionist models. Those who take necessitarian models believe that social science can never be applied to reflect the course of evolution of the system. According to necessitarian models, no decision of an individual or a group of individuals can prevent the successive states from coming into existence. An example may be Marxian decline of capitalism. Feuer gives Malinowski's view, that of functionalism as another example, Malinowski and other functional anthropologists believe that each cultural element is an indispensable part of a working whole and that any deliberate intervention to modify a culture will disturb the entire system. For them, there are no accessible or controllable independent variables.

On the other hand, those who work with interventionist models may argue that alternative states of equilibrium are

conceivable and propose that social science can assist intervention in the domain of accessible variables which are in the area of felt needs of cultural innovation or reform. In other words, where expressed needs of change exist, they believe purposive change can be brought about with knowledge gained in social science.

Interventionist models may be stated as those in which an individual or a group of individuals can manipulate the existing state of affairs so that it will be followed by states which would not have occurred otherwise (31). In order to manipulate some variables and achieve desired results, one has to think in terms of a causal framework.

According to Feuer (31), the interventionist models became more and more prominent since the end of World War II, especially among those who are involved, directly or indirectly, in assisting the people of the developing areas with programs associated with United Nations.

However, it should be pointed out that the interventionists' point of view is not necessarily expressed by all who are engaged in the causal approach.

One way to comprehend the current notion of causation may be to investigate how it is used in current literature. Such an investigation is more meaningful for the purpose of this section of the thesis than long historical review of its meaning in philosophy.

Blalock (7) suggested that we should delineate "ingredients" of causation, keeping the terms 'cause' and 'effect' undefined. Nagel's definition of cause may provide a point of departure. According to Nagel (64), cause of an occurrence is anything which is assumed or believed to be either partly or wholly responsible for that occurrence. From the above definition, two points should be especially noted.

First, cause is not claimed to exist but only assumed or believed to exist. Thus, one can be freed from the argument on existence of causation in the real world. As Blalock (7) points out, it is one's "pious opinion" that makes one assume or believe cause. According to Blalock one has to concede that causal thinking belongs completely on the theoretical level and that causal laws can never be demonstrated empirically.

Second, cause is either partly or wholly responsible to an occurrence. This point is relevant to the issue of either one-to-one causation or multiple causation. According to Lerner (54), modern philosophers think in terms of multiple causation rather than one-to-one causation, and thus they can avoid the argument over single or final cause.

Current causal approaches in social science are based on multiple causation. Nagel (64) is one of those thinking in terms of multiple causation. Assuming a set of causal

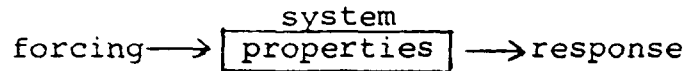
factors S, one of which is a cause C in question, Nagel's argument proceeds as follows: If S, then event E takes place. If the rest of the factors in S other than C has been met, or, more precisely, assumed to be met; then if C, E takes place. If one considers the rest of S other than C as given, one could state that C is wholly responsible for event E. Nagel takes the position of considering C partially responsible due to its being a member of causal set S. C is said to be contingently necessary for event E to take place. Along with partial responsibility of any cause, he makes another point which is consistent with "assuming causation" between events. Sometimes event E may take place even if not S. That is, the set of causal factors S can never claim its absoluteness. Possibility of having an alternative causal set(s) or refuting the assumed set S in question as inadequate upon further inquiries is taken into consideration.

Anything called cause can be something present or absent. Some consider it as an initial set of conditions at the time they take as the starting point. Subsequent states of the system are assumed to be caused by preceding states.

Up to this point, cause has been said to be responsible for event E. According to Bunge (14), causation, or causal connection, is a relationship of change. In Blalock's words,

a change in X produces a change in Y (7, p. 10). The notion of producing is elaborated as forcing, basically similar to producing according to Blalock, in the following manner

(7, p. 8):



External forcings attributed to the environment and properties within the system acted upon by forcings together cause responses. The system may be decomposed into sub-systems. Thus, there can be considered two types of causal variables; (1) external forcings and (2) properties of the system at the time of observation. Since the boundary of the system is set very much depending upon each investigator's choice, Blalock (7) suggests that these two types be taken as causal variables rather than only the first type, i.e. forcings alone.

The concern with changes may correspond to Wright's concern with differences. Wright states that science does not deal with total causes and that it deals with the causes of differences (98, p. 250).

Besides the concept of producing a change as one ingredient of the causation, there are other ingredients of causation. Simon (80) suggests asymmetry as another. Causal connection is distinguished from functional relationship and interdependent relationships which are symmetrical. Asymmetry refers to irreversability. Asymmetry is stated as

not an attribute to the real world but to the model. An asymmetrical relationship may be illustrated as; "A causes B" is incompatible with "B causes A" and it is also incompatible with "not-B causes not-A." The idea of feedback should not present difficulty; X_1 causes change in Y_1 , which becomes Y_2 as a result, and in return Y_2 causes change in X_1 , which becomes X_2 . The interpretation is that there are two asymmetrical relationships, one of which occurs later than the other.

According to Bunge (14), causation requires neither contiguity nor antecedence (time sequence), both of which were essentials to Humians, even though it is consistent with both. Simon (80) and Blalock (9) also consider asymmetry as not necessarily depending upon time sequence. The existence priority of cause over effect is expected in such a way that cause be there if the effect is to occur. This 'agreement' enables one to use survey data where often time sequence of variables are not known. Time sequence between two variables does not make the connection of the two variables causal. However, Blalock indicates implicitly the time sequence of variables is 'helpful' to suggest causation between them (8). Abandonment of the notion of "contiguity" sets investigators free from the argument over infinite possibilities of interrupting events which may take place between any two events one observes.

It may be appropriate to ask what objections have been raised over current notion of causation at this point of the review. Simon, Blalock and others work with simplified causal models with "simplifying assumptions" (7). These assumptions made in their inquiries have been the targets of major current objections. Besides Humian argument, which is related to the basic issue, (i.e. the position one takes in regard to nature of knowledge) Blalock considers current objections essentially two in number (7). First, introducing additional variables never enables the investigator to refute causal propositions (32). This objection should not prevent the proponents of the current causal approaches from using them, where the aim is to show adequacy or inadequacy of causal models rather than to refute individual causal propositions piece by piece. The second objection is the applicability of causal laws only to a completely isolated system. Such a system cannot be demonstrated in the real world. In short, these objections refer to two points; one, introduction of new variables and two, unaccounted environmental forcings. It seems to this writer that these objections 'helped' the investigators set up assumptions to guard their pursuit of causal approaches against objections.

The first objection is responded to by the assumption that a system is assumed to be closed¹ and that a finite number of variables operate within a model. By limiting the number of variables an investigator can examine the adequacy or fitness of the model with the empirical data.

The second objection may be responded to by the assumption that environmental forcings are random to the variables in the assumedly closed system encompassed by the model.

There is an additional point in relation to the first objection. Blalock (8) points out that directness or indirectness of causal connection is dependent upon each model. In one model, two variables may be considered to have direct causation, while in another model, they may be considered to be of an indirect causal nature. Thus, whatever inference may be made, it is only within the boundary of the assumedly closed model, and not extended to the universe.

Due to (1) the assumptions on closedness of the system encompassed by the model and the randomness of the extra-model variables in their effects on the variables included in the model, and (2) no empirical demonstratability of "producing", causal models in current causal approaches do not claim for correctness. Investigators merely "hang on"

¹Especially in the case of path analysis, assumedly-random exogeneous factors are explicitly indicated in the model, in this thesis, with symbol e .

(8) to their models until they can show inadequacy (or adequacy) of fitness of the chosen model with the empirical data. Thus, causation may be restated here as "if a system encompassed by the model is isolated or if there are no other variables operating systematically, then a change in A produces a change in B" (8).

The function of empirical data in the causal approach is that of 'assisting' the assumed causal model. Using the Simon-Blalock method or path analysis, which will be discussed later, one can demonstrate goodness of fit of the model to the empirical data. Each testing as such will be a step to support the adequacy, not correctness, of the models under consideration. Due to the nature of assumptions one makes the current causal approach cautions against any claim of correctness of the selected models. One recognizes the possibility of having any number of alternative models which may also 'fit' the same set of empirical data.

One may take the causal approach even when the data as such lack adequate information about the temporal sequences (8). An example is a case of survey research where one's information may be limited to a single point in time. Unless one can completely negate the value of theory in science, what is theoretically postulated and accompanied with a set of data which "fit" is not a 'wild guess' and is believed to make some contribution to science.

For closing remarks of this section, the following statements by Blalock are quoted:

The fact that causal inferences are made with considerable risk of error does not, of course, mean that they should not be made at all. For it is difficult to imagine the development and testing of social science theory without such inferences. Since they are in fact being made in practical research ... (8, p. 5).

One admits that causal thinking belongs completely on the theoretical level and that causal laws can never be demonstrated empirically. But this does not mean that it is not helpful to think causally and to develop causal models that have implications that are indirectly testable (8, p. 6).

Path Analysis

History

Path analysis was developed by geneticist Sewell Wright (e.g., 96-99) as early as 1918 and expounded formally by him in the 1920's. The main application of path analysis has been in population genetics. Recently limited use has been made of path analysis in social science, especially in connection with demographic data where time sequences are usually known (26, 27).

Aside from path analysis, Blalock (7) has stimulated interests among social scientists in causal interpretation of statistical relationships, basing his approach upon Simon's model (hence, called Simon-Blalock approach). In 1965, Boudon (13) pointed out that the Simon-Blalock approach is a weak form of path analysis. In the following year, 1966,

Duncan published a paper in the American Journal of Sociology where he demonstrated sociological application of path analysis using several examples. Examples used by Duncan included the class value index, density of population, and occupational prestige ratings as dependent variables respectively. Most of the independent variables in Duncan's examples had a known time sequence. Duncan and Blau (27a) also applied path analysis to occupational status with educational variables and father's educational and occupational variables as independent variables.

Application of path analysis to social-psychological variables in this thesis is attempted with the awareness of the lack of clear time sequence, for time sequence information might "strengthen" the investigation in terms of the assumption of asymmetry among variables. Due to the lack of obvious time sequence among variables in this thesis, assumption of asymmetric relationships are entirely based upon the theoretical discussion presented in the previous chapter.

The role of path analysis

The basic assumptions on path analysis, as stated by Wright, are:

It is assumed that any event always traces back continuously in time and space through successions of previous events and that statistically, variations in events of a given sort may be traced in principle to variations in previous ones of specified sorts, with varying degrees of relative importance, however difficult it may be in practice to disentangle such unidirectional sequences from the effects of common factors or of rapid reciprocal interaction (96, p. 16).

The general role of path analysis is stated by Duncan as:

The technique of path analysis is not a method for discovering causal laws but a procedure for giving a quantitative interpretation to the manifestation of an unknown or assumed causal system as it operates in a particular population (26, p. 177).

That is, the validity of a path analysis depends on the validity of assumed causal model. Wright emphasizes that:

Path analysis is an extension of the usual verbal interpretation of statistics not of the statistics themselves. It is usually easy to give a plausible interpretation of any significant statistic taken by itself. The purpose of path analysis is to determine whether a proposed set of interpretations is consistent throughout (99, p. 444).

As Duncan summarizes in his article (26), the role of path analysis is to render an interpretation.

Information obtainable in path analysis

What is specifically obtainable by the use of path analysis may be summarized as follows:

- (1) A path coefficient provides a quantitative measure for the assessment of direct effect of a change in an independent variable upon a dependent variable, if assumed causation holds between two variables. What should be noted here is that direction of

causation from one variable to another is strictly a matter of theoretical assumption within a particular model and it does not imply that the reverse direction of causation between the two variables will never be conceivable. The statistical significance of the assessed effect by path coefficient is testable. The path coefficients can be compared to study the relative direct effects of different variables upon the dependent variable.

- (2) The correlation coefficient between two variables can be calculated according to the paths with path coefficients and known correlation coefficients. The above correlation coefficient is mathematically identical to the zero order correlation coefficient.

Expansion of a calculated correlation coefficients between two variables in the diagram may consist of a single direct path and the sum of the compound paths representing all the indirect connections between the two variables allowed by the diagram (26). The expansion may be inspected to estimate the effects of an independent variable transmitted to the dependent variable via other independent variables.

- (3) The residual path coefficient between the error term which is indicated in a diagram and the

dependent variable will assess the amount of variation in the dependent variable which is not explained by explicit (Boudon's term (13)) independent variables in the diagram.

- (4) When a path diagram includes a set of independent variables and two (or more) dependent variables, an investigator may inspect whether the correlation between two dependent variables is explained by the set of independent variables (26).

The above listed items 1, 3 and 4 are concerned with goodness of fit of the model to the data. All of the four items will provide quantitative interpretation to the model, under assumed causal structure, in a particular population as far as the data permit.

The model may be modified based upon the analysis as to whether any of the path coefficients may be deleted from the path diagram. The procedure described by Duncan is as follows:

Had some of the β 's¹ turned out both non-significant and negligible in magnitude one could have erased the corresponding paths from the diagram and run the regression over, retaining only those independent variables found to be statistically and substantively significant (26, p. 7).

¹A beta coefficient is identical to a path coefficient in the path diagrams in this thesis.

Conditions

Before conducting a path analysis, an investigator needs to bear the following conditions in mind:

- (1) Causal ordering has to be assumed before constructing the path diagram: Causal ordering is external or a priori with respect to the data analysis. From the data analysis, an investigator merely obtains the information as to covariation of variables. Such an information will only support an investigator to assess the adequacy of his models.

As far as causal orderings are concerned in the models in this thesis, the essential point is that change in one variable is assumed to contribute to a change in another variable in some degree but not that one is a 'cause of another's existence.'

- (2) To cope with the problem of sampling error, a "large enough" sample is needed. Measurement errors in all variables should be small.

The latter presents a serious problem especially to social-psychological data, which are essentially composed of variables often subject to measurement error. For this matter Wolins states:

... Since the predictor variables are subject to measurement error, one can cross-validate by sacrificing precision in sampling or measurement. Since one or the other must be sacrificed in order to cross-validate, one may be able to choose in an optimum way (94, p. 826).

In this thesis, Wolins' recommendation will be followed by using alternative sets of measurements. The details will be discussed in the section on operationalization in this chapter.

- (3) Relationships among variables are assumed to be linear, additive and asymmetric. The variables are conceived as being measurable on interval scales. This assumption is necessary since path analysis uses recursive regression models.¹
- (4) Each "dependent" variable, or any variable determined by some other variable(s) in the same diagram, is assumed to be as completely determined by some combination of variables in the same diagram. In the case where complete determination by explicit variables does not hold, a residual variable uncorrelated with other variables must be introduced. Each such residual variable is assumed by definition to be uncorrelated with any of the immediate determinants of the dependent variable to which it pertains (26).

¹The use of recursive system excludes non-recursive systems involving instantaneous reciprocal action of variables. Under the use of path analysis in this thesis, a direct or indirect feedback will not be considered.

Computation procedure

Before presenting computation procedures, a path diagram will be introduced in terms of its notation according to Duncan.

In path diagrams, we use one-way arrows leading from each determining variable to each variable dependent on it. Unanalyzed correlations between variables not dependent upon others in the system are shown by two-headed arrows, and the connecting line is drawn curved, rather than straight, to call attention to its distinction from the paths relating dependent to determining variables. The quantities entered on the diagram are symbolic or numerical values of path coefficients, or, in the case of bidirectional correlations, the simple correlation coefficients (26, p. 3).

Each variable, X_i , is taken to be in standard form; if V_i is the i th variable as measured, (called explicit variable by Boudon (13)), then

$$X_i = (V_i - \bar{V}_i) / \sigma_{V_i} \quad [1] \quad (26).$$

The same convention holds for the residuals, R_a , R_b and so on to which a literal subscript is attached to indicate that these variables are not measured directly in the system the diagram represents. R_a , R_b and so on are indicated as e_a , e_b and so on in the theoretical models.

In the following presentation, the numbers correspond to the numbers in the section of Information obtainable in path analysis.

- (1) Measurement of the direct effect of one variable upon another in the path diagram is indicated by a

path coefficient. Wright defines path coefficients as follows:

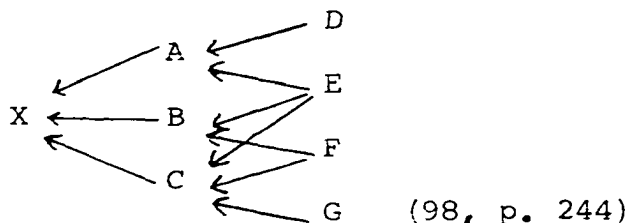
If we make all of the immediate factors except A constant, the variation left in X, measured by $\sigma_{CB X}$ (indicating constant factors by subscripts to the left), must be due wholly to the direct influence of A, i.e., each value of X is a certain multiple of A. This direct influence is exerted, however, in a population in which the variation of A itself is reduced because of its correlations with B and C. In order to measure the variation of X relative to the entire direct influence of A in the original population, the expression for the standard deviation of X for constant B and C ($\sigma_{CB X}$) must be multiplied by the ratio of the original standard deviation of A to its value in the population in which B and C are constant.

$$\text{Thus, } \sigma_{X \cdot A} = \sigma_{CB X} \frac{\sigma_A}{\sigma_{CB A}}$$

It may be admitted that the operations suggested by the verbal definitions could not be literally carried out in extreme cases and the definition is therefore imperfect. The above formula, however, which was given later in the paper can always be calculated.

The path coefficient, $p_{X \cdot A}$ is the ratio of this standard deviation of X due to A to the total standard deviation of X.

$$p_{X \cdot A} = \frac{\sigma_{X \cdot A}}{\sigma_X} = \frac{\sigma_{CB X}}{\sigma_{CB A}} \cdot \frac{\sigma_A}{\sigma_X}$$



Then Wright (96) writes each dependent variable as:

$$X_o = \sum_{i=1}^k p_{oi} X_i \quad [2]$$

p_{oi} is called an elementary path coefficient, pertaining to the indicated path of influence $X_i \rightarrow X_o$ in the diagram. In the above equation X_i includes standardized form of error term R_a as well. (R_a was indicated with symbol e_a in the models.) Path coefficients do not carry secondary subscripts to identify the other variables assumed to effect the dependent variable. The second subscript of p_{oi} identifies the variable whose direct effect on the dependent variable, indicated by the first subscript, is measured by path coefficient. Using equation [2], a recursive system of equations will be obtained for variables in the diagram which depend upon some other variable(s) within the diagram. Boudon (13) points out that these path coefficients are determinable if the residual factors in the diagram are assumed to be uncorrelated. The above equation [2] is actually the regression equation in the standardized form (cf. 89, p. 319).

- (2) The correlation between any pair of variables can be calculated in terms of the paths leading from common antecedent variables. This basic theorem may be written as follows (26):

$$r_{ij} = \sum_j p_{iq} r_{jq} \quad [3]$$

where i and j denote two variables in the system and q refers to all variables from which paths lead directly to X_j . $p_{iq} r_{jq}$, if $j \neq q$, may be called the portion of correlation between X_i and X_j due to the indirect effect of X_j via its correlation with X_q . The above [3] equation is actually a general form of simultaneous normal equations of a regression analysis expressed in terms of correlation coefficients (cf. 89, p. 325), where X_i is the dependent variable, X_j is one of the independent variables and X_q 's are the other independent variables. (Walker and Lev (89) use $b_{iq.1...k}^*$ instead of p_{iq} in their notation.)

Duncan demonstrates the successive application of equation [3] to each r_{jq} and the full expansion of the equation within the system. Such a procedure may be read off directly from the diagram as follows:

... Read back from variable i , then forward to variable j , forming the product of all paths along the traverse; then sum these products for all possible traverses. The same variable cannot be intersected more than once in a single traverse. In no case can one trace back having once started forward. The bidirectional correlation is used in tracing either forward or back, but if more than one bidirectional correlation appears in the diagram, only one can be used in a single traverse (26, p. 6).

By subtracting p_{ij} from r_{ij} , a single measure of indirect effect of X_j on X_i via other variables in the diagram will be obtained.

- (3) The amount of variation in the dependent variable which is not explained by the implicit independent variables in the diagram will be measured as follows (26):

$$r_{ii} = 1 = \sum_q p_{iq} r_{iq} \quad [4]$$

where the range of q includes all variables, measured and unmeasured, i.e. r_{ii} includes the term for the residual factor as well. Then, the residual path between X_i and R_a will be:

$$p_{ia}^2 = 1 - \text{all the terms of } r_{ii} \text{ except } p_{ia}^2$$

If one substitutes the symbol $b_{iq.1...k}^*$ for p_{iq} in equation [4] above, leaving out the term for error, then ' r_{ii} less the error term' is identical to $R_{i.1...k}^2$ which is equal to $\sum_q b_{iq.1...k}^* r_{iq}'$

in Walker and Lev (see 89, p. 326).¹

Then

$$p_{ia} = \sqrt{1 - R^2_{i.1\dots k}}$$

where $R^2_{i.1\dots k} = \sum_q p_{iq} r_{iq}$, using p_{iq} to avoid

the secondary subscripts required for b^* notation and where q includes only the explicit independent variables.

- (4) The correlation between residuals may be calculated using equation [3], reading the paths with a two-way arrow, which may be inserted between two residual R 's in a diagram (26). (For an example, see Duncan (26, p. 10)). Duncan (26) points out that the correlation between two residual factors of two dependent variables in the same diagram turns out to be a partial correlation between two dependent variables when the set of independent variables are held constant. The above computation may be conducted if an investigator is interested to see how much a set of independent variables explained the correlation between two dependent variables in the diagram.

According to Duncan's summary (26), in a path diagram where (1) there are no unmeasured variables

¹Here R^2 is a multiple correlation coefficient squared, and it does not refer to a residual factor in the path diagram.

other than residual factors, (2) the residuals are uncorrelated and (3) each of the dependent variables is directly related to all the variables preceding it in the assumed causal sequences, the path analysis amounts to a sequence of conventional regression analyses, and the path coefficients are nothing more than the "beta coefficients" in a regression setup.

Comparison between path analysis and Simon-Blalock approach

Among causal approaches, Simon-Blalock approach is perhaps better known to sociologists than path analysis. The reason why path analysis was chosen for this thesis rather than Simon-Blalock approach may be accounted for by illustrating differences of obtainable information between these two approaches. Mueller (63) attempted a comparison between these two approaches. Some of his points will be illustrated in terms of information obtainable as follows:

- (1) Test for goodness of fit; provided by both approaches. However, Blalock did not provide explicit criteria for determining the exact 'good-fitting'. Path analysis allows an investigator to perform tests for statistical significance.
- (2) Comparison of relative causal effects; not provided by Simon-Blalock approach. Since the path coefficients in path analysis are standardized, they

can be compared in terms of relative magnitudes.

- (3) Use as an exploratory technique. Simon-Blalock approach forces one to specify a particular model. The path analysis allows the researcher to specify causal ordering and also enables him to use the statistical results to modify the model.
- (4) Initial variables in the diagram. In Simon-Blalock approach, initial variables should be almost uncorrelated, while path analysis allows correlated variables in the diagram as long as they themselves do not depend upon any other variables within the same diagram.

In addition, Duncan points out that $r_{ij} = r_{ji}$ and $r_{ij.123} = r_{ji.123}$, yet $p_{ij} \neq p_{ji}$; p_{ij} and p_{ji} would never appear in the same system (26). It is possible to compare two path diagrams where the direction of an arrow between two variables is contrasted, since $p_{ij} \neq p_{ji}$. On the other hand, in Simon-Blalock approach, the emphasis is placed on partial correlation coefficients.

Collection of Data

The data used to test fitness of the models in this thesis are part of those collected under an Agricultural Experiment State Project of Iowa State University, Project 1626: "The Dealer Success" project. The leaders of the project are Drs. George M. Beal, Joe M. Bohlen and Richard

Warren of the Department of Sociology and Anthropology of Iowa State University. The co-ordinator of the project was Daniel Himes at the initial stage, and then David Duncan at the later stage. The supervisor of data analysis was Dr. Richard Warren of the Department of Sociology and Anthropology and the Department of Statistics of Iowa State University.

Sample selection

A sample of general managers of Iowa farmer cooperatives was randomly selected from a list comprising the entire population. The population list was compiled from two sources; (1) the 1965 directory of the Farmers Grain Dealers Association and (2) the records of the Iowa Institute of Cooperation. The first source provided the basic list of cooperatives with the major product lines handled by each business as well as the name of the present manager. This basic list was supplemented by the second source.

There were three restrictions placed in obtaining the final sample for the project. First, the cooperative must be handling fertilizer. This restriction excluded those cooperatives handling one specialized product line such as dairy cooperatives and oil cooperatives. Second, the cooperative must be independently controlled and operated by a local board of directors and a manager, and not a branch of individual cooperatives controlled from the main office.

Third, the manager of the cooperative must have held his present position for at least eighteen months. A list of 342 dealerships was compiled.

By contacting these 342 dealerships, the population was reduced to 305. When the restriction of selling \$15,000 of fertilizer was applied, the population of 305 was reduced by 20 percent, and a random selection of 100 managers and a substitute list was then compiled. During the interview of the sample, four substitutes were used for two managers who refused to be interviewed and two who were found as not meeting the third restriction. Out of the 100 interviews, 98 useable schedules were obtained for analysis.

Field procedure

The data collection for the study took place during the months of July and August of 1966. Both an interview schedule and a questionnaire was employed in the survey. The interview schedule pertained to financial data and goals the manager had in the operation of his business. Upon the completion of the schedule, the respondents were asked to fill out the questionnaire and return it by mail. Instructions were given to the respondents for responding to the items in the questionnaire. If the questionnaire had not been mailed back a second interview was conducted to complete the questionnaire.

The questionnaire and the schedule were developed by Drs. Beal, Bohlen and Warren and then graduate students Daniel Himes and David Duncan. This study was considered as an exploratory study to determine concept relations leading to more precise conceptualization and measurement and the development of a more concise schedule and questionnaire for the follow-up study in the future.

Table 1. Characteristics of the sample¹

Characteristics	Sample		
	Range	Average	S ²
Age of the manager 1966	29-68	45.32	10.26
Education of the manager	8-16	12.70	1.85
Years as manager in present position	2-39	11.77	8.01
Number of employees	2-60	13.05	11.14
Average net commodity sales 1964-1965	\$226,000-\$10,869,000	\$1,796,500	\$1,458,800
Average net operating profit 1964-1965	\$22,130-\$251,660	\$40,440	\$50,930

¹n = 98.

²Standard deviation.

Operational Measures

In this section a description of the methods used to obtain the measures will be presented.

The data for this study were collected prior to the theoretical development of this thesis. However, the theoretical framework of this thesis was constructed without knowledge as to the results obtained in preliminary analysis of the data. This situation of an ex-post-facto study placed some limitations upon operationalization of the theoretical concepts.

First an effort was made to obtain operational measures for all the theoretical concepts. Where it was not possible to obtain direct and adequate operational measures, indicators were sought. Such indicators were selected on the basis suggested by Blalock (7). Blalock states that:

... it will be useful to distinguish among three types of variables: (1) theoretically important variables that have been linked with operational definitions, (2) unmeasured theoretical variables, and (3) measured variables that are of little theoretical interest but that can be used as indicators of the unmeasured theoretical variables.... There may be several indicators of each unmeasured variables (7, pp. 163-164).

Ideally a researcher wishes to have all his variables of type (1) in the above quotation. If he is unable to do so, the next alternative is to obtain variables of type (3). In this thesis, the attempt was made to identify variables either in type (1) or a measured variable of type (3).

Operationalization

When operationalization of theoretical concepts was carried out, a recommendation made by Dr. Wolins of the Department of Statistics at Iowa State University was followed. A quotation from Dr. Wolins' publication (94) was presented earlier on page 116 of this thesis. In order to cross validate the result of statistical analysis where most of variables are subject to measurement error, selected measures for each variable (except those variables which can be regarded as being measured without error and thus considered as fixed) were randomly partitioned into two sets.

Wolins states that:

If the variables are measured highly reliably and the number of observational units, N , is small, this design¹ will be better than the usual one. However, if the reliability of the measures is generally low and N is large then the conventional cross-validation procedure would seem to be superior (94, p. 825).

Since this type of study on role behavior of managers in farmer cooperatives has never been conducted prior to the present study, the reliability between alternative measures was unknown empirically prior to data processing. Thus, selection of measures were conducted based on two conditions. First, selection of measures was judged

¹This design refers to the same type as employed in this thesis for data analysis.

theoretically sound, and, if possible, reliability of measures was checked according to the result of a closely related study which was previously conducted.¹

Two sets of measures were used following Dr. Wolins' recommendation. Wolins states:

The best set of predictors may be determined from scores derived from the first groups of measures, the regression coefficients² and the R^2 values may be unbiasedly estimated (in some sense) from scores derived from those second groups of measures which represent the variables selected for use (94, pp. 824-825).

After obtaining the best set of predictors from the first set of measures, the second set of measures will be used for hypothesis testing.

If one wishes to estimate regression coefficients to determine the contribution of traits to the criterion variable, the correction of correlation coefficients for attenuation will be conducted. Correction for attenuation is necessary to estimate weights of traits, since measurement error tends to attenuate 'true' correlation coefficient values (30, 89). The procedure of correction for attenuation and estimation of trait contribution will be presented in detail with computational examples in the chapter on the data analysis.

¹The study conducted by Hobbs (40) included some of the measures included in this study.

²Standardized regression coefficients will be equal to path coefficients in the path diagrams in this thesis.

Construction of a model may be based on two bases: (1) the theoretical basis and (2) the empirical basis to support the theoretical basis. In this thesis, the first set of measures were used to assist construction of models in the way of selecting the best set of predictors at the empirical level. Based on the result obtained from the first set of measures, the models will be modified, thus they will be based on both the theoretical and the empirical bases. The second set of measures will be used to test the models which were constructed with the first set of measures and the theoretical orientations. If the models hold as indicated by the first set of measures, the second set of measures were used to obtain estimates of path coefficients, i.e. beta coefficients here, after correcting correlation coefficients for attenuation. The models may need to be further modified after the analysis with the second set of measures and before estimating path coefficients.

Before presenting actual items which composed measures of concepts, a general description on selection of items will be presented. In selecting items for concept measurements, two different approaches were taken.

Operationalization of K, RS, PT, PE, RP and ORP were conducted by using a panel of judges¹ to determine the

¹The judges were faculty members and graduate students of the Department of Sociology and Anthropology at Iowa State University.

degree of consensus on the adequacy of items to measure the concepts. Many of the items for concept measurements were established in the original study and were considered to be adequate within the limits of time, funds and length of interview schedules.

Operationalization of VO and MO were based on Hobbs' study (40). Hobbs used the same items to measure the same or similar dimensions of value and attitudinal orientations and he also checked the internal consistency of the items. Those items which were changed a little in expression to apply to managers in farmer cooperatives were examined by judges to see whether they were the same in "content" as the original items in Hobbs' study (40). The operational measures of each concept will now be presented.

VO (value orientation)

Rational value orientation toward economic ends is operationalized by using verbal inferences made by respondents to selected statements. The techniques of attitude scaling were employed in the development of measures of value orientation. The assumption is that the direction of an individual's response to statements which involve value judgements provides some insights to the value orientation of an individual, in a relative sense. 'Relative sense', is used in the sense that an individual's

value orientation is measured in relation to other individuals' value orientation and not in relation to other values the individual may hold.

The statements included as the measures of value orientation were selected on two bases: (1) the theoretical basis, and (2) knowledge on scaling gained from researches other than the present study. The reason for the second basis was to avoid the possibility of arriving at any biased conclusions about traits.¹ Such a possibility may arise if scales were constructed and inferences on traits were made both based on same data.

Many of the statements used by Hobbs (40) to measure values and attitudes of farm managers were used in the present study with necessary minor changes in expression. The theoretical basis as well as results of other studies were used by Hobbs, when he compiled scale items and classified them into five dimensions. The scale construction conducted by Hobbs provided a basis to judge those items likely to be internally consistent or "hang together" (48). The construction of the scales and evaluation of internal consistency of the scales were discussed by Hobbs and others (41, pp. 83-87).

¹In the following discussion, traits refer to quantitative qualities free of measurement error, i.e. VO, K, etc. They will be differentiated from variables, i.e. X_1 , X_2 etc., which are actual measurements of traits and subject to measurement error.

Not all the items used by Hobbs were included in this study. Thus, items used in this thesis as the measures of rational value orientation to economic ends consist of only parts of Hobbs' scale.

The index of rational value orientation toward economic ends consists of items selected from the five scales constructed by Hobbs. Hobbs found the five scales were intercorrelated, thus supported his hypothesis that 'rational value and attitudinal orientation' toward economic ends may be considered as a configuration of the five dimensions (scales).

The managers were asked to respond to series of statements by indicating the strength of their agreement or disagreement with each statement. The following instructions were given to the respondent:

On the following twelve pages are a number of statements about business management. We are interested in your feelings or opinion about each statement. You will probably agree with some of these statements. That is, some statements will express your own opinions or feelings about managing. Other statements will express feelings opposite to yours.

After you have read each statement, please circle the "A" (agree) if you agree with the statement or the "D" (disagree) if you disagree with the statement. Once you have made this decision, please indicate how strongly you agree or disagree with the statements by circling one of the numbers which appears to the right of each statement. If it really doesn't make much difference to you if you agree or disagree with the statement, circle 1. If you very strongly agree or disagree with the statement, circle 5. For some statements, the numbers 2, 3 or 4 may better describe how strongly you agree or disagree with the statement. When this is the case, circle the appropriate number.

For example, consider the statement:

All men are created equal.

A	1	2	3	4	5
D					

Do you agree or disagree with this statement? Circle "A" ("D"). How strongly do you agree (disagree) with this statement? Circle the appropriate number.

Please be sure to circle both a letter and a number after each statement, unless you are completely undecided whether you agree or disagree with the statement. In that case, circle both "A" and "D", but do not circle any of the numbers. This response indicates that you neither agree nor disagree with the statement.

These statements are in no way designed to be a test. There are no right or wrong answers to the statements. The answers which will be most helpful to this research project are the ones which best reflect your own feelings about each of the statements.

The data obtained from the respondents included eleven categories of responses. The scoring procedure involved two steps, following the certainty method developed by Wolins and others (95b). First, the categories indicating intensity of certainty of the responses were assigned new values, changing from 1, 2, 3, 4 and 5 to 1, 2, 3, 5 and 8 respectively. This step was taken in order to better discriminate responses at the two extreme ends. The scoring was done in such a way that agreement with a dimension was scored positively and disagreement with it was scored negatively. Thus, if an item was negative from the way the statement was constructed, the scoring procedure was reversed. Second, the range of responses now coded as from +8 to -8 was

transformed by adding 8 to each value. The possible range of each item is now from 0 to 16. This procedure, for a positive item, is summarized as follows:

Responses	D-5	D-4	D-3	D-2	D-1	A/D	A-1	A-2	A-3	A-4	A-5
Numerical values	-8	-5	-3	-2	-1	0	1	2	3	5	8
Transformed values	0	3	5	6	7	8	9	10	11	13	16

/For a negative item, the code was reversed.

The total items were randomly split into two sets, disregarding dimensions. The reasons for disregarding dimensions were: (1) no knowledge was available as to how to weight the five dimensions, and (2) there were not equal number of items for each dimension. In order to obtain higher reliability of the rational value orientation index, it was decided not to eliminate any available items to make the number equal in every dimension. Therefore, no inference was intended to be made for each dimension, but the total was to infer the rational value orientation toward economic ends.

The scores were totaled for the items in each set (see Appendix A for the list of items partitioned into two sets), and the total scores of each became the first and the second measures of rational value orientation toward economic ends. A high score indicates relatively strong rational value orientation toward economic ends.

Even though the items were combined disregarding the dimensions as the index of rational value orientation toward economic ends, the original five dimensions will be presented to show the content of the items corresponding to the theoretical dimensions discussed previously.

(1) Items of economic value orientation

Hobbs labeled them as items of economic motivation. Among all the items used in the present study, only those which appear to infer economic value orientation rather than motivation were selected. They were labeled as economic value orientation items. (Motivational orientation is specified in this thesis as motivational orientation toward profit making in management of farmer cooperative. Therefor those items which infer motivational orientation were separated and grouped as motivational orientation items.) Items in this dimension were:

... to measure the degree to which the individual is oriented toward the attainment of economic goals... (41, p. 87).

Items in this dimension were not limited to attainment of economic goals in management but to pertain more general economic attainments, such as financial success in life, income and living standards. A higher score indicates relatively stronger economic value orientation. The items included in this dimension were as follows:

1. Having many friends is more important than being a financial success.
2. Families with modest incomes are happier than those who have lots of money.
3. The major reason for going to college is to be able to make a better living.
4. One of the major problems in our country today is that people are too concerned with money and the things money will buy.
5. People who have been successful financially generally are more interesting people with whom to visit.
6. There are so many desirable things in life that a person can afford to get along on a lower income to maintain these advantages.
7. There are more important things in life than trying to make a few extra dollars.

(2) Items of scientific value orientation

This dimension was called scientific orientation, by Hobbs traditionalism was defined as the opposite. The items were:

... to measure the degree to which the individual is oriented toward, utilizes and believes in the developments of science and the degree to which he uses scientific approaches to management decision making (41, p. 90).

Scientific approaches to management decision making includes new management practices based on scientific research findings and are contrasted with traditional approaches which do not accept scientific development in practices. A high score indicates relatively strong scientific value orientation.

The items included in the present study were:

1. One of the best guides in making decisions is what has worked in the past.
2. Time spent in learning about new management practices is time well spent.

(3) Items of mental activity value orientation

This dimension was labeled by Hobbs as the mental activity scale. Physical activity orientation is the opposite extreme. The items were:

... to measure the individual's orientation toward mental as opposed to physical activity in 'management'¹ (1, p. 90).

Mental activities refer to activities where thinking is emphasized rather than motor actions. Reading, attending meetings, planning, evaluating and so forth involve abstract reasoning, while working side by side with employees, using hands, etc. involve less of abstract reasoning and more of motor actions. A high score indicates relatively strong mental activity value orientation.

The items included in the present study were:

1. A manager's most important asset is a "strong back".
2. If I had a choice I would rather work with my hands than read a book.
3. If a man is going to hire labor he should be willing to work right along with the man he hired.
4. Quite a few managers would be better off if they would spend less time going to meetings and more time in their business.

¹Originally 'farming' was used by Hobbs and others (41).

5. Physical work is more satisfying and rewarding to me than mental activity.
6. Intelligence is more important in management than in most other business activities.
7. Hours spent by a manager evaluating and making future plans for his business are generally more profitable than hours spent helping with the mixing or grinding operations.
8. A good manager is the one who can use his head as well as his back.
9. Thinking, reading, and planning are not really important to me in managing this business.

(4) Items of independent value orientation

This dimension was labeled by Hobbs as the independent scale, and dependence in decision making was defined as the opposite extreme. The items were:

... to measure the individual's orientation toward independence, or autonomy, in decision-making (41, p. 94).

In farmer cooperatives, some decisions are made by the board of directors and some jointly by the board and the manager. This dimension is concerned with independent thinking in general. A respondent's evaluation of self as an independent thinker is taken into consideration as well as values and beliefs placed on independent decision making. A high score indicates relatively high independent value orientation.

The items included in the present study were:

1. In this day and age a person can no longer afford to be independent and to rely on his own judgment in making decisions.
2. One of parents' greatest obligations is to teach their children to make decisions on their own uninfluenced by what others may say or do.
3. Managing must be extremely difficult without the advice and help of my board.
4. A new manager would do well to find out the opinions of more experienced managers before making decisions.
5. Having the freedom to make up my own mind is, to me, one of the major advantages in management.
6. It is more important to me to be known as a person who gets along well with others and has a lot of friends rather than a person who likes to make decisions for himself.

(5) Items of risk-taking value orientation

This dimension was labeled by Hobbs as risk aversion scale, and risk preference was defined as the opposite extreme. The items were:

... to measure the degree to which an individual is oriented toward security and conservatism and is reluctant to make decisions and take actions in situation characterized by risk and uncertainty (41, p. 97).

By reversing the code, the items were intended to measure risk taking value orientation.

This dimension focuses risk taking involved in management rather than in a broader sense, since risks in management are tied to economic ends and the risks an individual

may take in other phases of his life are not necessarily in regard to economic ends. The emphasis is placed on risk taking in relation to profit making. Self-evaluation of respondents as a manager in the risk taking aspect is also considered.

The items included in the present study were as follows:

1. It is better to make smaller profit each year than to attempt something where there is some chance of losing.
2. I regard myself as the kind of person who is willing to take a few more risks than the average manager.
3. A manager should try to reduce the risk in his business by keeping his operation diversified, even though it may mean the loss of some future income.
4. Managers who are willing to take more than average chances usually do better financially.
5. A manager should always have a contingency fund in case of emergency.
6. I would rather take more of a chance on making a big profit than to be content with a smaller but less risky profit.

MO (motivational orientation)

Among the statements in Hobbs' economic motivation scale, discussed in the section of value orientation items, some are specific statements related to profit making in management. Those statements were selected to infer state of readiness of an individual to be motivated to engage in profit making in management, i.e. motivational orientation toward profit making in management of a farmer cooperative. Four items were included in the present study. They were:

1. The only real goal in managing is to maximize business profits.
2. The greatest satisfaction in being a manager comes in running a highly profitable business.
3. In deciding about making changes in his business, a manager's first consideration should be "is it profitable."
4. The most successful manager is the one who makes the most profit for his business.

The same procedure described for measures of value orientation (VO) was applied in scoring. A high score indicates high motivational orientation toward profit making. The items were randomly split into two sets (see Appendix A), then the scores were summed within each set to obtain two alternative indices.

The following concepts were operationalized by measures which were considered to be adequate by the panel of judges. The original study included these items as operational measures of the following or similar concepts. The internal consistency of the items included in each index was not known. Thus, knowledge of internal consistency did not play a part in selection of items; it did in selecting items for measures of VO and MO.

PE (past experience of having been a manager of farmer cooperative(s))

The amount of past experience was measured by number of years of the experiences. This concept was operationalized by responses to the following question:

How long have you had full responsibility for the management of a business?

The responses to the above question included not only years spent in taking full management responsibility in all the farmer cooperatives but also the number of years spent in managing any other type of businesses. So far as managerial role in farmer cooperative may be assumed to share some commonality with managerial role in other types of business organization, the above question was used to indicate the total managerial experiences. The frequent turn-over of managers in farmer cooperatives made it less meaningful to use only the number of years at the present position as the measure of PE. The actual number of years was used as the score, since there is no alternative scoring known to be superior.

PT (past formal educational training)

Inclusion of occupational training managers received after they started to play the role of manager entered into the consideration of judges at the time when the adequacy of measure was discussed. However, the problem of weights between formal educational training and such specified training with various contents and intensity made it less feasible to include occupational training in this measure.

Besides, PT is used as an indirect indicator of innate intelligence, since the correlation between number of years in formal educational training and test scores of intelligence tests is known to be high (93).

The measure of PT was the actual total number of years a respondent spent in grade school, high school, college and formal schooling beyond B.A. or B.S. degree programs.

RS (role satisfaction)

Role satisfaction is operationalized with responses to a set of questions. The responses to these questions were intended to measure the respondents' satisfaction in terms of the four sources of role satisfaction (52). Some of the questions may be classified in more than one category.

One source of managerial role satisfaction may be the role (task) itself. Managers may have chosen the role as means to some personal ends. As he plays the role, he may find satisfaction in the tasks he plays in his role of manager. Besides the managerial role as a whole, some aspects of it may be considered.

The progress a manager is making in his role performances to attain goals may be one aspect. Implicitly, the managerial role may be considered in relation to other roles an individual plays. Then, the problem of time allocation arises. Role satisfaction may depend upon the amount of time a manager has to spend or he can spend in

playing the role. Earlier in the theoretical framework, the possibility that an individual engages in definition of his future role prior to taking the position and starting to play the role was discussed. Whether his predefinition (expectation) met with the role he is playing now is another aspect. Since a manager is expected to make certain levels of decisions, his satisfaction in playing his role may depend upon the satisfaction with the amount of authority the board of directors delegates to him.

Pertaining to the satisfaction from the managerial role itself, the responses to the following questions were used:

1. How satisfied are you with the progress that you are making toward the goals which you set for yourself in your present position?
2. How satisfied are you with the amount of time which you must devote to your job?
3. How satisfied are you with your present job when you consider the expectations you had when you took the jobs?
4. How satisfied are you with the work that you do as the manager of a cooperative?
5. How satisfied are you with the amount of authority you are given for the tasks you are expected to perform?

Along with the role, another source of managerial role satisfaction may be the position of a manager. One may evaluate present position in comparison with other positions he has held in the past. The result of such comparison may have some effect on his satisfaction obtained from the

position. Characteristics of position will also be taken into consideration in terms of the challenge and responsibility which are assumed to be the important factors in considering the position as a source of satisfaction.

Pertaining to satisfaction from holding the position of a manager in a farmer cooperative, the responses to the following questions were used:

6. How satisfied are you with your present position when you compare it to similar managerial positions in the state?
7. How satisfied are you with the level of challenge and responsibility you are faced with in your present position?

Another source of a manager's role satisfaction may be the rewards given to him for his role performances. Rewards here include monetary reward and recognition and prestige given to him because of his occupational performances and position by the community, by the members of his family and by significant others.

Pertaining to the satisfaction from rewards to him as a manager, the responses to the following questions were used:

8. How satisfied are you that the people of your community give proper recognition to your work as a manager of a cooperative?
9. How satisfied are you with your present salary?

Another source of satisfaction may be the relationships a manager has with complimentary role players. Among the

manager's complimentary role players may be the board of the directors, employees, wholesalers, credit sources and customers. Role relationships as a source of satisfaction may include not only attitudes of complimentary role players to the manager but also the performances of complimentary role players in the context of role relationships with the manager.

The community may also be taken into consideration, in that the farmer cooperative is a part of the larger social system, the community, and many customers and employees may be members of the community. In other words, the whole community may be considered related to the farmer cooperative directly or indirectly through various role relationships a manager holds.

Pertaining to the satisfaction from these types of role relationships, the responses to the following questions were used:

10. How satisfied are you with the authority you have been given by your board of directors to do your job?
11. How satisfied are you with the amount of interest shown by the community in its cooperative?

Respondents were asked to indicate the degree of satisfaction or dissatisfaction to each item by using a number from 1 to 5, 1 being a slight degree and 5 being a very great degree of satisfaction or dissatisfaction. Responses were scored as follows:

<u>Score</u>	<u>Responses</u>
00 = dissatisfied	5
03 = dissatisfied	4
05 = dissatisfied	3
06 = dissatisfied	2
07 = dissatisfied	1
08 = no opinion	
09 = satisfied	1
10 = satisfied	2
11 = satisfied	3
13 = satisfied	4
16 = satisfied	5

A higher score indicates a higher role satisfaction. The above manner of scoring was used to discriminate the responses at the two extreme ends. The total items were partitioned randomly into two sets. Within each set, the scores were totaled to obtain the first and second measures of role satisfaction respectively (see Appendix A for the list of partitioned items).

K (knowledge)

The two major lines of products handled by the farmer cooperatives in the sample were fertilizers and insecticides. One group of items were used to measure the managers' knowledge of insecticides and another group of items were used to measure their knowledge of fertilizer and its applications. The items are listed in Appendix A. Respondents were asked whether they agree with the statements or not. Some statements are correct¹ and some are not. If a

¹For all the items of knowledge, judgement on correctness or incorrectness was made by specialists in the relevant field at Iowa State University.

respondent agreed with a correct statement, he was given one point. If he did not agree with it, he was given zero. The scoring was reversed with incorrect statements. This scoring was judged as adequate by the panel of judges in order not to overweight knowledge of products handled over knowledge of management practices.

Statements pertaining to knowledge of fertilizer and its applications were randomly partitioned into two sets and the scores were summed within each set. These became the first and the second measures of the fertilizer-knowledge component. The same was done with statements pertaining to knowledge of insecticides in order to obtain the first and the second measures of insecticide-knowledge component.

Knowledge of management practices should enable the manager to select (1) the best combinations of goods and services, (2) the lowest possible cost combination of inputs to provide the goods and services and (3) the most profitable level of sales or the "satisficing" (81) level of sales. To accomplish these objectives, a manager should probably use the financial statements and budgeting procedures as a main resource.

The following procedure was used by the researchers in the present study to score the responses to the open-end question. In consultation with management specialists, the correctness and incorrectness and the hierarchical order of responses in terms of closeness to the correctness were

judged. All the responses to the open-end questions were placed on separate sheets. The responses were then categorized according to their similarity of the contents. Then judgements were made as to the order in terms of closeness to the correct response. Then, the numerical values were assigned to the categories, the low number to the "least correct" and the high number to the "most correct" among the categories. The equal distance between ordered categories was assumed.

The original scoring was maintained for the data analysis in this thesis. Now the question items for knowledge of management practices component will be presented.

First of all, a manager needs to know how to use financial statements in order to arrive at evaluation of his business, interpret the status of the business. Also he must be able to judge the adequacy of the amount of the information given by the financial statements. If the information is judged to be insufficient, the manager is expected to know what information is needed to supplement the financial statements. Pertaining to the above aspect, the responses to the following questions were used:

1. What is the best way to use financial statements in evaluating your business? Computing certain ratios and:

<u>Score</u>	<u>Responses</u> (to select one of the following)
1	comparing with industry ratios
2	comparing with last year's ratios
3	comparing with your own goals

2. Will you please give me an interpretation of the status of this business as represented on these financial sheets?

<u>Score</u>	<u>Responses</u> (showing a hypothetical set of financial sheets in Appendix B)
1	good; doing well (no qualification offered)
2	doing well but ... (some qualification offered)
3	business is okay because net savings is good
4	liabilities are too high, otherwise the business is average
5	not too good because assets equal liabilities
6	the assets to liabilities ratio is not good. Member's equity should be higher. Other income, cash-on-hand, and sales costs are too high.

3. What additional information do you need to take full advantage of these statements?

<u>Score</u>	<u>Responses</u>
1	no other information needed
2	breakdown of aging accounts receivable and other income
3	need a better breakdown of expenses, assets, liabilities, and age of accounts receivable
4	need a complete detailed breakdown of assets, liabilities, and operating expenses giving a comprehensive picture of the whole business; also the age of accounts receivable and a detailed listing of other income

4. How precise are these financial statements?

<u>Score</u>	<u>Responses</u>
1	precise, accurate, and enough information is presented
2	precise if certified by audit
3	perhaps precise but not enough information
4	not precise, and not enough information

5. What do you feel are the main purposes of financial statements?

<u>Score</u>	<u>Responses</u>
1	for tax purposes only

- 2 to show the manager, the stockholders, the directors, and bank(s) the present financial position of the business
- 3 as a guide for planning inventory
- 4 as a yardstick (i.e., the making of comparisons)
- 5 to determine profitability by departments, and as a guide for future check on overhead costs, and help plan future inventory (as compared to experience)
- 6 as a comparative tool to help in planning the budget, stocking of inventory, indicator of farming trends, and as a guide in making changes (corrections) in our business

An important aspect of management is rational decision making related to dropping or adding product lines. The factors which a manager takes into consideration in dropping and adding product lines will be crucial to whether he reaches an adequate decision in this regard. Pertaining to this aspect, the responses to the following question were used:

6. The fertilizer department in a farm supply business showed this financial statement at the close of the last fiscal year.

<u>Sales</u>	<u>Margins</u>	<u>Direct costs</u>	<u>Overhead costs</u>	<u>Profit</u>
\$500,000	\$50,000	\$40,000	\$15,000	-\$5,000

What factors should a manager take into consideration in deciding whether or not to drop the fertilizer department?

<u>Score</u>	<u>Responses</u>
--------------	------------------

- | | |
|---|--|
| 1 | Fertilizer is a service department and is essential to a farm supply business. It should be kept unless it sinks the whole business. |
| 2 | Keep it as a service if the losses are minor. |
| 3 | If it doesn't make money, drop it. |
| 4 | If you can't raise the margin and reduce the costs, then get out. |

- 5 Reconsider the margins and costs; try to find the problem.
- 6 Keep it and try to increase sales, cut margins and costs, and perhaps change or improve the equipment.

A manager's knowledge of pricing products and services is essential to all the three management objectives, especially selecting the level of profit. Pertaining to this aspect, the responses to the following question were used:

7. When pricing products and services several factors must be taken into account. Under certain conditions it may be wise to maintain a wide margin even at the sacrifice of sales volume while in other instances it would be better to maintain a smaller margin to get increase sales volume.

For each situation, please state whether you would maintain a large margin with the possibility of decreasing the volume or maintain a small margin with the possibility of increasing the volume.

Encircle one

- | | | |
|-----|-----|--|
| (L) | S | 1. Brand handled recognized by customers as superior to that of competitors. |
| L | (S) | 2. Extra services wanted by customers cannot be (or are not) provided. |
| L | (S) | 3. Many other dealers in the trade area have full competitive lines. |
| (L) | S | 4. An aggressive sales and merchandising program is maintained. |
| L | (S) | 5. Many expenses are fixed so that total per unit handling costs decrease sharply as volume increases. |
| (L) | S | 6. Increased sales of this line have little value for increasing sales of other lines handled. |

For each correct response (encircled in the above), one point was given and each incorrect response was scored zero. The total points of all the six items above were summed to arrive at the score for this question.

A manager's economic knowledge of management may be used in advising customers on farm management matters. Pertaining to this aspect, the responses to the following questions were used:

8. You are advising a farmer who owns 360 acres of crop land. 300 acres are top quality land. 60 acres is land that will raise corn but not as well as the rest of the farm. It would be possible to raise trees on this land that would produce in 10 years.

Which of the following alternatives would you recommend to this farmer?

<u>Score</u>	<u>Responses</u>
1	raise trees on this 60 acres of land and receive \$10,000 net profit at the end of 10 years
2	raise corn on this 60 acres of land and receive a net profit of \$900 per year for 10 years.

9. What factors did you take into consideration in making this decision?

<u>Score</u>	<u>Responses</u>
1	The trees would be less work and make more money. If it isn't tillable, put in the trees and make an extra \$1,000.
2	Putting in trees is good conservation. It makes a good watershed.
3	He would have to clear stumps at the end of 10 years. We are in the corn handling business; would hate to see too much land in trees.
4	If he used a good fertilizer program he could make more than \$900 per year.
5	He will get some income each year.
6	He can invest the \$900 he receives from the corn each year and make more money in 10 years than he will receive from the trees at the end of 10 years.

The scores of these questions were kept as they were in order to give heavier weights on knowledge of management practices (the maximum of 43 points for the total items) than on knowledge of products (the maximum of 17 points for the total items). The questions pertaining to knowledge of management practices were randomly partitioned into two sets (see Appendix A for items in two sets), and scores were summed within each set. These scores became the first and the second measures of management-practices knowledge component.

By summing through the three components, two alternative measures of overall knowledge were obtained. A higher score was intended to indicate relatively more overall knowledge.

RP (role performance) items

The manager's role performance, in the farmer cooperatives, has been categorized into five functions (53). These functions are organizing, planning, controlling, coordinating and directing.

Due to the nature of the method employed in data collection, role performance was operationalized by verbal responses which is assumed to reflect the actual performance of tasks in each function of managerial role. Based on the size of sample and the time limitation it was not feasible for the investigators to check their verbal responses against

non-verbal or actual performance. It is not claimed that verbal responses directly coincide with actual performances of tasks. Rather, verbal responses are assumed to be a verbal report of essentially actual performances of tasks. The question as to the accuracy of the verbal report of activities cannot be answered in this thesis. An attempt was made to overcome some of this difficulty by using standard interviewing techniques and by legitimation obtained for the study through the cooperation of regional cooperatives and the executive secretary of the Iowa Institute of Cooperation. An introductory letter explaining the purposes of the study and introducing the interviewers was mailed to each manager in the sample. At the time of the interview, the importance of obtaining as accurate data as possible was emphasized.

The measures for overall managerial performances were developed as follows: First, knowledge of five functions was used in selecting items. A panel of judges¹ was used in categorizing performance items in the field schedule into the five functional categories. Then, another panel of judges¹ was used to select the most relevant items for each function.

There is no literature which states how the five functions are to be weighted to obtain overall evaluation of managerial

¹The judges were specialists at Iowa State University.

performances. It was assumed that organizing, controlling, coordinating and directing were to be weighted equally and planning to be weighted, somewhat arbitrarily, twice as much. There are two bases for the above weighting.

First, much of the literature on management emphasizes planning and managerial decision making (1, 3, 36, 51, 75). When managerial role performances are analyzed in terms of Phillips' (75) five functions, planning function includes decision making and planning for implementation of decisions made. Decision making appears to be the most emphasized aspect of managerial function when the various authors define management. In the quotation on page 82 in this thesis, Heady and Jensen state true management is a planning and decision-making activity (36). Baumel and Fuller (3) consider that management consists of decision making and implementing these decisions. Phillips (75) emphasizes management as decision making based on uncertainty and implementing decisions made. Many authors seem to agree that decision making and planning for implementation of decisions are the most important aspects of management. Furthermore, in order to implement decisions made, a manager has to plan how to conduct the other four functions; how to control, coordinate, direct and organize. Planning appears to be the most important function of operational management.

Second, according to Phillips (75), organizing may be considered as a part of controlling and coordinating as a part of directing. That is, planning is a relatively unique category among the five functions, even though the five functions are said to be highly interdependent.

Thus, for this thesis, the panel of judges agreed on the use of the double weighting of the items for planning. As a result, eight items were selected for planning, and four items were selected for each of organizing, controlling, coordinating and directing. The selected items were randomly partitioned into two sets within each function and combined later to make the two alternative sets of overall role performance items. The sum of the individual item scores, after standardized by dividing each item score by its standard deviation (27b), was used so that planning is weighted twice as much as the other four functions. Appendix A presents the grouping of items into two sets.

Items selected for the five functions will be presented.

- (1) Planning consists of: Decision making with available information, evaluation in terms of desired results, careful process of thinking, looking ahead, appraising in anticipation (75).

In the planning function of management, a manager's performance may be evaluated in terms of how he makes decisions and how he plans for the implementation of decisions made. In detail, a manager's decision making and planning may be evaluated in terms of each managerial phase.

Besides general management, a cooperative manager is responsible for decision making and planning in the following phases according to Phillips: (1) personnel management, (2) wholesale management, (3) retail sales management, (4) accounting and records management, (5) inventory management, (6) finance management, (7) equipment management, and (8) credit management (75, pp. 12-14).

Pertaining to manager's decision making in general, the responses to the following question were used:

1. In making a major decision, what steps or processes do you go through?

Pertaining to planning for change based on decision and implementation of the decisions, the responses to the following question were used:

2. Once a major decision to make a change has been made, what are some of the things you would do to insure that the implementation of this decision will be successful? (Include planning for change, and planning for the period after the change has been made.)

Planning for goods and services is relevant in many phases of management. A manager is expected to decide (or to make recommendation to the board) on the line of business to maintain, to select brands and qualities of merchandises and to decide on the services to offer. It is not only related to retail sales management but also relevant to wholesale purchase management. Pertaining to decision making on goods and services, the responses to the following question were used:

3. What are the major factors you take into consideration in deciding (or in making recommendations to your board) to add or to drop existing lines of business or reorganizing your business to place greater emphasis on a given line?
4. Within the lines, how do you determine what brands and qualities of merchandise to handle?

In relation to this aspect, planning for customer relationships is also important. The responses to the following question were used:

5. Most businesses attempt to create a favorable image with their customers. What are the essential features or ingredients in the image you are trying to create for this business?

An important decision to be made in wholesale purchases phase of management is selection of sources and outlets. Pertaining to this aspect, the responses to the following question were used:

6. On what basis do you select your wholesale sources and outlets?

Retail sales management is closely connected with wholesale management, a manager has to plan for resale when he purchases supplies. Besides price and quantity, some other factors will enter into manager's decision making and planning in purchasing supplies for resale. Pertaining to this aspect, the responses to the following question were used:

7. When purchasing supplies for resale, what factors (other than price and quantity) do you consider?

Planning is the problem of relating the present situation to the future situation, and decision making based on a sound forecast is important. One of the factors a manager should

be concerned with its market prices and changes in prices. This aspect is related to several phases of management, one of which is inventory management. Pertaining to this aspect of planning, the responses to the following question were used:

8. How do you protect yourself against market price changes on products and supplies in inventory?

- (2) Organizing includes: Grouping processes, assets and personnels and establishing relationships among personnels, in order to make them function effectively to carry out the purpose of the business (75).

A manager is expected to organize his business operation and his employees into a certain structure in order to operate the business efficiently. Organizing business operation includes dividing the business into departments and functions. Organizing personnels includes determining the number of personnel and their qualifications and the delegation of responsibility and workload and specifying job descriptions for the employees.

Pertaining to the managers' performances in organizing business into certain structure, the responses to the following question were used:

1. What factors do you take into consideration in making decisions concerning how your business is organized into departments and functions? (Include decisions such as those concerning functions to be performed and departments to have.)

Pertaining to the effectiveness in organizing personnel as to functions, the following questions were asked:

2. What methods do you use to determine the number and qualifications of the employees needed in your business firm?
3. How do you determine the responsibilities and work loads of each of your employees?
4. What type of job descriptions do you have for each employee position in your business?

(3) Directing includes: Leadership or training function of management, requiring management policies which are well defined and clearly understood, a consistent application of these policies (75).

A manager is expected to operationalize policies into action. In order to do so, he has to guide his personnel to perform as well as to provide adequate training for them. Methods of training personnel and techniques of guiding them will be considered in order to evaluate the manager's performances in the function of directing.

Pertaining to a manager's performance in training employees, the following question was asked:

1. What methods are used to train and develop your employees?

In regard to manager's performance in guiding employees to perform their tasks, techniques and frequency were taken into consideration. The following questions were asked as to this aspect of directing function of managers:

2. What techniques do you include to get top performance out of your employees?
3. How frequently do you work alongside your employees?
4. How frequently do you help employees with important tasks to make sure they've done well?

- (4) Coordinating refers to: effective internal communication (75).

It is a manager's responsibility to achieve effective internal communication between his employees and himself. The communication between the board of directors and himself may also be carried out effectively between both parties. A manager is also expected to see that the communication between his employees and the patron members is effective. The communication between the business and the customers is important in promoting sales. These different levels of communication have to be well coordinated, so that information obtained at one level will be communicated with speed and accuracy.

Pertaining to coordinating communication between manager and employees, the following question was asked:

1. How is information in your business communicated from you to your employees?

Pertaining to coordinating communication between employees and patrons, the following question was asked:

2. Which one of these statements best describes the way you feel about key employee relationships with patron members?
 - a. They have a responsibility to keep themselves well informed and make recommendations on all our major product lines.
 - b. They have a responsibility to pass on only that information about our major product lines which is requested by the customer.
 - c. They should be extremely cautious in making recommendations about any major product line since a poor recommendation could result in a loss of customers.

In communication with customers, a manager has to probably deal with the problem of communicating ideas to a variety of customers rather than a homogeneous group of individuals. Pertaining to this aspect, the following questions were asked:

3. Selling is a matter of getting your ideas and product information to purchasers. What factors do you take into consideration in getting this job done?
4. As you think of merchandising your products, do you classify your farmer customers into different groups and use different selling approaches on them? (If yes, what are the amjor factors you take into consideration in classifying them?)
- (5) Controlling includes: Supervisory function to assure satisfactory performance in all phases of operations; regular reports of activities and performance, clear definition of authority within well-defined policies, direct managerial decision on exceptions only rather than on routine matters, keeping informed on performance in all phases of the business; interpreting and evaluating the information and knowing when and how to take remedial action if necessary (75).

As pointed out earlier, this aspect of managerial function may be considered as a part of directing. The controlling function of management may be divided into (1) supervising and evaluating the business operation and personnel and (2) taking remedial actions. To assure satisfactory business operation, clear definitions of business activities and evaluation of them in all phases are needed. To assure satisfactory employee performances, clear definitions of authority delegated to employees,

evaluation of employee performances and remedial actions to take in order to enhance effective employee performances are needed.

Pertaining to evaluating employee performances, the following question was asked:

1. What method or methods do you use in your business for appraising the performance of employees in the jobs to which they are assigned?

A sales plan may enable the manager to enhance satisfactory performance in retail sales management, a manager may be able to control better with a sales plan. Pertaining to this aspect, the following question was asked:

2. Do you have a sales plan or projection for the next operating year?
 - a. have one written down
 - b. carry one around mentally
 - c. none

Budgeting may be a basis for improving control in all the phases of management. Pertaining to this aspect, the following question was asked:

3. Do you prepare a budget for your next operating year? (If yes, what types of budgets do you use and how are they employed?)

One way to evaluate overall management efficiency is to use ratios. Pertaining to this aspect, the following question was asked:

4. What kinds of ratios do you use to determine how efficient you are in your business? What should these ratios be for your business? What are the factors you take into consideration in deciding on what these ratios should be?

The transformation of the raw data into a form acceptable for statistical analysis was done originally by members of the project, following recommendations made by Dr. Wolins. For each of 98 responses to each question, several judges were asked to indicate their beliefs as to the adequacy of the answers in terms of their leading to successful management, that is, some level of goal attainment. The instruction given to each judge for questions was as follows:

On the following pages are the responses made by general managers of Iowa Farmer Cooperatives to the question: "What are the major factors you take into consideration in deciding (or in making recommendations to your board) to add or to drop existing lines of business or reorganizing your business to place greater emphasis on a given line?"

It is assumed that you have or will formulate a standard of managerial performance which would enable you to differentiate adequate performance from inadequate performance. The adequacy of performance is to be considered in terms of its leading to successful decision making regarding adding, dropping, or reorganizing existing lines of the business. Read the response of each manager and form a judgment as to whether his methods and techniques (his performance) in this area are adequate or inadequate. Compare your judgment for each general manager with your standard. If you believe that the response given by the manager indicates his procedures most certainly would lead to highly adequate performance of the function indicated by the question, place a 99 by the individual's response. On the other hand, if you believe that the response given by the manager indicates his procedures most certainly would lead to highly inadequate performance of the function indicated, place a 1 by the individual's response. The continuum with which you are working is one of certainty. The more certain you are that a response indicates a manager's procedures are on the adequate performance side of the midpoint (50), the greater the number you assign to the response.

The more certain you are a response indicates a manager's procedures are on the inadequate performance side of the midpoint, the smaller the number you assign to the response. A score of 50 indicates you cannot decide. Feel free to use any number from 1 to 99 that best expresses your belief.

Responses to each question were presented to the judges in a random manner. After responses were scored by judges, they were transformed to the scores in the standard normal distribution (z). Thus, 99 was coded as 2.326, 75 as +0.674, 50 as 0.000, 25 as -0.674 and 01 as -2.326 (22). A higher score indicates relatively more adequate performance.

Standardized scores were obtained by dividing z scores with standard deviations (27b). The results were partitioned and summed within each of the two sets. Himes states:

Foremost is the applicability of the questions to certainty scoring.... It was felt that simple open-end questions would permit the respondent freedom in his response and give him a chance to express his competence in the area. Certainty scoring seems quite well suited to the task of transforming the responses to continuum of performance. The judges, who at this point become the definers of the normative expectations placed on the manager's role, are able to consider the whole answer and more completely make a judgment as to the level of performance (39, p. 123).

ORP (outcome of role performance)

Managerial performance is assumed to be directed to profit making, i.e. attainment of economic returns. Economic returns may be defined, according to Warren, in terms of (1) total net sales, (2) total gross commodity margins, (3) total

net operating revenue, (4) indicators of profit maximizations and (5) some of the more commonly used ratios for testing the profitability of business firm (91, p. 165). In this thesis, two of the above items were used: (1) total net operating revenue and (2) a measure of profitability which is the return for fixed investments.

The total net operating revenue is associated with volume sales. It was stated earlier that the satisficing level of profit may be associated with volume or size of sales. Baumol (4) points out that the goal of a business organization is one of total revenue expansion limited by a minimum level of acceptable profits, and that this is likely to be the case in the organization where management and ownership are separated. In this thesis the total net operating revenue will be indicated as net operating revenue. Net operating revenue is computed by commodity sales, plus total other income minus refund. Investment income is excluded from revenue because this is the area where the operational manager may have the least impact (39, 91).

Net operating revenue is the profit a manager may wish to maximize, if he must take all inputs as given. If a manager is able to change current inputs, he may wish to maximize the return on fixed investments (91).

Return on fixed investments is computed as follows:

Return on	(commodity sales + total other income) -
fixed	(refunds + total other expenses + ammortization)
investments	fixed assets + ammortization

The formulae used to compute net operating revenue and return on fixed investments were judged as adequate by the panel of judges.

Both of the above indices of profit were measured, at two points in time, i.e. in 1964 and in 1965. The measurements of these two years provided the two alternative measures for each index. Other variables were measured only once, at the time of interviewing. It is assumed that other variables stay relatively unchanged during the period of one year.

CHAPTER V. DATA ANALYSIS

Path Diagrams and Path Coefficients

The following three major steps will be taken in data analysis:

Step 1: Analysis of the first set of measures to assist in the construction of models by using the empirical data and the selection of the best set of predictors on an empirical basis in addition to the theoretical basis. Necessary modifications of postulated models will be made.

Step 2: Analysis of the second set of measures to confirm the models constructed after Step 1. A further modification of models may be made if the second set of measures does not confirm the models constructed in Step 1.

Step 3: Estimation of contributions of traits or quantitative qualities to the criterion variables with the corrected set of correlation coefficients.

Step 1: Analysis of the first set of measures

Path analysis technique involves the sequential regression analysis to test the statistical significance of paths. Any path to remain in the model has to be statistically significant or, as expressed by Duncan, to be not negligible in

magnitude (26). The path diagrams, i.e. the models subjected to path analysis, are shown in Figure 4.

In order to evaluate the significance of the paths, t values of regression coefficients were used. Since the models include different sets of regression equations, they will be designated. In the following figure, the X 's and R 's are the standardized forms of variables V 's and residual factors e 's respectively. In the diagrams, broken lines were added to indicate the relationships which were not postulated to exist in the models in the chapter on the theoretical framework. The terms which represent the broken lines in the diagrams were underlined with broken lines in the regression equations. Regression coefficients for those terms are expected to be statistically insignificant. The purpose was to determine whether the absence of arrows was substantiated by non-significant regression coefficients. The regression equations for the models in Figure 4 are:

$$X_1 = p_{1.5}X_5 + p_{1.9}X_9 + p_{1.10}X_{10} + p_{1.a}R_a \quad (\text{Models 3, 4})$$

$$X_1 = p_{1.9}X_9 + p_{1.10}X_{10} + p_{1.a}R_a \quad (\text{Models 1, 2})$$

$$X_3 = p_{3.1}X_1 + p_{3.5}X_5 + p_{3.9}X_9 + p_{3.10}X_{10} + p_{3.b}R_b \quad (\text{Models 2, 4})$$

$$X_3 = p_{3.1}X_1 + p_{3.5}X_5 + p_{3.7}X_7 + p_{3.9}X_9 + p_{3.10}X_{10} + p_{3.b}R_b$$

(Models 1, 3)

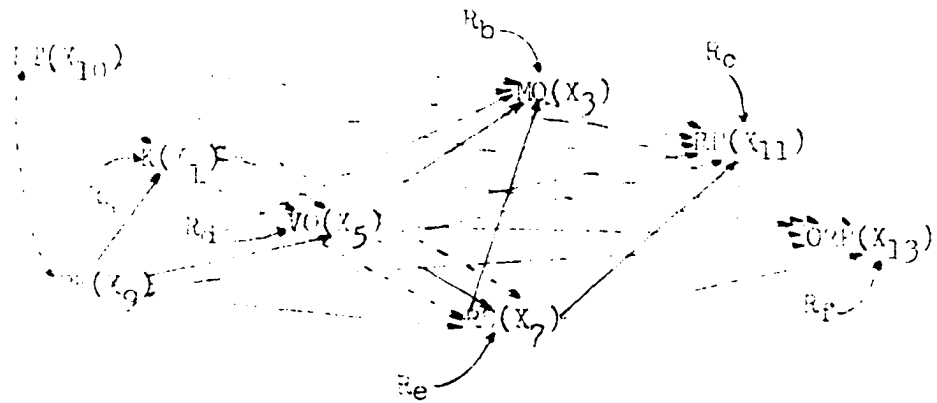


Diagram 1 (model 1)

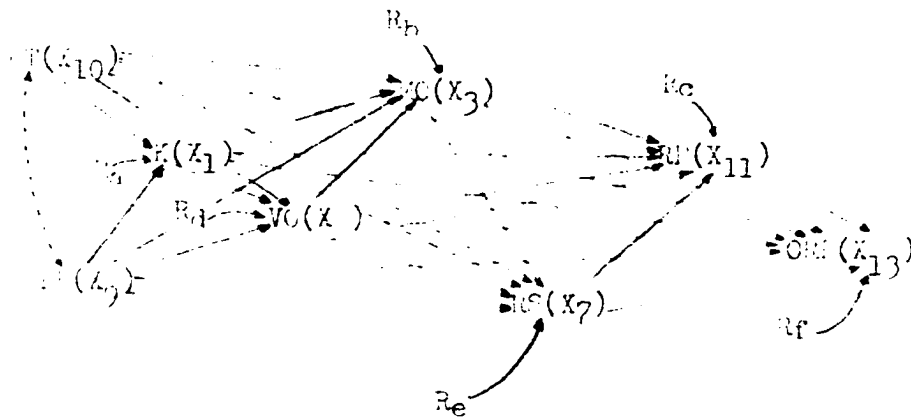


Diagram 2 (model 2)

Figure 4. Path diagrams for RP and ORP

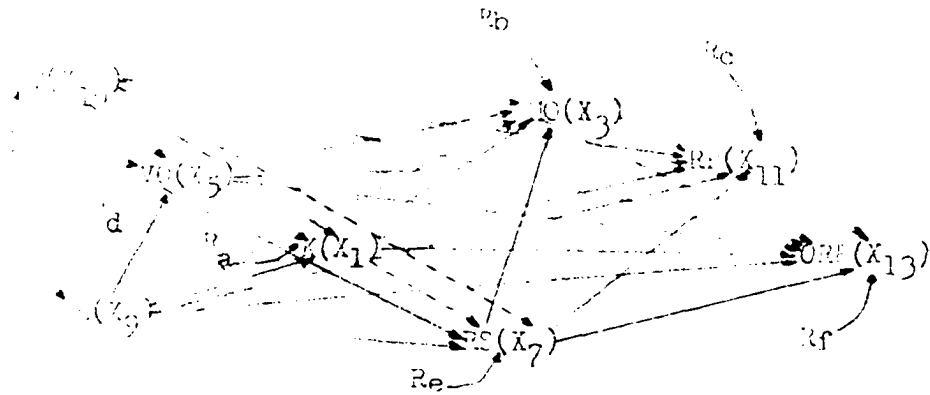


Diagram 3 (model 3)

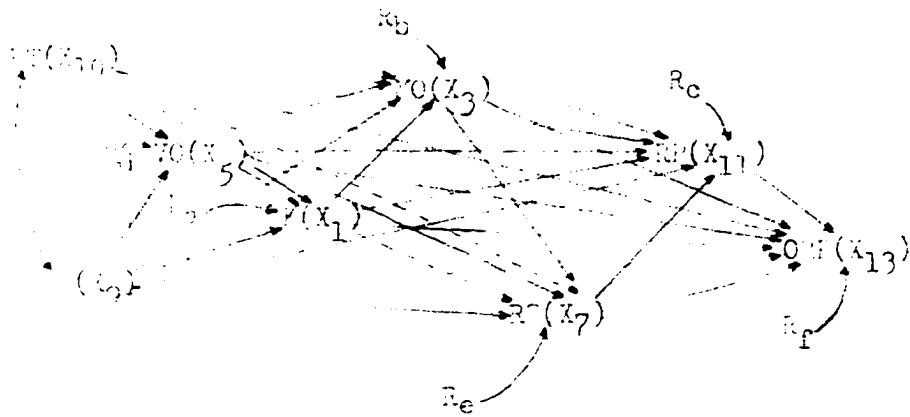


Diagram 4 (model 4)

Figure 4 (continued)

$$X_5 = p_{5.1}X_1 + p_{5.9}X_9 + p_{5.10}X_{10} + p_{5.d}R_d \quad (\text{Models 1, 2})$$

$$X_5 = p_{5.9}X_9 + p_{5.10}X_{10} + p_{5.d}R_d \quad (\text{Models 3, 4})$$

$$X_7 = p_{7.5}X_5 + p_{7.9}X_9 + p_{7.1}X_1 + p_{7.10}X_{10} + p_{7.e}R_e \quad (\text{Models 1, 3})$$

$$X_7 = p_{7.3}X_3 + p_{7.5}X_5 + p_{7.9}X_9 + p_{7.1}X_1 + p_{7.10}X_{10} + p_{7.e}R_e$$

(Models 2, 4)

$$X_{11} = p_{11.1}X_1 + p_{11.3}X_3 + p_{11.5}X_5 + p_{11.7}X_7 + p_{11.9}X_9$$

$$+ p_{11.10}X_{10} + p_{11.c}R_c$$

$$X_{13} = p_{13.1}X_1 + p_{13.3}X_3 + p_{13.5}X_5 + p_{13.7}X_7 + p_{13.9}X_9$$

$$+ p_{13.10}X_{10} + p_{13.11}X_{11} + p_{13.f}R_f$$

For the diagrams where ORP was measured as net operating revenue, the equation for X_{13} is replaced with the following equation for X_{15} .

$$X_{15} = p_{15.1}X_1 + p_{15.3}X_3 + p_{15.5}X_5 + p_{15.7}X_7 + p_{15.9}X_9$$

$$+ p_{15.10}X_{10} + p_{15.11}X_{11} + p_{15.g}R_g$$

In Figure 5, the t values obtained in the first regression analysis are presented. The t value for the regression coefficient between two variables is identical regardless of the direction of the arrow between the two variables, if the other independent variables are same and controlled. For example, t value for $b_{12.34}$ is equal to t value for $b_{21.34}$.

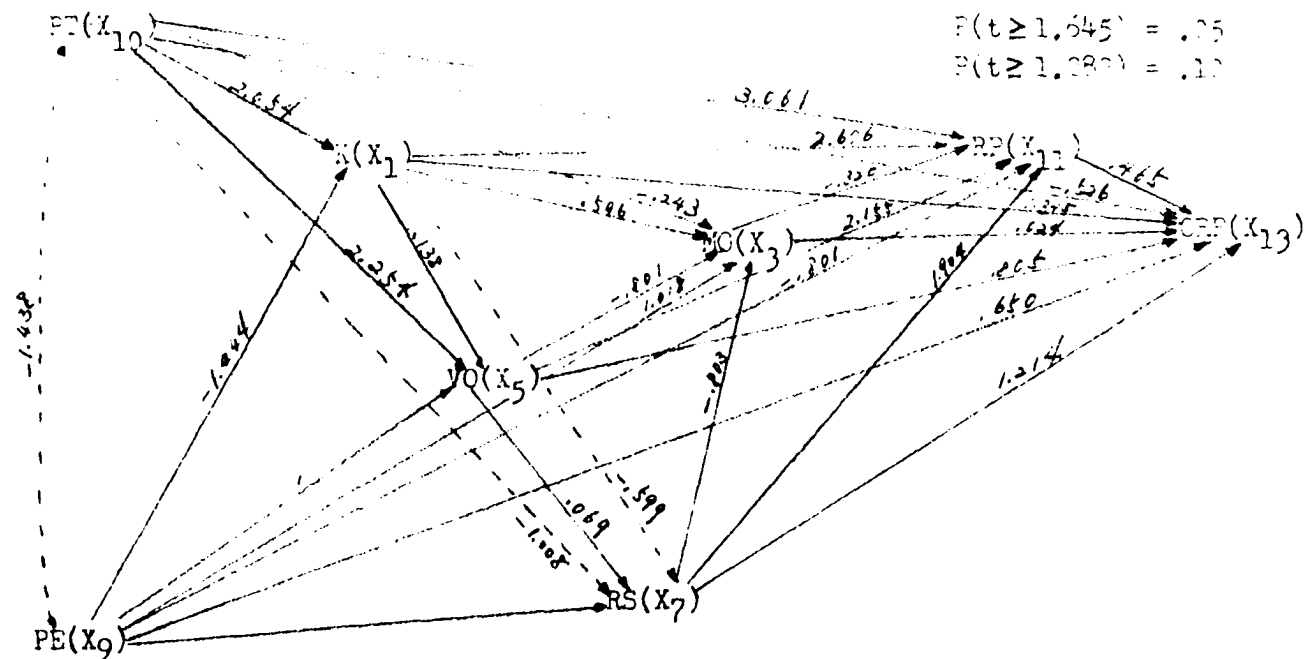


Diagram A. t values¹ for the diagrams for RP and ORP as return on fixed investments

¹Under the present settings of diagrams 1 - 4, the same set of t values will apply to all the four diagrams, since for example, t value for $b_{12.34}$ is equal to t for $b_{21.34}$.

Figure 5. Path diagrams with t values using the first set of measures

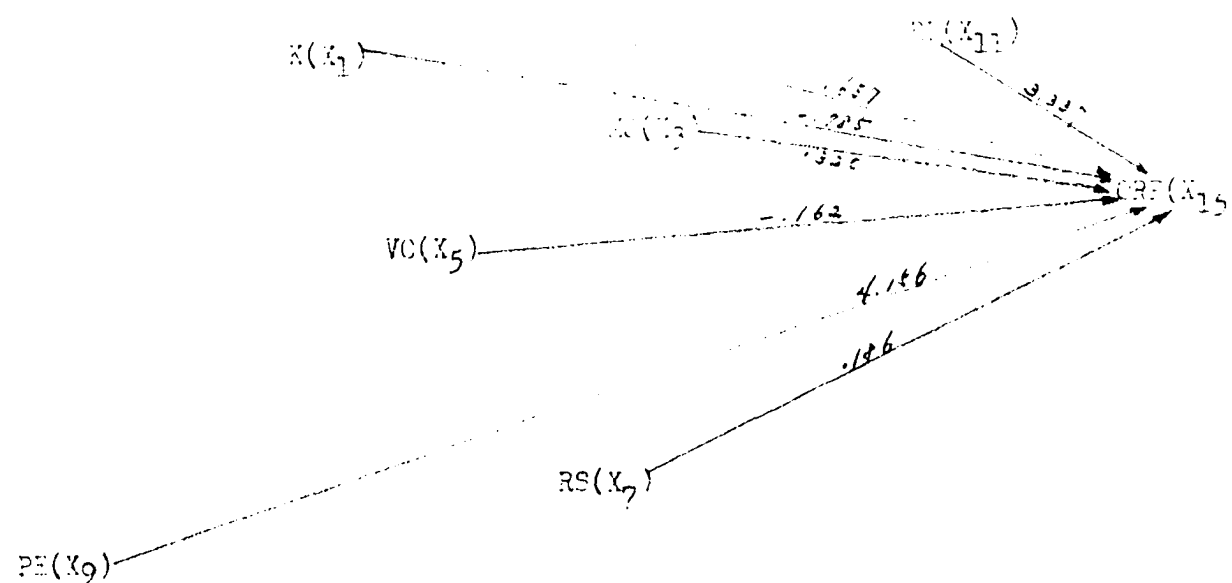


Diagram B¹. t values for the arrows leading to ORP as net operating revenue

¹The structure of the diagrams for ORP as net operating revenue is identical at this stage to ORP in diagram A in Figure 5. So the portion different from diagram A, Figure 5 is presented above.

Figure 5 (continued)

Thus, all the four diagrams, for the four alternative models, in Figure 4 will be considered together in one diagram, diagram A in Figure 5. Diagram B in Figure 5 presents only a part of the whole diagram for RP and ORP as net operating revenue. It shows only arrows leading to ORP from its independent variables, since the rest of the diagram is identical to diagram A in Figure 5. The relationships which were not postulated in the models in Figure 3 yielded insignificant t values. Based on the postulated causal relationships, some of the t values were not large enough to maintain the arrows further in the models.

An attempt was then made to select the best set of predictors for each equation. Only those relationships where t values were significant at or beyond 10 percent level were retained for the further regressional analysis. The results of the final regressional analysis in Step 1 are shown in Figure 6. Only t values were entered in the diagrams. At this stage, residual coefficients were not computed, they will be computed after the path coefficients are estimated in Step 3.

Based on the data analysis with the first set of measures, the best set of predictors consisted of PT, K, VO, and RS for RP as the dependent variable. K and RS were selected as the best set of predictors for ORP (return on the fixed investments), and RP and PE for ORP (net operating

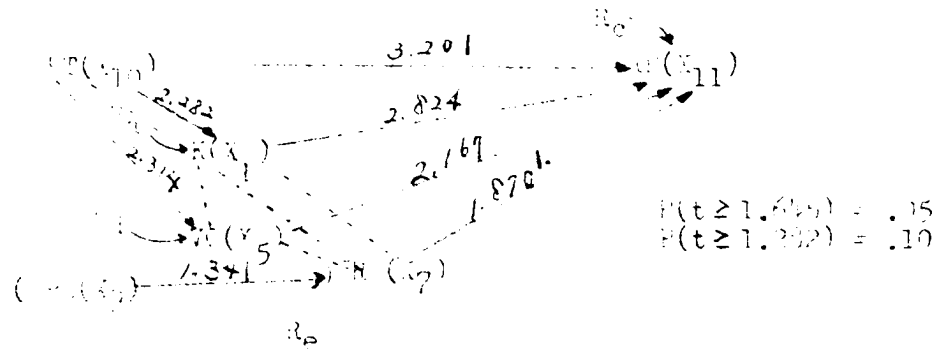


Diagram A, for RP

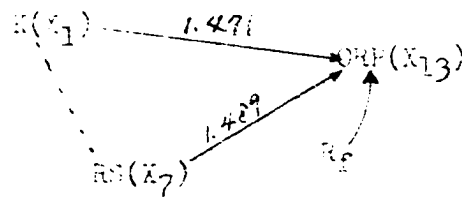


Diagram B, for ORP as return on fixed investments

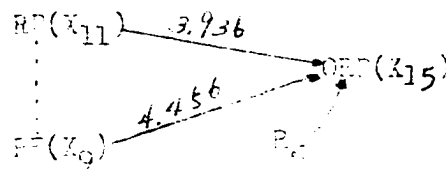


Diagram C, for ORP as net operating revenue

¹1.870 was t value for $p_{11.7}$ which was computed not as $b^*_{11,7.1,5,9,10}$ but as $b^*_{11,7.1,5,10}$, so that it can be compared with $p_{11.10}$, $p_{11.1}$ and $p_{11.5}$.

Figure 6. Modified path diagrams with t values using the first set of measures

revenue). Since the analysis revealed that RP, ORP as return on fixed investments and ORP as net operating revenue had different sets of best predictors, diagrams were re-organized into three different diagrams by separately constructing one for RP (diagram A), one for ORP as return on fixed investments (diagram B) and one for ORP as net operating revenue (diagram C). In Figure 6, a broken line indicates that the numerical value of correlation coefficient between two variables with a postulated causal relationship was not statistically significant. However, it was deemed necessary to differentiate between relationships of independence¹ and relationships of some dependence in the path diagram, even though the latter were not statistically significant. In other words, the variables connected with a broken line cannot be said to contribute independently to the criteria variables in a strict sense². No numerical values will be entered for the broken lines until the last stage of data analysis where correlation coefficients between the dependent variables and traits are computed and the components will be examined.

¹Here, relationships of independence refer to the correlation coefficients being actually zero or approximately zero.

²This addition of broken lines will be discussed in the following chapter on discussion and recommendation.

As seen in Figure 6, those relationships which differentiated the four alternative models, i.e. $K \rightarrow VO$, $VO \rightarrow k$, $RS \rightarrow MO$, $MO \rightarrow RS$, have been eliminated from the diagrams due to the small t values. Thus the original four alternative models of RP became one. There were also several causal relationships postulated among determinants in diagram A in Figure 6 which were supported by significant t values; $PT \rightarrow K$, $PT \rightarrow VO$, and $PE \rightarrow RS$.

Step 2: Analysis of the second set of measures

The second step consists of regression analysis of the models established in the first step (see Figure 6) using the second set of measures. The diagrams in Figure 7 carry standardized variable numbers for the second set of measures, and the same symbols for residuals are used to simplify the notations. The regression equations to be computed using the variables for the second set of measures are presented, following Figure 7:

$$X_2 = p_{2.10}X_{10} + p_{2.a}R_a \quad (\text{Diagram A})$$

$$X_6 = p_{6.10}X_{10} + p_{6.d}R_d \quad (\text{Diagram A})$$

$$X_8 = p_{8.9}X_9 + p_{8.e}R_e \quad (\text{Diagram A})$$

$$X_{12} = p_{12.2}X_2 + p_{12.6}X_6 + p_{12.8}X_8 + p_{12.10}X_{10} + p_{12.c}R_c \\ (\text{Diagram A})$$

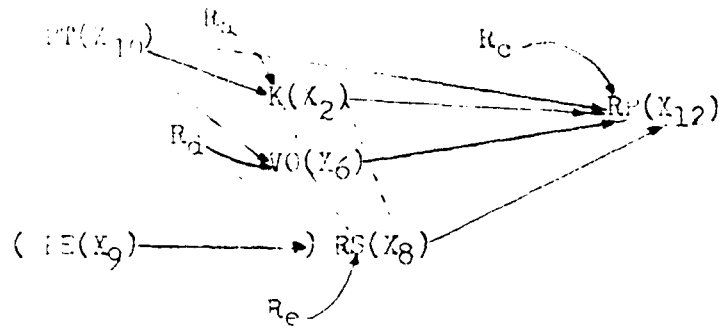


Diagram A, for RP

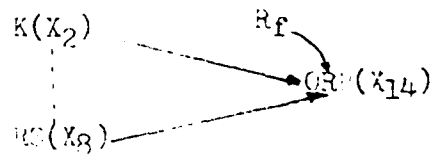


Diagram B, for ORP as return on fixed investments

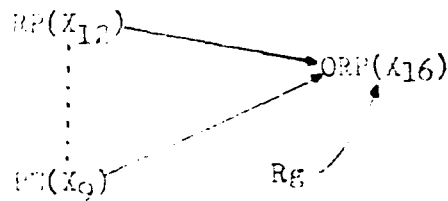


Diagram C, for ORP as net operating revenue

Figure 7. Models to be tested using the second set of measures

$$X_{14} = p_{14.2}X_2 + p_{14.8}X_8 + p_{14f}R_f \text{ (Diagram B)}$$

$$X_{16} = p_{16.9}X_9 + p_{16.12}X_{12} + p_{16g}R_g \text{ (Diagram C)}$$

The t values obtained in the regression analysis based on variables in Figure 7 were entered in each diagram in Figure 8. The result of data analysis with the second set of measures (Figure 8) did not completely confirm the models established by the first set of measures (see Figure 6). Among the relationships whose t values were relatively small in the first step was the relationship indicated by the arrow from PE to RS, whose t value became insignificantly small in magnitude (.438) in the second step. Thus, the arrow from PE to RS was dropped at this stage of analysis. Three other t values were relatively small with the second set of measures. They were the t values for the relationships indicated by arrows from PT to K, and from RS to RP in diagram A and from K to ORP in diagram B in Figure 8. (For these relationships, only the arrow from K to ORP in diagram B carried a relatively small t value with the first set of measure in Step 1.) The three arrows were retained in the models due to the following considerations: (1) The table value of significance is after all approximation and these values were approaching significance. Thus, their magnitudes were considered large enough to retain the arrows in the model. (2) With knowledge of the first step of

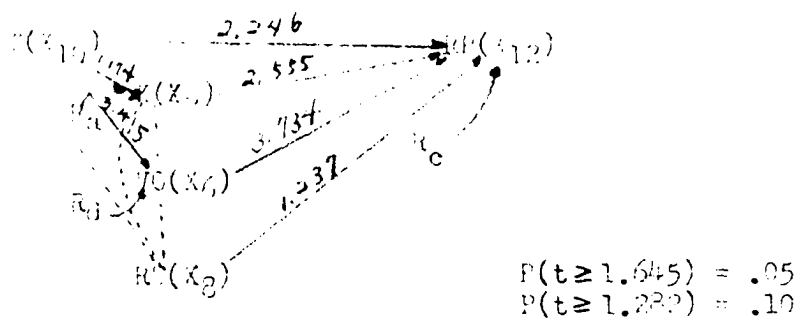


Diagram A, for RP

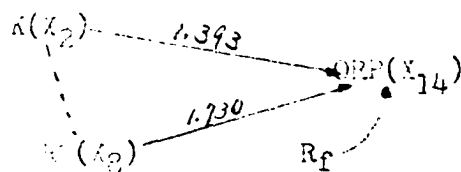


Diagram B, for ORP as return on fixed investments

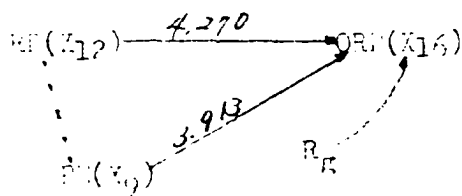


Diagram C, for ORP as net operating revenue

Figure 8. Path diagrams with t values using the second set of measures

analysis, these relationships were expected to hold empirically in addition to the theoretical point of view. Under this circumstance, the level of significance may be considered as less absolute.

In Figure 8, the path diagrams indicate each dependent variable with its best set of predictors as confirmed with the second set of measures. Again t values are entered to indicate the relative magnitudes of the relationships. The residual path coefficients will not be entered until the last procedure of this chapter.

Step 3: Estimation of trait contribution

Based on the results of the data analysis with two sets of measures, the models were modified. They are shown in Figure 9.

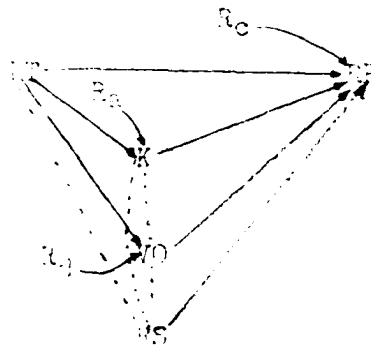


Diagram A, for RP

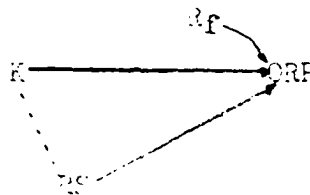


Diagram B, for ORP as return on fixed investments

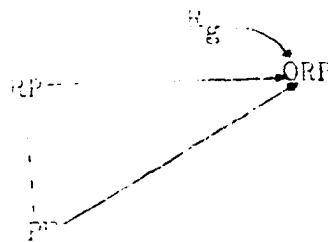


Diagram C, for ORP as net operating revenue

Figure 9. Modified models

The regression equations are:

$$X_K = p_{K.PT} X_{PT} + p_{K.a} R_a \quad (\text{Diagram A})$$

$$X_{VO} = p_{VO.PT} X_{PT} + p_{VO.d} R_d \quad (\text{Diagram A})$$

$$X_{RP} = p_{RP.K} X_K + p_{RP.VO} X_{VO} + p_{RP.RS} X_{RS} + p_{RP.PT} X_{PT} + p_{RP.c} R_c \quad (\text{Diagram A})$$

$$X_{ORP} = p_{ORP.K} X_K + p_{ORP.RS} X_{RS} + p_{ORP.f} R_f \quad (\text{Diagram B})$$

$$X_{ORP} = p_{ORP.PE} X_{PE} + p_{ORP.RP} X_{RP} + p_{ORP.g} R_g \quad (\text{Diagram C})$$

In the third step, the concern is not with variables (i.e. X_1, X_2, \dots), but with traits or quantitative qualities (i.e. VO, K, \dots).

In order to estimate path coefficients of traits, the correlation coefficients of the second set of measures need to be corrected for attenuation for each dependent variable¹ in the diagrams in Figure 9.

To correct the correlation coefficients for attenuation, the following procedure was used. In each corrected correlation matrix, the off-diagonal values except the column of dependent variable, were obtained by using the following equation:

$$^A r_{ij} = \frac{r_{i_2 j_2}}{\sqrt{r_{i_1 i_2}} \sqrt{r_{j_1 j_2}}}$$

¹The expression 'dependent variable' will be still used, since the objective is to determine how much traits contribute to the dependent variable measured.

The equation above may be expressed as $\hat{R} = D^{-\frac{1}{2}} R_2 D^{-\frac{1}{2}}$ in a matrix notation. In the above equations, $r_{i_2 j_2}$ is an element in matrix R_2 , which is the correlation matrix of the second set of measures. $r_{i_1 i_2}$ and $r_{j_1 j_2}$ are obtained from the diagonal elements, D , of the intercorrelation matrix between the first set of measures and the second set of measures. In other words, D includes the correlation between the first measure and the second measure of each concept, which is labeled as the reliability coefficient in the discussions to follow. For the column dependent variable y , the correction for attenuation will be computed, using the following equation:

$$\hat{r}_{yj} = \frac{r_{y_2 j_2}}{\sqrt{r_{j_1 j_2}}}$$

The correlation coefficient between a dependent variable and an independent variable will be corrected only in regard to the independent variable. So in the following discussion, $r_{y_1 y_2}$ will be left out of D matrix. The diagonal elements of corrected correlation matrix \hat{R} will be 1.000.

For RP as the dependent variable as shown in diagram A, in Figure 9, the independent traits are K, VO, RS and PT. To compute the correction for attenuation the following matrices were needed:

D matrix (M1) was:

	K_2	VO_2	RS_2	PT^1
K_1	.370	0	0	0
VO_1		.399	0	0
RS_1			.638	0
PT				1.000

R_2 matrix (M2) was:

	K_2	VO_2	RS_2	PT	$RP_2(Y)^2$
K_2	1.000	.367	.056	.119	.390
VO_2		1.000	-.030	.329	.501
RS_2			1.000	-.011	.104
PT				1.000	.342
RP_2					1.000

Upon inspection of D (M1) and R_2 (M2) matrices above, it was decided³ that a composite of VO and K would be used rather than VO and K as two separate traits. The reasons for using the composite trait are as follows: (1) Upon the correction

¹The measure for PT was considered as fixed, so the same measure was used for the first and the second set of measures.

²(Y) was added to indicate the dependent variable in each regression analysis.

³Upon consultation with and recommendation by Dr. Wolins.

for attenuation, VO and K correlated near 1.000, which implies that VO and K would correlate approximately unity if they were measured without error,¹ and (2) $r_{K_1K_2}$ and $r_{VO_1VO_2}$ in D matrix (M1) show that only about 37 percent of the measure of K was the true measurement and 40 percent of the measure of VO was true measurement and furthermore $r_{K_2VO_2}$ (.367) in the R_2 matrix (M2) shows that the portion measured without error in VO and K was approximately the portion that VO and K were correlating with each other. In a regression analysis, when two independent variables correlate high with each other, one of them should be dropped or a composite of the two should be used. At this stage, the diagrams in Figure 9 were further modified to include the composite of K and VO, K-VO, rather than K and VO separately.

Now, the R_2 matrix (M2) and the D (M1) matrix had to be adjusted so that they would include composite K-VO respectively, before correction for attenuation would be performed. In order to compute elements in the adjusted matrix of R_2 ,

¹In the first set of measures in Step 1, the correlation between K and VO was not significant. As the result, the postulated arrow, $K \rightarrow VO$ and $VO \rightarrow K$, was dropped from the diagrams at the end of Step 1. It may be stated that the first measure of K items and the first measure of VO items correlated very low, indicating "item" correlation rather than "trait" correlation (94a). It was noted that $r_{K_1VO_2}$, $r_{K_2VO_1}$, and $r_{K_2VO_2}$ were all highly significant. See Appendix C.

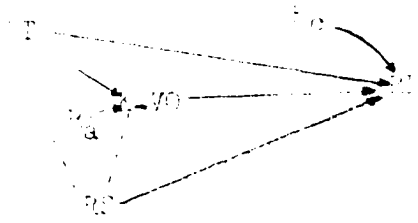


Diagram A, for RP

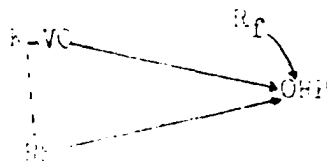


Diagram B, for ORP as return on fixed investments

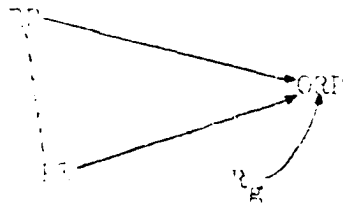


Diagram C, for ORP as net operating revenue

Figure 10. Modified models with a composite of K and VO

the following procedure was used:

$$r_{y.K-VO} = \frac{\sum_j r_{yj}}{\sqrt{\sum_j \sum_j r_{jj}}}, \text{ where } j \text{ includes } K \text{ and } VO$$

and y includes RS, PT and RP (for the R_2 matrix (M2) with RP as the dependent variate.) Using figures in the original R_2 matrix (M2), an example of the computation is given for

$$r_{RS_2 \cdot (K-VO)_2}:$$

$$\begin{aligned} r_{RS_2 \cdot (K-VO)_2} &= \frac{r_{RS_2 K_2} + r_{RS_2 VO_2}}{\sqrt{r_{K_2 VO_2} + r_{K_2 K_2} + r_{VO_2 K_2} + r_{VO_2 VO_2}}} \\ &= \frac{.056 + (-.030)}{\sqrt{.367 + 1.000 + .367 + 1.000}} \\ &= .015 \end{aligned}$$

By applying the same procedure, the adjusted R_2 matrix (M3) was obtained:

	K-VO ₂	RS ₂	PT	RP ₂ (Y)	1
K-VO ₂	1.000	.015	.271	.539	
RS ₂		1.000	-.011	.104	
PT			1.000	.342	
RP ₂				1.000	

The D matrix (M1) was also adjusted in order to include a composite of K and VO. The equation $\bar{r} = \frac{2\bar{r}}{1+\bar{r}}$ was used to

¹The broken line block encloses the adjusted part of the R_2 matrix (M3).

compute reliability coefficient for the composite K-VO, where \bar{r} was the average of $r_{K_1K_2}$, $r_{VO_1VO_2}$ of the original D matrix (M1) and $r_{K_2VO_2}$ of the R_2 matrix (M2).

The adjusted D matrix (M4) was:

	K-VO ₂	RS ₂	PT
K-VO ₁	.549	0	0
RS ₁	0	.638	0
PT	0	0	1.000

The correction for attenuation was performed with the adjusted R (M3) and D (M4) matrices. A computational example will be given:

$$\hat{r}_{RS.K-VO} = \left(\frac{1}{\sqrt{r_{RS_1RS_2}}} \right) r_{RS_2K-VO_2} \left(\frac{1}{\sqrt{r_{K-VO_1K-VO_2}}} \right)$$

In the R_2 matrix (M3), $r_{RS_2K-VO_2} = .015$, and in the D matrix

(M4), $r_{K-VO_1K-VO_2} = .549$ and $r_{RS_1RS_2} = .638$. Thus,

$$\hat{r}_{RS.K-VO} = \left(\frac{1}{\sqrt{.638}} \right) (.015) \left(\frac{1}{\sqrt{.549}} \right) = .026.$$

To compute $\hat{r}_{RP.K-VO}$,

$$r_{RP.K-VO} = \frac{r_{RP_2K-VO_2}}{\sqrt{r_{K-VO_1K-VO_2}}}$$

The same procedure was carried out for the other off-diagonal elements and 1.000 was placed for the diagonal elements in the \hat{R} (M5) matrix. The \hat{R} (M5) matrix was:

	K-VO	RS	PT	RP(Y)
K-VO	1.000	.026	.366	.727
RS		1.000	-.013	.130
PT			1.000	.342
RP				1.000

Now the set of b^* values will be computed for RP as follows:

$$B^* = \hat{R}^{-1} \cdot r_{y.x},$$

where \hat{R}^{-1} will be the inverted form of the \hat{R} matrix (M5) less the column and row of RP(Y) and $r_{y.x}$ will be the column of RP(Y) in the \hat{R} matrix (M5).

The beta coefficients of traits, i.e. path coefficients, were estimated as follows:

$$\hat{B}_{y.x}^* = \hat{R}^{-1} \cdot r_{y.x}$$

$b_{RP, K-VO, RS, PT}^*$	=	1.000	.026	.366	-1	.727
$b_{RP, RS, K-VO, PT}^*$			1.000	-.013		.130
$b_{RP, PT, K-VO, RS}^*$				1.000		.342
		1.156	-.036	-.423		.727
	=	-.036	1.001	.026		.130
		-.423	.026	1.156		.342

The result was $b_{RP,K-VO,RS,PT}^* = .691 (= p_{RP,K-VO})$,

$b_{RP,RS,K-VO,PT}^* = .113 (= p_{RP,RS})$, and $b_{RP,PT,K-VO,RS}^* =$

$.091 (= p_{RP,PT})$.

Using the variables in Figure 10, the contribution of traits to other dependent variables will be estimated, following the same procedure used to estimate the contribution of traits to RP.

For the contribution of K-VO and RS to ORP (return on fixed investments) in diagram B in Figure 10, the following matrices were used:

D matrix (M6) was:

	K-VO ₂	RS ₂
K-VO ₁	.549	0
RS ₁	0	.628

R₂ matrix (M7) was:

	K-VO	RS	ORP (Y)
K-VO	1.000	.015	.155
RS		1.000	.181
ORP			1.000

\hat{R} (M8) matrix was obtained by computing off-diagonal elements according to the procedure described earlier and placing 1,000 as the diagonal elements.

\hat{R} (M8) was:

	K-VO	RS	ORP (Y)
K-VO	1.000	.026	.209
RS		1.000	.227
ORP			1.000

$$B^* = \hat{R}^{-1} r_{Y.X}$$

$$= \begin{vmatrix} 1.000 & .026 \\ .026 & 1.000 \end{vmatrix}^{-1} \cdot \begin{vmatrix} .209 \\ .227 \end{vmatrix}$$

$$= \begin{vmatrix} 1.001 & -.026 \\ -.026 & 1.001 \end{vmatrix} \cdot \begin{vmatrix} .209 \\ .227 \end{vmatrix}$$

The result was $b_{ORP, K-VO, RS}^* = .203 (= p_{ORP, K-VO})$, and

$b_{ORP, RS, K-VO}^* = .222 (= p_{ORP, RS})$.

To compute contribution of traits to ORP (net operating revenue) as shown in diagram C in Figure 10, the following matrices were needed:

D matrix (M9) was:

	PE	RP ₂
PE	1.000	0
RP ₁		.743

R_2 matrix (M10) was:

	PE	RP ₂	ORP ₂ (Y)
PE	1.000	-.174	.290
RP ₂		1.000	.328
ORP ₂			1.000

Upon correction for attenuation, the resulting \hat{R} matrix (M11) was:

	PE	RP	ORP (Y)
PE	1.000	-.202	.290
RP		1.000	.381
ORP			1.000

Computation of b^* values was conducted as follows:

$$B^* = \hat{R}^{-1} r_{y.x}$$

$$\begin{vmatrix} 1.000 & -.202 \\ -.202 & 1.000 \end{vmatrix}^{-1} \cdot \begin{vmatrix} .290 \\ .381 \end{vmatrix}$$

$$\begin{vmatrix} 1.042 & .211 \\ .211 & 1.042 \end{vmatrix} \cdot \begin{vmatrix} .290 \\ .381 \end{vmatrix}$$

The result was $b^*_{\text{ORP,PE.RP}} = .382$ ($= p_{\text{ORP,PE}}$) and $b^*_{\text{ORP,RP.PE}} = .458$ ($= p_{\text{ORP,RP}}$).

For the contribution of PT to K-VO, diagram A in Figure 10, the corrected correlation coefficient $r_{K-VO.PT}$ in R matrix (M5) was entered in Figure 11, since $b_{ij}^* = r_{ij}$ when there is only one independent variable. K-VO is at the same time an independent trait for RP, thus $r_{K-VO.PT}$ was corrected for attenuation in regard to K-VO.

Now the result of Step 3 will be presented together in Figure 11, with the beta values (path coefficients):

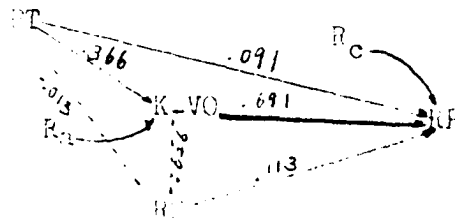


Diagram A, for RP

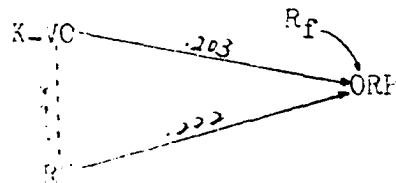


Diagram B, for ORP as return on fixed investments

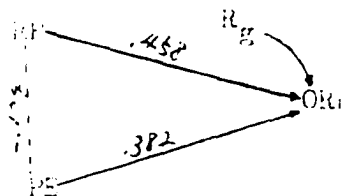


Diagram C, for ORP as net operating revenue

Figure 11. Path diagrams with path coefficients¹

¹In order to facilitate the following step of path analysis, the correlation values were placed at this stage on the broken lines.

Computation of Correlation Coefficients on the Path Diagrams

The procedure here corresponds to items 2 reviewed earlier in the section of 'information obtainable in path analyses' in the chapter on methodology. Correlation coefficients as indicated in the diagrams will be inspected in regard to its components, i.e. direct and indirect effects.

The correlation coefficients computed from the diagrams are identical to zero order correlation coefficients:

$$r_{ij} = \sum_q p_{iq} r_{jq}$$

Thus, the set of simultaneous normal equations will be written for each dependent variable and the terms of each equation will be inspected.

In the following, a correlation coefficient between the dependent variable and its independent trait will be analyzed into the portion due to the direct effect of the trait and indirect effects of the trait via its correlation with other traits. The above will be computed by observing each one of simultaneous normal equations for each dependent variable. Interpretation of the correlation, which is only a point of view unique to the particular setting of path diagrams in this thesis, will be given as follows: In the following, Duncan's notation of p 's are used rather than b 's.

For diagram A in Figure 11:

$$r_{RP.K-VO} = p_{RP.K-VO} + p_{RP.RS} r_{K-V).RS} + p_{RP.PT} r_{K-VO.PT}$$

$$r_{RP.RS} = p_{RP.K-VO} r_{RS.K-VO} + p_{RP.RS} + p_{RP.PT} r_{RS.PT}$$

$$r_{RP.PT} = p_{RP.K-VO} r_{PT.K-VO} + p_{RP.RS} r_{PT.RS} + p_{RP.PT}$$

From the above set of equations:

$$\begin{aligned} r_{RP.K-VO} &= p_{RP.K-VO} + p_{RP.RS} r_{K-VO.RS} + p_{RP.PT} r_{K-VO.PT} \\ &= (.691) + (.693)(.026) + (.091)(.366) \\ &= (.691) + (.003) + (.033) = .727 \end{aligned}$$

In the correlation between RP and K-VO (.727) as presented in diagram A in Figure 11, the portion due to the direct effect of K-VO on RP was .691, while the portions due to indirect effects of K-VO via correlation with PT and RS were very small, .033 and .003 respectively. Under the assumed causal ordering in the diagram, changes in K-VO were expected to directly affect RP, thus the portions due to indirect effects of K-VO on RP were expected to be of non-significant magnitudes.

$$\begin{aligned} r_{RP.RS} &= p_{RP.K-VO} r_{RS.K-VO} + p_{RP.RS} + p_{RP.PT} r_{RS.PT} \\ &= (.691)(.026) + (.113) + (.091)(-.013) \\ &= (.018) + (.113) + (-.001) = .130 \end{aligned}$$

The correlation between RP and RS (.130) was mostly due to the direct effect of RS on RP. Its indirect effects via correlation with PT and K-VO were very minute as indicated by the broken lines in diagram A, Figure 11.

$$\begin{aligned}
 r_{RP.PT} &= P_{RP.K-VO} r_{PT.K-VO} + P_{RP.RS} r_{PT.RS} + P_{RP.PT} \\
 &= (.691)(.366) + (.113)(-.013) + (.091) \\
 &= (.253) + (-.001) + (.091) = .343
 \end{aligned}$$

In the correlation between RP and PT (.343), the portion due to direct effect of PT on RP was only .091, while the portions due to its indirect effects via K-VO and via RS were .253 and -.001 respectively.

For diagram B, for ORP as return on fixed investments:

$$\begin{aligned}
 r_{ORP.K-VO} &= P_{ORP.K-VO} + P_{ORP.RS} r_{K-VO.RS} \\
 r_{ORP.RS} &= P_{ORP.K-VO} r_{RS.K-VO} + P_{ORP.RS}
 \end{aligned}$$

From the above set of equations,

$$\begin{aligned}
 r_{ORP.K-VO} &= P_{ORP.K-VO} + P_{ORP.RS} r_{K-VO.RS} \\
 &= (.203) + (.222)(.026) \\
 &= (.203) + (.006) = .209
 \end{aligned}$$

The correlation between ORP (return on fixed investments) and K-VO was mainly due to the direct effect of K-VO on ORP. The portion due to the indirect effect of K-VO via its correlation with RS was very small (.006).

$$\begin{aligned}
 r_{ORP.RS} &= P_{ORP.K-VO} r_{RS.K-VO} + P_{ORP.RS} \\
 &= (.203)(.026) + (.222) \\
 &= (.005) + (.222) = .227
 \end{aligned}$$

The correlation between ORP and RS was also mainly due to the direct effect of RS on ORP. The above two results were

in fact expected from the diagram B, where the correlation between the two traits was indicated with a broken line as insignificant.

For diagram C, ORP as net operating revenue, the simultaneous normal equations were:

$$r_{\text{ORP.PE}} = p_{\text{ORP.PE}} + p_{\text{ORP.RP}} r_{\text{PE.RP}}$$

$$r_{\text{ORP.RP}} = p_{\text{ORP.PE}} r_{\text{RP.PE}} + p_{\text{ORP.RP}}$$

From the above set of equations,

$$\begin{aligned} r_{\text{ORP.PE}} &= p_{\text{ORP.PE}} + p_{\text{ORP.RP}} r_{\text{RE.RP}} \\ &= (.382) + (.458)(-.202) \\ &= (.382) + (-.092) = .290 \end{aligned}$$

The above equation shows that the correlation between ORP (net operating revenue) and PE includes the portion (-.092) due to the negative indirect effect of PE via its negative correlation with RP, while the main portion is due to the direct effect of PE on ORP (.382).

$$\begin{aligned} r_{\text{ORP.RP}} &= p_{\text{ORP.PE}} r_{\text{RP.PE}} + p_{\text{ORP.RP}} \\ &= (-.382)(-.202) + (.458) \\ &= (-.077) + (.458) = .381 \end{aligned}$$

In the correlation between ORP and RP (.381), the portion due to the direct effect of RP exceeded the correlation value, but the portion due to the indirect effect of RP via its negative correlation with PE was -.077. PE and RP

together explained the variance in ORP (net operating revenue) far better than either one of them along even though PE and RP were negatively correlated with each other.

Computation of Residual Path Coefficients

According to Figure 11, $p_{K-VO.a}$, $p_{RP.c}$ in diagram A, $p_{ORP.f}$ in diagram B and $p_{ORP.g}$ in diagram C need to be computed. The equation given earlier in the chapter on methodology was (20):

$$r_{ii} = 1 = \sum_q p_{iq} r_{iq}$$

This includes the term for error, thus being identical to

$$\begin{aligned} r_{ii} = 1 &= R_{i.1..q...k}^2 + \text{error} \\ &= \sum_q b_{iq.1...k}^* \cdot r_{iq} + \text{error} \end{aligned}$$

Error being p_{ia}^2 ,

$$\begin{aligned} p_{ia} &= \sqrt{1 - \text{all the terms of } r_{ii} \text{ except } p_{ia}^2} \\ &= \sqrt{1 - R^2} \end{aligned}$$

For diagram A in Figure 11, to compute $p_{RP.c}$, the following computation was carried:

$$\begin{aligned} R^2 &= p_{RP.K-VO} r_{RP.K-VO} + p_{RP.RS} r_{RP.RS} + p_{RP.PT} r_{RP.PT} \\ &= (.691)(.727) + (.113)(.130) + (.091)(.342) \\ &= .548 \end{aligned}$$

$$\begin{aligned}
 p_{RP.C} &= \sqrt{1 - R^2} \\
 &= \sqrt{1 - .548} \\
 &= .672
 \end{aligned}$$

Computation of $p_{K-VO.a}$ in diagram A was as follows:

$$p_{K-VO.a} = \sqrt{1 - r_{K-VO.PT}^2} = \sqrt{1 - .366^2} = .931$$

For diagram B in Figure 11, the computation of $p_{ORP.f}$ was conducted as follows:

$$\begin{aligned}
 R^2 &= p_{ORP.K-VO} r_{ORP.K-VO} + p_{ORP.RS} r_{ORP.RP} \\
 &= (.203)(.209) + (.222)(.227) \\
 &= .092
 \end{aligned}$$

$$p_{ORP.f} = \sqrt{1 - .092} = .953$$

For diagram C in Figure 11, the computation of $p_{ORP.g}$ was conducted as follows:

$$\begin{aligned}
 R^2 &= p_{ORP.PE} r_{ORP.PE} + p_{ORP.RP} r_{ORP.RP} \\
 &= (.382)(.290) + (.458)(.381) \\
 &= .285
 \end{aligned}$$

$$p_{ORP.g} = \sqrt{1 - .285} = .846$$

Now the path diagrams in Figure 11 will be presented as Figure 12, with the values of residual path coefficients entered.

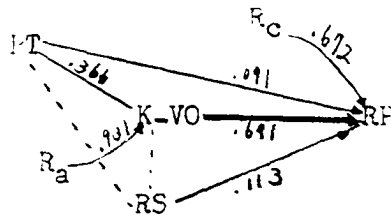


Diagram A, for RP

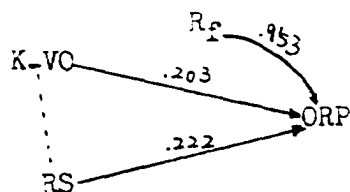


Diagram B, for ORP as return on fixed investments

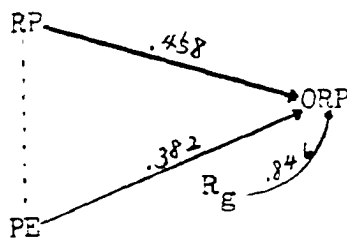


Diagram C, for ORP as net operating revenue

Figure 12. Path diagrams with path coefficients and residual path coefficients

Correlation coefficients between residual factors were not computed, since the path diagrams in this thesis are not applicable to the case where Duncan (26) points out such a computation may be of an interest to an investigator, that is, where a question arises as to whether a set of independent variables are accounting for the correlation between two dependent variables in the same diagram.

This concludes the data analysis in this thesis. In the following chapter, discussion on the data analysis and recommendation will be presented.

CHAPTER VI. DISCUSSION AND RECOMMENDATIONS

Discussion

As the result of the data analysis with the first set of measures (Step 1) the postulated models (Figure 3) were modified. The major modification was elimination of MO from the model. In Step 1, all the t values for arrows to and from MO were found to be neither large enough in their magnitudes nor statistically significant at .10 level of probability. Even though measures of MO will be discussed in detail later in the recommendation section of this chapter, a brief comment may be made as to the possible explanation for MO dropping out. Some items in the measures of MO, especially those in the first set of measures, may be questioned as to its internal validity (101), even though the measures appeared to be quite reliable ($r_{MO_1MO_2} = .557$) in comparison with measures of some other concepts. There is a possibility that some items in the measure of MO might imply motivational orientation to profit maximization as the single goal rather than that which it was intended to imply, i.e. motivational orientation to profit making in general. A large proportion of respondents responded unfavorably to the items of the first measure of MO or were uncertain about their favorable attitudes to the item statements.

The arrows, $K \rightarrow VO$, (models 1 and 2), $VO \rightarrow K$ (models 3 and 4), $VO \rightarrow RS$, $PE \rightarrow K$, $PE \rightarrow RP$ and $PE \rightarrow VO$ were also eliminated according to the data analysis on the first set of measures.

Some comments will be made as to the above relationships, even though individual measures of concepts will be discussed later.

$K \rightarrow VO$ (models 1 and 2) and $VO \rightarrow K$ (for models 3 and 4) were eliminated at this stage. The above relationships between K and VO in the first set of measures were recognized in Step 3 of the data analysis as very low t values due to "item" correlation between the first measure of K and the first measure of VO. Even though the items were randomly partitioned into two sets, there is always the possibility of having a unique selection of items as a measure which may uniquely correlate with other measures. It may be noted that $r_{K_1K_2}$ and $r_{VO_1VO_2}$ were the lowest two in the D matrix. It was also recognized that $r_{VO_1K_2}$, $r_{VO_2K_1}$ and $r_{VO_2K_2}$ were all relatively high, (see Appendix C), thus trait correlation between K and VO appears to be significant. In fact, K and VO would have correlated with each other near unity, if freed measurement error.

The arrows from PE to K, RP and VO were all dropped. A possible explanation may be that the measure available as an indicator of PE was the number of years of taking full

management responsibility in any business as well as in farmer cooperative, while K pertained to knowledge relevant to management in farmer cooperatives and RP pertained to role performances in the present farmer cooperative in which the respondent worked. As to the negligible magnitudes of t values for $PE \rightarrow K$ and $PE \rightarrow RP$, the question may be raised about the measure of PE as not exclusively experiences in management of farmer cooperatives, and also the question of where and when managers of farmer cooperatives obtain knowledge necessary for his role.

The fact that $PE \rightarrow VO$ was eliminated raises a question as to where individuals acquire rational value orientations toward economic ends. Since VO was a rational value orientation in a broader sense than exclusively in regard to management in farmer cooperatives, the problem of the measure of PE may not be the explanation for the result of the data analysis which eliminated $PE \rightarrow VO$ from the models. It may be noted that PT (past formal educational training) $\rightarrow VO$ was of significant magnitude.

Consequently, characteristics differentiating the four models, i.e. $K \rightarrow VO$, $VO \rightarrow K$, $MO \rightarrow RS$, $RS \rightarrow MO$, disappeared from the path diagrams, having one path diagram for RP for testing with the second set of measures. In the original diagrams before the data analysis (Figure 4), RP, ORP (return on fixed investments) and ORP (net operating revenue)

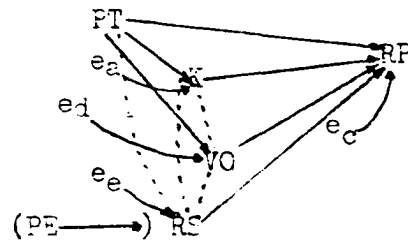
were postulated to depend upon K, VO, MO, RS, PE and PT.

Both ORP's were postulated to depend also upon RP.

ORP was placed in the same diagram with RP and its determinants. Upon the analysis with the first set of measures, the best predictors for RP, ORP (return on fixed investments), and ORP (net operating revenue) were selected as follows: PT, K, VO, RS for RP; K and RS for ORP (the return on fixed investments); and RP and PE for ORP (net operating revenue). Since each dependent variable has a different set of best predictors, at this stage of data analysis, three separated diagrams were established; diagram A for RP, diagram B for ORP (return on fixed investments) and diagram C for ORP (net operating revenue).

Therefore, after the data analysis with the first set of measures, several arrows were eliminated from the models as discussed above. All the measures of concepts will be reviewed in a later section and recommendations will be made, since it is recognized that measures should be re-evaluated and suggestions for improvement should be made before theories may be questioned. Even though several arrows were eliminated at this stage, it may be noted that the relationships which were postulated to not exist, i.e. $PT \rightarrow RS$ and $K \rightarrow RS$, did not hold in the empirical relationships.

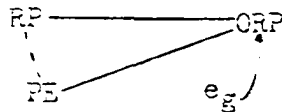
In Figure 6, several points may be noted and those points provide the basis as to what to expect in Step 2 of the data analysis. In diagram A in Figure 6, $PT \rightarrow RP$, $K \rightarrow RP$, $VO \rightarrow RP$, $PT \rightarrow K$, and $PT \rightarrow VO$ all appeared to be substantial in their magnitudes of t values, while $RS \rightarrow RP$ was not as large and $PE \rightarrow RS$ was small. In diagram B, Figure 6, $K \rightarrow ORP$ and $RS \rightarrow ORP$ had relatively low t values. On the other hand, in diagram C, ORP as net operating revenue, $PE \rightarrow ORP$ and $RP \rightarrow ORP$ both carried very high t values. As the result of Step 1, the model for RP became:



The model for ORP as return on fixed investments was as follows:

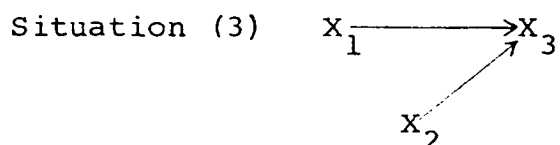
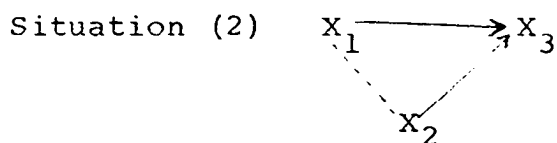
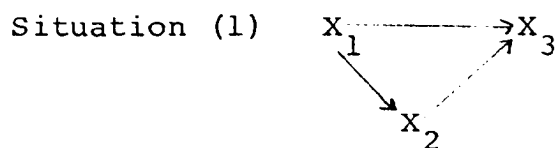


The model for ORP as net operating revenue was as follows:



As for the added broken lines in the diagrams, the following was considered: Duncan (26) suggests the employment of the test of significance and the magnitude of a path coefficient to decide whether to retain or eliminate a causal arrow from the diagram. During the data analysis, the necessity to differentiate the following three situations among independent variables was recognized. (As far as the causal relationships between the dependent variable and independent variables are concerned, the arrows may be eliminated based on the test of significance or when the magnitudes of path coefficients were judged as negligible, since the interest of the investigator is to select the best predictors and/or identify the significant components of the dependent variables.) The three situations may be stated as follows: (1) a causal relationship between two independent variables yields a significant path coefficient, thus the postulated relationship is supported empirically as adequate, (2) the path coefficient is not significant at a certain level of significance the investigator chooses, yet it is neither zero nor close to zero, and (3) the two independent variables are actually independent with correlation coefficient of zero or approaching zero. If the investigator follows Duncan's suggestion, the last two situations will not

be differentiated in the diagrams. The differentiation appears to be of some importance. For example, the three situations may be illustrated as follows:



In situation (1) $p_{3.1} = b_{31.2}^*$ and $p_{3.2} = b_{32.1}^*$. In situation (2), in so far as r_{12} is not near zero in actual value, contribution of X_1 and X_2 on X_3 respectively may be better estimated same as in situation (1). On the other hand in situation (3), since X_1 and X_2 are independently contributing to X_3 , the estimators of the contributions of X_1 and X_2 to X_3 respectively will be $p_{3.1} = r_{31}$ and $p_{3.2} = r_{32}$. In this thesis, the broken lines were added to the diagram to indicate situation (2), where the postulated relationship between two variables was not statistically significant yet the actual value of the correlation coefficient between them was not zero or approximately zero, thus they were not independently contributing to the dependent variable. In such a situation as above, the amount of correlation between such two

independent variables is no longer problematic, it merely reminds the investigator that he has to compute a standardized partial regression coefficient, rather than a zero order correlation coefficient, to estimate the contributions of those independent variables to the dependent variable.

Moreover, when the 'independent' variables are not actually independent among themselves and if they are subject to measurement error, an investigator may wish to conduct correction for attenuation to estimate trait contributions to the dependent variable. This comment applies to situations (1) and (2) above, thus it may be decided, in order to better define the relationships, to differentiate situation (2) from situation (3), by placing the broken line rather than simply eliminating the arrows upon the test of significance.

The above point will be relevant, when the correlation between the dependent variable and an independent variable is inspected in the expansion form, i.e. a normal equation form, to see the portions due to direct and indirect effects of the independent variable on the dependent variable. If the value for the broken line in situation (2) is not included, the mathematical identity between the correlation between the independent variable and the dependent variable presented in

the diagram and the zero order correlation coefficient will not be maintained.

In Step 2, the second set of measures were used to confirm the above models. The result of the data analysis with the second set of measures introduced one modification on the models. A t value of only 0.438 was obtained for $PE \rightarrow RS$. This was considered to be negligible. Therefore, the arrow $PE \rightarrow RS$ was eliminated from the model at this stage. It may be recalled that t value for $PE \rightarrow RS$ in Step 1 was relatively small. Thus, the effect of the past experiences as a manager on managerial role satisfaction was not of a magnitude to be considered in the model as far as the two sets of measures indicated. A probable reason for the negligible effect of PE on RS may be that measures of RS refer to RS as a farmer cooperative manager at the present place of employment, while PE includes various experiences of taking full management responsibility in any business. The amount of experiences in managing other than farmer cooperative does not necessarily affect the managerial role satisfaction in farmer cooperatives. Earlier in the chapter on the theoretical framework, it was also pointed out that $PE \rightarrow RS$ may not necessarily apply to every manager, even though the assumption was made that an individual is free to change his occupation almost at any time he wishes.

"Why individuals stay with the same jobs?" may reveal a complex set of reasons in addition to the simple answer "Because I am satisfied with my job."

As the result of two steps of analyses using two alternative sets of measures, the postulated models (Figure 3) incurred a great deal of modification. In the following section of this chapter, discussion and recommendation will be presented regarding the lack of empirical support of the theoretically postulated relationships in this thesis.

After the second step, the models for RP, for ORP (measured as return on fixed investments) and ORP (measured as net operating revenue) were as presented in Figure 9.

In Step 3 of the data analysis, the correction for attenuation was conducted on the correlation coefficients of the second set of measures before estimating trait contributions to each dependent variable. The important assumption in the correction for attenuation was that the measurement error be random.

At this stage, it was recognized that K and VO would correlate near unity if they were freed from measurement error. They would explain essentially the same portion of the dependent variable. The data analysis first depended upon the first set of measures to select the best set of predictors, i.e. Step 1. Upon inspection of the inter-correlation matrix in Appendix C, it was recognized that

$r_{K_1VO_1}$ was exceptionally low in comparison with $r_{K_1VO_2}$, $r_{K_2VO_1}$ and $r_{K_2VO_2}$ which were statistically significant.

It appeared that the postulated $K \rightarrow VO$ and $VO \rightarrow K$ were eliminated from the path diagrams in Step 1 due to the correlation between the particular set of items composing the first measure of K and the particular set of items composing the first measure of VO rather than correlation between trait K and trait VO. Wolins states:

The basic notion is that a trait score for an individual is defined from performance of that individual on a population of test questions. An individual's "score" on a trait is estimated by having him respond to a sample of such questions. Some of the variability in test scores depend on the particular sample of questions included in a test (94a, p. 10).

Path diagrams to estimate trait contribution included a composite of K-VO instead of K and VO as separate traits. The result of Step 3 was shown in Figure 12 where the entered values were path coefficients, i.e. b^* values, and residual path coefficients.

A further step was taken after Step 3 to inspect the terms of simultaneous normal equations in terms of correlation coefficients, which were identical to the basic theorem of path analysis in computing the correlation coefficients between a dependent variable and independent variables as indicated in the diagrams. The procedure was presented, following Step 3 of the data analysis.

Based on Figure 12 and expansion of correlation coefficients between an independent trait and its dependent variable in the form of normal equation, some comments may be made. In diagram A of Figure 12, managerial role performances (RP) appeared to be most affected directly by K-VO, second by RS and third by PT in the order of relative magnitudes. However, the indirect effect of PT via K-VO on RP was larger than any other indirect effect. In other words, the effect of PT on RP tended to be more of indirect nature, while effects of K-VO and RS on RP tended to be more of direct nature. Furthermore, role satisfaction (RS) appeared to affect RP almost independently. $P_{RP.c}$ (.672) indicates that about half of the variance in RP ($1 - .672^2$) was estimated to be explained by the set of selected traits, i.e. PT, K-VO and RS.

In diagram B in Figure 12, the direct effect of RS on ORP (the return on fixed investments) was estimated greater than that of K-VO on ORP. As for the indirect effect of K-VO via its correlation with RS and that of RS via its correlation with K-VO, the two were estimated about same and approaching to zero. That is, K-VO and RS were estimated to affect ORP (return on fixed investments) almost independently. When K-VO and RS can be assumed to affect ORP independently, the estimates of each effect on ORP will be the value of correlation coefficients between each trait and ORP. Less than 20 percent of variance in ORP was explained by K-VO and RS.

In diagram C in Figure 12, contribution of RP, as a quantitative quality, and PE to ORP (net operating revenue) were estimated. The major effect of RP on ORP was estimated to be direct. The same can be said with PE's effect on RP. Between RP and PE, RP appeared to have more direct effect on ORP than PE did. Contrary to the case of ORP as return on fixed investments in diagram B in Figure 12, the RP and PE are not contributing to ORP (net operating revenue) independently. Although the postulated causal relationship $PE \rightarrow RP$ was eliminated in the data analysis with the first set of measures, the corrected correlation coefficient between PE and RP ($-.202$) was not negligible in terms of indirect effect of each of PE and RP via correlation with each other. The portion of variance in ORP (net operating revenue) explained by RP and PE was estimated to be about 29 percent.

The presentation of the estimation of trait contributions was conducted by using correction for attenuation. The assumption of measurement error being random was crucial. If such an assumption is not applicable, the correction for attenuation may overcorrect the values. Walker and Lev (89) point out that this assumption is almost impossible to verify empirically, but that it is instructive for an investigator to be cautious about situations where the assumption may be seriously questioned.

Recommendations

Kerlinger states:

When the data support hypothesis, positive results are not only evidence for the validity of the theoretical reasoning but also evidence that the methodology, the measurement and the analysis are satisfactory.... The outcome, though predicted, may be as it is for reasons quite other than those we fondly espouse. Still, the fact that the whole complex chain of theory - deduction from theory, design, methodology, measurement and analysis - has led to a predicted outcome is cogent evidence for the adequacy of the whole structure.... If we can repeat the fact, then the evidence of adequacy is even more convincing (48, p. 620).

But when the result is negative, adequacy of the design, the observation method, the measurement and the statistical analysis may be re-examined before questioning the theory.

In this chapter, the discussion and recommendation will be mainly limited to the adequacy of the measurement, since the thesis is only a part of a larger research project as well as being a post facto study.

As a result of the statistical analysis, the postulated models would have to be considerably modified if the measures had been taken as valid and reliable. A general discussion will be presented as to the problems in relation to validity and reliability, then specific recommendations will be made to improve measures.

Validity

Validity may be divided into two types, internal validity and external validity (101).

Internal validity is concerned with the relationship between the definition of the concept and the indicator of the concept. Perfect internal validity refers to that the indicator has the same scope of content as the definition. This type of validity is termed by Kerlinger (48) as content validity. Both Zetterberg and Kerlinger point out that the nature of internal, or content, validity is judgemental. The internal validity is determined by agreement among judges as to the validness of the measures. It depends upon the representativeness¹ of items as a measure of the concept. Each item of an index has to be judged for its presumed relevance to the property being measured. Kerlinger suggests the use of judges to achieve higher content validity. Judgement as to whether an item is appropriate as a measure of the concept may vary from individual to individual. In other words, operationalization of concepts is better conducted by more than one investigator.

By combining many items into one index, an investigator can also enforce representativeness of the measure, and, in regard to reliability, can let the items cancel out the

¹Four situations are discussed by Zetterberg (101, pp. 115-117).

1. The indicator has the same scope of content as the definition.
2. The definition implies the indicator and, in addition, something other than the indicator.
3. The reverse situation of the above two.
4. The indicator implies the definition and vice versa.

errors among themselves. To this, Zetterberg adds a word of caution as to use of many invalid items over one valid indicator.

External validity is concerned with the accuracy of information obtained. An example is the verbal expression as an indicator of other behavior. This type of validity is closely associated with reliability of measures. In some cases, there may be a reliable criterion to judge external validity. An example is the verbal report of voting and the records of the Election Board. However, in most cases, Zetterberg (101) points out that the determination of external validity is a test of hypothesis. If a hypothesis derived from theory is supported by an empirical relationship between the measures, to that extent, the empirical relationship provides an evidence of external validity of the measures. This point was also made by Kerlinger in the quotation given at the beginning of this section.

To achieve higher external validity, first, the higher internal validity should be achieved. Then, the accuracy of information obtained by the instrument may be increased by avoiding any ambiguous items which allow respondents to interpret them in various ways and by securing some means to let the respondents provide accurate information. In this study, assuring the anonymity of respondents with

results of the study and a letter asking cooperation and introducing interviewers were used to secure accurate information. Legitimation for the study was obtained from regional cooperatives and the executive secretary of the Iowa Institute of Cooperation, and the importance of obtaining accurate data was emphasized at the time of interviewing. There was no outside criterion to judging external validity besides hypothesis testing. Reliability of measures becomes a necessary prerequisite for validity (101).

Reliability of measures may be inspected in regard to four aspects (101):

- (1) Reliability depends on congruency of indicator items. This is the problem of internal consistency of items in an index. The items have to "hang together" in order to measure the same thing. Internal consistency of the data was partially assessed from the previous study conducted by Hobbs (40) where the same items were used as part of an index. Ideally, internal consistency of items should be checked when an investigator develops a scale by using a sample of individuals from the same population in his study. Then, the study should be conducted on another sample of individuals from the same population. Hobbs points out that some scale items may discriminate

differentially in different populations. Thus, use of a sample of individuals from the target population is recommended to develop scales and check internal consistency of the scale items prior to the field study.

- (2) Reliability depends upon precision of an instrument. This is concerned with precision of readings of one observer from time to time.
- (3) Reliability depends upon objectivity of an instrument. This is concerned with agreement of readings among different observers.

The above two aspects were attempted to be met by use of standardized questionnaires and standardized coding, and by use of different sets of individuals, one set to collect the data, and the other to code the data. Some of the data were coded by using a set of judges whose evaluations were averaged to achieve objectivity of readings.

- (4) Reliability depends upon constancy of an object measured. This is concerned with differences due to observation times. Ideally an investigator wishes to have replications of study, and repeated hypothesis testing. Sometimes, it is not feasible to plan replication of the study. After some time interval, the same individuals may not be available

at the same locations. An individual's response may be highly conditional by his memory of previous responses he gave. Problems of controlling changing environmental factors arise. The population may not be large enough to draw another sample for replication. Funds may not be available for replication of study.

When replications are not feasible, there may be two ways of coping with the problem (94). One of them is the approach taken in this thesis. When the size of sample is not large enough and measures are subject to error, the measures are randomly partitioned into two sets and the conclusions will be drawn by using two alternative sets of measures. The other is the use of two alternative sets of individuals by dividing the sample of individuals into two groups when the measures are not highly reliable and the size of the sample is large enough. In the present study, the sample size was not large enough for the latter way to be taken.

In summary, the following general recommendations are made in addition to whatever means have been taken to achieve higher validity and reliability of measures in the study.

- (1) Add more items to the indices and administer scales with a sample of individuals drawn from the target population to secure internal consistency prior to the field study with another sample of individuals.

- (2) Secure a larger sample and partition the sample of individuals rather than the measures (94) when the replication of the study is not feasible and the extremely high reliability of measures is not obtainable.

Now the discussion will focus on individual measures and recommendations to obtain the better measures for the concepts in the models.

Reliable measures do not mean valid measures; the measures may be accurately measuring something else. However, assuming the measure is valid, then the investigator should try to make the measures as reliable as possible. This is where measurement error becomes the issue.

The effect of measurement errors on statistics was discussed and mathematically demonstrated by Walker and Lev (89). The points made by them may be summarized as follows:

Measurement error, if random,

- (1) inflate the variance so that the variance of observed scores is larger than the variance of "true" scores (89, p. 296).
- (2) has a negligible effect upon the mean of a sample (89, p. 298).
- (3) attenuates the true correlation coefficients (89, p. 300).

- (4) Random errors in the dependent variables have no effect upon a regression coefficient, and that random error in the independent variable reduce the coefficients (89, p. 306).
- (5) In general the greater the measurement error, the less likely it is that any statistical test will be significant (89, p. 307).

In this thesis, significance of the beta coefficient, or path coefficient, was used as the criterion of judgement on the adequacy of the models. Thus, the conclusion would be greatly influenced by measurement error, if no means were taken to cope with measurement errors. By increasing reliability of measures as well as validity of measures, one may arrive at a different conclusion. So some means of improving reliability of individual measures as well as validity have to be taken. The following can be done:

- (1) Determine if there is any other instrument which appears more valid.
- (2) Evaluate the instruments in terms of consistency. Determine if questions can be interpreted more than in one way by different respondents and if so, to seek more consistent instruments.

- (3) Increase reliability and internal validity. A usual procedure is to add more test items which are judged to possess the attribute of interest to the items previously included, and scales should be reconstructed.
- (4) Check the internal consistency of items in an index, administering it to a sample of individuals from the target population.

In this chapter, the scope of discussion on the specific items of measures will be limited to the first three. Measures of each concept will be reviewed and recommendations will be made.

First, the reliability of measures obtained will be inspected. Walker and Lev (89) delineate four usual methods of obtaining reliability coefficients for data:

- (1) Correlating scores from two comparable but different test given on two different occasions.
- (2) Correlating scores on a single test given twice with a time interval.
- (3) Correlating scores on two tests given on the same occasion, or scores on two halves of a single application of a single test.
- (4) Analyzing the variance among the items on a single application of a single test.

The third method above was applied during the data analysis in this thesis. The reliability coefficients computed between two halves of a single index were shown in the following D matrix (M12):

	K ₂	MO ₂	VO ₂	RS ₂	RP ₂	ORP ₂	ORP ₂
K ₁	.370	0	0	0	0	0	0
MO ₁		.557	0	0	0	0	0
VO ₁			.399	0	0	0	0
RS ₁				.638	0	0	0
RP ₁					.743	0	0
ORP ₁ (return)						.939	0
ORP ₁ (revenue)							.897

PT and PE were assumed as measured without errors, so there were no alternative measures. It appears that reliability of MO, VO and K needs to be increased a great deal. The following recommendation will be made with respect to measures of MO, VO and K.

MO (motivational orientation)

MO was measured with four items. The four items were chosen because (1) they previously demonstrated internal consistency in the study conducted by Hobbs and others (41) and (2) they also indicate the specific state of readiness to be motivated to engage in profit making in management, if the respondents agreed with them.

Even though the four were included as scale items of Hobbs' 'economic motivation', contents of the items may be interpreted differently. The two items which composed the first set of MO by random selection appear to emphasize profit maximization as the single goal rather than profit making in general. The items are listed to facilitate the discussion here:

Set 1:

1. The only real goal in managing is to maximize business profits.
2. The most successful manager is the one who makes the most profit for his business.

Set 2:

1. The greatest satisfaction in being a manager comes in running a highly profitable business.
2. In deciding about making changes in his business, a manager's first consideration should be "Is it profitable?".

The mean for the first measure, as the summed score of the two items, was 9.8, which is, on average per item, a little less than the score for "disagree 3", and the standard deviation of the first measure was 6.2. On the other hand, the mean of the second measure was 19.3, which is, on average per item, a little less than the score for "agree 2", and the standard deviation of the second measure was 6.6. The above comparison makes it very doubtful whether the first measure was valid as the measure of motivational orientation toward profit making in general, though it may be a valid measure for motivational orientation toward profit

maximization. Measures of MO indicated a higher reliability coefficient in D matrix (M11) in comparison with those for K and VO. Questionable validity of some of the items used as a measure of motivational orientation toward profit making in general may be a major reason why the postulated relationships between MO and other variables were not supported by the empirical relationships.

Evidence from another study shows that managers have different goals. McCabe (59) made an analysis of data from another phase of this research project based on the same population as the present study (see Table 2). It may be noted that the highest ranked goal for both managers and the board presidents was 'to make a satisfactory net savings each year' and that 'maximum net savings of the cooperative' was a relatively low ranked item.

A recommendation may be to add new items to the present measures of MO and reconstruct the scale using a sample of managers. Some of the scale items included in Hobbs' 'economic motivation' (40) were not used again in the present study. By making minor adjustments of expressions to apply to managers of farmer cooperatives, those items may be added to the present items and the scale may be reconstructed by selecting the most adequate set of items among them.

For reconstruction of the scale, the following recommendation is made based on the comments made earlier

Table 2. Goal rankings by managers and board presidents

Goal	Rankings	
	Managers	Board presidents
1 Increasing the area served by the cooperative	5	7
2 Maximizing the income of the members	11	3
3 Increasing the sales volume of the cooperative	6	6
4 To provide products and services at lowest prices	9	11
5 To be a business leader in the area	12	12
6 To serve our members by providing a policing type of competition to the other agribusiness firms	4	9
7 To maintain the present policies and practices and avoid risk in the operation of the cooperative	3	5
8 Maximum operational efficiency of the cooperative	8	2
9 To build a good public image for the cooperative	10	10
10 To make a satisfactory net savings each year	1	1
11 To expand and update the facilities of the cooperative	2	4
12 Maximum net savings of the cooperative	7	8

on the four items of the measure for MO. One of the items of the first set of MO reads: The only real goal in managing is to maximize business profits. When an individual agreed with this statement, he was judged to show favorable attitude toward profit making by the scoring procedure used by Hobbs (40). However, if the respondent does not agree with the statement, it was not determined what his response of disagreement would indicate in terms of the continuum of 'economic motivation' (40). The argument is that his disagreement may imply his unfavorable attitude toward profit making while his disagreement may in fact indicate unfavorable attitude toward profit maximization as the single goal. In scale construction, if an investigator uses judges to see the items are "hanging together" when the items are agreed to, he cannot be sure whether they still "hang together" when the items are answered in disagreement. A suggestion to deal with this problem is to ask judges the location of the items both in the case of agreement and disagreement. By this approach more valid item selection for scales may be achieved. When the items are to be placed on a continuum depending on respondents' agreement or disagreement, an investigator may wish to be certain that all the selected items will be located on one continuum.

It was stated earlier that rationality should be considered in relation to empirical goals (71). Motivational

orientation, attitude toward goals, may be also considered in terms of actual goals of managers. Using the actual goals given by the respondents in Table 2, another approach to measure MO may be taken. By the use of paired comparison technique (28, pp. 19-51) a scale of MO may be developed. Judges will be asked to compare all the possible pairs of the goals listed in Table 2 in terms of the degree of the attribute of profit making the goals possess.¹ Once the scale values are assigned to the goals in regard to the attribute of profit making, respondents will be asked with which goal he agrees most and with which goal he agrees second most. If he is high in motivational orientation toward profit making in management of farmer cooperative, he will agree with a goal which is assigned a higher scale value. The most agreed and the second most agreed will provide the two alternative measures of MO, with the assumption that these two will correlate highly with each other.

Among alternative procedures in obtaining individual attitude score in paired comparison techniques (28), the above seems to be most feasible. Asking agreement or disagreement with all the goals may provide a problem, since

¹The paired comparison technique was used by McCabe (59) to obtain the data in Table 2, asking the respondents to rank the goals. However, ranking was not conducted in terms of the attribute of profit making.

it is possible that all the goals listed by the managers in Table 2 may be accepted and the difference among individuals arises only as to the priority placed among the goals.

VO (value orientation)

The problems with items used as measures of VO were two: (1) that weights of component dimensions of rational value orientation are not known, and (2) that equal number of items were not available for every dimension, so that block stratification was not applied when the items were split into two alternative sets of measures. Some of the dimensions of rational value orientation toward economic ends were accounted for much less than some other in the present measure. Random partitioning disregarding dimensions resulted in one set being more weighted in certain dimensions than the other, so that variance may be attributed heavily to the heavily weighted dimension rather than due to the variation in rational value orientation toward economic ends as a whole. Until relative importance of each dimension to rational value orientation toward economic ends is determined, equal weighting may be assumed.

The numbers of items included in the five dimensions were seven for in the dimension of economic value orientation, six in the dimension of independent value orientation, nine in the dimension of mental activity value orientation, two

in the dimension of scientific value orientation and six in the dimension of risk-taking value orientation. The dimension of scientific value orientation needs to have more items in order to be weighted as heavily as other dimensions. The dimension of mental activity value orientation was weighted heavier than any other dimensions. If the equal weights on all the dimensions are assumed to compose overall rational value orientation toward economic ends, an equal even number of items are recommended to be included in each dimension and block-partitioning is suggested to obtain two alternative sets of measures of rational value orientation toward economic ends.

Some other items used in the scales constructed by Hobbs (40) may be added to those items used in the present study. Since Hobbs' sample was farm managers, ideally a sample of cooperative managers should be used in order to construct new scales of rational value orientation toward economic ends.

Among the five dimensions of rational value orientation, the dimension of economic value orientation may be dealt with separately. This dimension emphasizes the value on economic goals, while the other four dimensions emphasize the rational selection of means to attain economic goals. The correlation matrix in the study of Hobbs and others (41, p. 126) also provides evidence that the last four dimensions cluster better than the five dimensions altogether.

It is recommended that a different approach to the values placed on goals be made separating these values from values placed on the means to achieve goals. Catton states that:

Human values ... become measurable relative to each other in exactly same manner as other verbal stimuli - by application of Thurstone's law of comparative techniques (17, p. 55).

Catton's position was empirically supported by Carter's study of values placed on national goals (16). Carter applied paired comparison test of national goals to Philipppinoes, Indians and Americans. His finding indicated that individuals arrange goals in the hierachical order of desirableness according to the value they place upon them. The emphasis of Carter's study was on the agreement among judges in ranking national goals in terms of desirableness.

It was demonstrated earlier that the measures of VO and the measures of K explained essentially the same portion of variance in RP. By adding more items and attaining higher reliability by reconstructing scales of VO (and of K), the portion of variance in RP explained by VO may be differentiated from that explained by K. Besides the present relatively low reliability of measures of VO and K, the following point may be presented as to the reasons why the two measures correlated with each other so highly, upon correction for attenuation. Knowledge questions, using hypothetical problems, also appeared to pertain to rational

problem solving to attain economic goals of the farmer cooperative, while measures of VO emphasized rational selection of means, in general, to attain economic ends. Those who place high values on rational means to achieve economic ends may tend to respond correctly to those hypothetical questions. In the U.S.A. culture, it may be speculated that an individual tends to guide behavior rationally, according to his values which may be values he places on knowledge rather than on personal beliefs. Considering the above as a possible explanation of high correlation between measures of VO and K, it may be more meaningful to emphasize values placed on goals as VO rather than values placed on both goals and means simultaneously as components of one trait, VO.

Earlier, the paired comparison technique was recommended to measure the motivational orientation toward profit making. The emphasis there was to measure the "desiredness" respondents place on profit making through management by asking them to indicate the most desired and the second most desired goals among the goals arranged in the hierarchy of profit making orientation by judges. The same technique may be used to arrive at typology of value 'profile' of individual managers. Instead of confounding all the managers in terms of their value structures of goals, it could be determined whether managers arrange goals differently in hierarchical

orders according to the relative values they place on the goals. Again, the goals listed in Table 2 may be used.

Following Carter's procedure, the goals are assumed to be placed on a continuum from strongly desirable to strongly undesirable relative to each other within one individual. Carter used a hypothetical nation in asking respondents the desirableness and not in terms of actual 'desiredness', a hypothetical new farmer cooperative may be named.

The goals will be paired into an optimum number of combinations. If the same goals as listed in Table 2 were used, the optimum number of pairs will be ${}_{12}C_2 = 66$. The respondents would be asked to mark the one more desirable in each pair. If both are undesirable, the less objectionable one is to be marked.

In this case, the respondents become judges themselves, and the way they rank the goals will be considered as an indicator of an individual's "value profile" of goals for farmer cooperatives. Some typology of individuals may be developed in terms of value patterns. A large sample will be needed. The models may be tested separately for each sub-group of individuals who are categorized according to their value patterns of goals. In this case, values placed on goals will serve to categorize individuals into groups, but would not be included as one of the variables in the models. VO may remain, if differentiated from K, as a

measure of values and beliefs individuals place on rational means to achieve economic ends. By categorizing individuals in terms of "value profile" of goals, the originally postulated connections between other concepts and motivational orientation toward profit making may be empirically supported in some categories of managers, and the same may be said about the connections between VO, as rational value orientation in selection of means to attain economic ends, and other concepts. The above recommendation is based upon a position that an individual's value system may be looked as a typological characteristic of an individual rather than as a characteristic according to which different individuals are placed on one continuum. Hobbs and others (41) also point out that values should be looked at relative to other values within individuals rather than relative to other individuals in terms of a certain value object.

RS (role satisfaction)

Even though measures of RS indicated a relatively high reliability coefficient as computed by randomly partitioned halves, some other items may be added in order to improve the reliability further. Reviewing the items of RS, it may be recognized that items pertaining to satisfaction from role relationships are few in number. A manager holds role relationships with (1) the board, (2) employees, (3) customers, (4) wholesalers, and (5) credits sources. The items pertaining

to satisfaction obtained from the following role relationships and performances of the complimentary role players may be added to the items already included in the present measures of RS. Those relationships and the performances of the complementary role players are:

- (1) the board of directors and their performances.
- (2) the employees and their performances.
- (3) the customers and the way they deal with the manager in general.
- (4) the wholesalers and the way they deal with the manager.
- (5) the credit sources and the way they deal with the manager.

K (knowledge)

Knowledge questions used did not cover sufficient areas of knowledge required to carry out all tasks in management. Knowledge of management practices was measured with the items which almost exclusively pertained to interpretation of financial statements and evaluation of the business. The exceptions were one pertaining to pricing policy and one pertaining to advising customers in farm management. The three management objectives delineated by Phillips (75) are at the general level. In order to articulate those objectives, a manager may be required to have knowledge in every phase of the operational management. Phillips'

definition of managerial phases may be used to obtain specific tasks for which knowledge is needed in management. Hypothetical questions may be constructed as to determine the respondents' knowledge of a list of management tasks. Since the weights of those tasks in overall management operation are not known, they may be weighted equally, or weights of knowledge on varying tasks may be assigned by consulting with some specialists on management tasks. In order to attain more accurate scoring than assumed equal interval between response categories, it is suggested that the questions may be presented as open ends and the certainty method of scoring using a panel of judges may be used as to determine the amount of knowledge indicated by respondents in each task.

For the personnel management, a manager needs knowledge of:

1. how to select new employees,
2. salary adjustment and promotions for each employee,
3. employee welfare and fringe benefits,
4. and how to detect and settle interpersonnel problems.

For the wholesale purchase management, a manager needs knowledge of:

1. wholesale outlets,
2. current and expected wholesale prices,
3. outlook for business conditions and for each commodity handled by the business,
4. terms of wholesale purchasing,
5. and how to enter contractual or other vertical relationships with wholesale suppliers.

For the retail sales and services management, a manager needs knowledge of:

1. sales techniques and programs,
2. margin and pricing policy situation by situation,

3. how to determine the best balance of merchandise handled and profitable combination of services to provide his customers,
4. how to deal with competitors,
5. how to determine the level of advertising expenditure in relation to his advertising budget,
6. and how to deal with customers and to see his employees act accordingly.

For the accounting and records management, a manager needs knowledge of:

1. accounting principles,
2. how to develop a system of records in order to provide accurate information about the business to the board as well as to himself,
3. the point of diminishing returns in record keeping and allocation of the least possible man hours necessary,
4. and budgeting.

For the credit management, a manager needs knowledge of:

1. administration of credit business so that the costs of extending credit and the credit business are as low as possible.

For the inventory management, a manager needs knowledge of:

1. how to achieve the highest possible inventory turnover,
2. demands of customers,
3. how to hedge his inventory against price change to protect his margin,
4. insurance program on inventories,
5. and maintenance of inventory quality.

For the financial management, a manager needs knowledge of:

1. use of borrowed capital,
2. capital sources, and when and how to borrow,
3. how to judge and achieve the proper balance of various forms of capital,
4. regulations of securities and the capital structure of the business,
5. tax regulations on income of the business,
6. and how to change the capital situation if necessary.

For equipment management, a manager needs knowledge of:

1. maintenance of equipment,
2. efficient use of equipment,
3. design and layout of building and equipment,
4. insurance and depreciation of equipment,
5. and developments in equipment design.

For general management, a manager needs knowledge of:

1. latest developments and current recommendations in agriculture and management practices,
2. how to coordinate different functions into over-all operation,
3. profitable combinations of products and services,
4. how to keep cost down and margin up through planning the business and organizing the operations,
5. and directing and controlling the business in order to achieve the operating efficiency.

By enlarging the scope of measures of knowledge, the correlation between the measure of K and that of VO may change considerably. Knowledge alone may be able to explain a unique portion of variance in RP, different from the portion explained by VO alone.

Some discussion will be presented relative to the two variables, PE and PT, which were assumed to be fixed in this study.

PE (past experience)

The most relevant past experience among various experiences a manager has had appears to be that in managing farmer cooperatives. The measure used included the number of years of taking full management responsibility in farmer cooperatives and other businesses. Equal weighting of the number of years in managing other businesses to those in managing

farmer cooperatives might have distorted the impact of experiences in managing farmer cooperatives on other variables. The number of years in managing farmer cooperatives should be separated from other managerial experiences which may be considered as secondary.

Given the state of the social system, i.e. farmer cooperative, the individual manager is expected to play his role. It takes certain amount of time for a manager to become able to manipulate the facilities the system provides. The number of years he has been managing the present farmer cooperative may also be taken into consideration as a situational variable, rather than as the amount of personal experience, along with any other situational factors. Effects of situational factors upon outcome of role performances (ORP) may deserve a great concern in future study.

PT (past formal educational training)

In the scope of this thesis, only the years of formal educational training was taken into consideration as an indirect indicator of intelligence. Any additional training a manager has received after he began to play the role of a farmer cooperative manager was not taken into consideration. Such a training experience may bear some effect on manager's performance. If a large enough sample of managers were taken, it may be worth for consideration that managers

be grouped into those who received occupational training and those who did not. Warren's study (91) may be referred to on this issue. It is recognized that differential content of occupational trainings given at different times to different managers will present a further problem in studying a group of individuals who attended various training courses.

RP (role performances)

Measures of RP yielded a relatively high reliability coefficient ($r_{RP_1, RP_2} = .743$). Measure of RP may be further improved by adding more items, especially if one wishes to make any inference as to each managerial function and/or each managerial phase.

Items of planning function mainly emphasized planning in phases of general management, retail sales management, wholesale purchases management and inventory management. It is recommended that additional items may be included pertaining to planning in personnel management, credit management, financial management, accounting and records management and equipment management.

Items of organizing function were mainly concerned with organizing in general management and personnel management. Based on the definition of organizing by Phillips (75), items pertaining to grouping assets and establishing relationships among personnel may be added.

Items of directing function were concerned with methods of training and supervising employees. Items may be added as to manager's day to day decision making on matters which are not covered by managerial policies and for which employees may seek manager's answers and instructions.

Items of coordinating function were concerned with communication between the manager and employees, between employees and patrons, and communicating with customers in general. What was missing appears to be items pertaining to communication between the board and the employees, probably via the manager, especially for those occasions when the needs of communication may be more from employees to the board rather than from the board to the employees. As to this point, a question may be raised to specialists of farmer cooperative management if any communication channel which will connect the employees directly or indirectly to the board is desirable and/or necessary.

Items used to measure the controlling function were concerned with method to appraise employees' performances, use of sales plan and projection, budgeting and evaluation of the business with use of efficiency ratios. Items may be added referring to how a manager keeps himself informed with all phases of business operation and how he takes remedial actions when necessary.

ORP (outcome of role performances)

Outcome of role performances were operationalized by two measures: (1) the return on the fixed investments and (2) net operating revenue. The reliability coefficients computed as correlation coefficients between two alternative measures were .939 for the former and .897 for the latter. These were the two highest values among all the measures used in this thesis.

Concerning the question as to whether size or profit is to be considered as ORP, some insights may be gained from the finding obtained by McCabe (59) as shown in Table 2. The highest ranked goal by both the presidents of the boards of directors and the managers was to attain satisfactory net savings. Thus, so far as a certain size of volume is associated with a certain level of profit, the managers may aim at volume sales rather than the maximum profit, which was ranked the eighth among twelve goals.

The scheme applied to managers in farmer cooperatives in this thesis was constructed with the assumed managerial goal of profit making. So long as the concern is with goal-oriented behavior, understanding of the empirical goals and the values placed on them ('desirableness' of those goals in hierarchical order) and motivational orientation toward attainment of those empirical goals ('desiredness' placed on them) may be the key issues of the entire problem of predicting managerial role performances and their outcome.

The problem left out in this thesis was how to deal with the situational factors which may be included as composing the defined situation. As pointed out by Swanson (84), there is a need for developing a set of primitive concepts to describe the situation as defined by an individual. While the way the situation is defined will affect the behavior of individual, the outcome of behavior may be affected by the situational factors some of which may not be even defined as part of the situation by the individual.

In all, the major factors which contributed to the result obtained from the statistical analysis appear to be of low reliability and questionable internal validity for some measures due to insufficient representation of items composing the measures for the domains which the concepts were defined to occupy. Since the selection of the best predictors depends upon halves of the items of measure, high reliability of the measures is required. The particular selection of the predictors may be highly conditional to which halves will be used as the first set of measures, if the measures are not reliable. Internal validity in regard to representativeness of items as measures also has crucial importance so that the conclusion may not be drawn due to the unique, sometimes perhaps biased, set of items selected to represent the domains of the concepts.

CHAPTER VII. SUMMARY

This thesis was an attempt to study role behavior with emphasis upon the relationships among determinants of role behavior and the relationships of determinants to role behavior itself. The role behavior of concern was essentially overt behavior, role performances. The role behavior chosen for the study was that of managers in farmer cooperatives.

The major objectives of the thesis were: (1) the delineation of theoretical determinants of role behavior, construction of causal models of role behavior and application of the models to the case of managerial role behavior in farmer cooperatives, (2) the application of path analysis to test adequacy of the models and the modification of the models based on the data analysis, and (3) the recommendation of improvements in measures to be used to test the models.

In the chapter on the theoretical framework, human behavior was discussed in general, with emphasis on the overt behavior. It was assumed that human behavior of concern in this thesis was learned, social, goal-oriented, adaptive, communicative and cumulative. Various authors' ideas pointed out the apparent concensus on 'definition of the situation' as the crucial step in determining human behavior. Since it was recognized that the actual definition itself is very difficult

for the investigator to determine the discussion was focussed upon determinants of the definition of the situation.

Eleven general concepts were delineated by integrating theoretical points of view presented by various social scientists. The eleven concepts were (1) biological capacities, (2) past experiences, (3) knowledge, (4) symbolic skill, (5) value system, (6) attitude, (7) motives and needs, (8) self-evaluation, (9) sentiments, (10) expectations of referents, norms, and (11) goals.

The discussion on the role theory followed in order to tie the above concepts with the related concepts in the role theory. After the discussion on the role, position and role behavior, the concepts listed above were discussed, in the framework of the role theory and each concept was related to a concept in role theory.

Biological capacities were the limiting factors of human behavior. Assuming physiological capacities to be about equal among the role players of a particular role, innate intelligence was taken into consideration. Since the intelligence tests scores account for not only variation of innate intelligence but also environmental variation and furthermore such test scores may not be readily available for individuals, it was decided to use an indirect indicator, i.e. amount of formal education training, to measure innate intelligence, this was discussed along with past experiences.

Past experience was identified as past experiences in playing a particular role, and another type of past experience, formal educational training, was used as a separate concept.

Knowledge was identified as knowledge to facilitate an individual in playing a particular role.

Symbolic skill was integrated into knowledge, since it is the basis for acquiring knowledge. The acquiring of knowledge is unconceivable without symbolic skill. The assumption made was that the amount of knowledge one acquires depends upon the amount of symbolic skill one has obtained.

Value system was explored in its theoretical implication to the problem of role behavior. As a result, it was decided to be more meaningful to deal with value orientation rather than value system alone. Value orientation was defined as a configuration of values and beliefs which were relevant to an individual playing a particular role.

Two categories of attitudes were considered to be most relevant in the scheme of this thesis; (1) value-expressive attitudes and (2) attitudes toward an organizational goal, i.e. motivational orientation toward an organizational goal. The first was integrated into the preceding concept, value orientation, because some value-expressive attitudes are hard to separate from values and such attitudes will aid the investigator in studying individual's values. The second

category refers to relatively persistent state of readiness to be motivated toward goal attainment. Since the behavior of concern in this thesis is assumed to be goal-oriented, attitude toward a goal (motivational orientation) was emphasized. An organizational goal was selected because of its relative manifestedness and because choice of an organizational goal enables the investigator to study the variation of motivational orientation among different individuals.

Motives and needs were discussed as a part of the discussion on motivational orientation. Since the concern in this thesis is the role behavior of the individuals who occupy the same positions, managers in farmer cooperative, variation of personal motives and needs was considered as not feasible to take into consideration. Besides the individuals themselves may not be aware of their own motives and needs.

Self-evaluation was discussed in the dimension of value orientation, since an individual evaluates himself according to his value system, which he also uses to evaluate others. Self-evaluation was included as a part of value-orientation as defined in this thesis.

Sentiments were linked to role satisfaction. The assumption here was that sentiment toward a role is a function of role satisfaction.

Expectations of referents were identified with role expectations. They were discussed in relation to role behavior since it was assumed that an individual actor guides his behavior partially by what he perceives is expected of him. Role expectations will also provide the standards against which role behavior will be evaluated.

The relevance of goals, which were here limited to organizational goals, was considered in the discussion of motivational orientation. As the target of motivational orientation, a goal bears relevance to individual's role behavior.

In all, the following concepts were selected as theoretical determinants of role behavior; past experience, past formal educational training, knowledge, value orientation, motivational orientation and role satisfaction. Then, causal relationships of the determinant concepts to role behavior and among determinants themselves were explored. Four alternative models (see Figure 1, pp. 67-68) were constructed from the theoretical point of view. In the models postulated causal relationships were designated by arrowed lines. Where no causal relationships were postulated, no arrowed lines were used.

Following the general discussion of role behavior and the construction of models, farmer cooperatives and the managerial roles in farmer cooperatives were discussed.

Each of the concepts included in the general models of role behavior was discussed specifically in relation to managerial role performances in farmer cooperatives. Role performances of managers were assumed to be oriented toward profit making in general, i.e. not maximization of profit. Thus, in operational models, another dependent variable, outcome of role performances, was added in order to evaluate attainment of the goal. Figure 3, pp. 97-98 presents postulated causal relationships of the two dependent variables, role performances and outcome of role performances, with their determinants.

Managerial role performances in farmer cooperatives were studied as a configuration of performances in the five functions, i.e. planning, directing, controlling, coordinating, and organizing. Outcome of role performances was evaluated in two aspects; (1) the return on the fixed investments and (2) net operating income.

In the chapter on methodology, the current notion of causation was first discussed. Characteristics of current notion of causation, causal relationships, were: (1) cause being assumed or believed to exist rather than claimed to exist, (2) multiplicity of causes, (3) cause being something present or absent, (4) causal relationship being A's change producing a change in B, (5) requiring neither contiguity nor time sequence, and (6) asymmetry as an attribute of

models. This was followed by the discussion of path analysis, where the procedure of path analysis was presented and its commonality with regression analysis was pointed out.

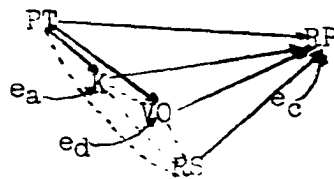
The data collection procedure and operationalization of measures were discussed. A sample of 98 managers in farmer cooperatives in Iowa provided the data for the present study. For all the concepts except past experience and past formal educational training, i.e. PE and PT, items of each measure were randomly partitioned into two alternative sets of measures. The measures of past experience and past formal educational training were considered as fixed, so the same measures were used in both sets of measures.

In the data analysis chapter, the first set of measures were used to empirically construct the models based on the models postulated from the theoretical viewpoint. The best set of predictors were selected for each dependent variable with the first set of measures. When the four alternative models were constructed in the chapter on the theoretical framework, the distinction among the models was made in regard to the alternative directions of arrows between role satisfaction and motivational orientation and between knowledge and value orientation. As the result of the data analysis with the first set of measures, these relationships were eliminated from the models, thus the alternative models

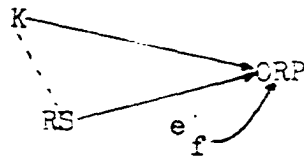
became only one model of role performances. For the outcome of role performances, return on fixed investments and net operating revenue resulted in having different sets of best predictors upon the first step of the data analysis with the first set of measures. The postulated models were modified based on the data analysis with the first set of measures and modified models were subjected to confirmation with the second set of measures.

With the second set of measures, the models constructed with the first set of measures were not completely confirmed. Modification was made by elimination of one causal relationship from the model for role performances.

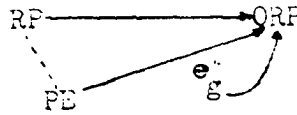
The resulted model for RP (role performances) was:



The resulted model for ORP (return on fixed investments) was:



The resulted model for ORP (net operating revenue) was:

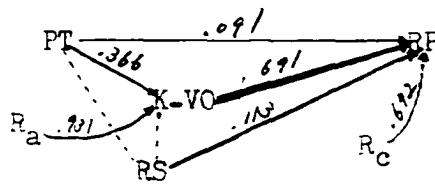


In the above model for RP (role performances), role performance (RP) is indicated to be determined by past formal educational training (PT), knowledge (K), value orientation (VO), and role satisfaction (RS) to some extent. At the same time, it is shown that the best predictor of K and VO respectively was PT. In the above model for ORP (return on fixed investments), return on fixed investments is shown to be best predicted with knowledge and role satisfaction. In the above model for ORP (net operating revenue), net operating revenue is indicated to be best predicted by role performances and past experiences. With the addition of the broken lines, it is shown that the predictors were not strictly independent.

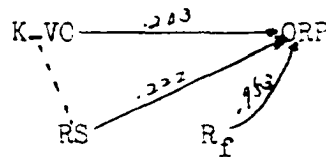
The next step taken was the correction for attenuation and estimation of trait contribution to dependent variables. When the correlation matrix of independent variables for role performances, i.e. PT, K, VO, and RS, was inspected along with the reliability coefficients computed as correlation coefficients between the two alternative halves of each measure (called the first measure and the second

measure), it was recognized that the measure of knowledge and the measure of value orientation, if freed from measurement error, would explain essentially the identical portion of variance in role performances (RP). A decision was made to use a composite trait of knowledge (K) and value orientation (VO), K-VO, rather than K and VO separately as two traits. After necessary adjustments to include a composite K-VO in correlation matrices and correction of correlation coefficients for attenuation, b^* values, i.e. path coefficients, and residuals were computed to estimate the contributions of the traits to each dependent variable and the unexplained portion of variation in each dependent variable.

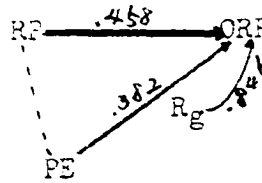
The resulted path diagram for RP (role performance) was:



The resulted path diagram for ORP (return on fixed investments) was:



The resulted path diagram for ORP (net operating revenue) was:



Many of the postulated causal relationships were eliminated from the causal models presented originally in the chapter on theoretical framework, as the result of the data analysis. Lack of high reliability and questionable internal validity of some measures in representing the concepts appear to be the contributing factors to the results obtained by the statistical analysis. In the chapter, Discussion and Recommendations, the data analysis was discussed and recommendation was made as to measures of concepts in the models.

The following conclusions can be drawn as a result of this work;

- (1) In a farmer cooperative; the manager's overall role performances may be best predicted by amount of formal educational training, a composite of knowledge and rational value orientation toward economic ends and role satisfaction. The return on fixed investments, as a measure of outcome of managerial role performances, may be best predicted by a

composite of knowledge and rational value orientation toward economic ends and role satisfaction. The net operating revenue, as a measure of outcome of managerial role performances, may be best predicted by managerial role performances and past experiences of being a manager. It is this author's opinion that a reappraisal should be made as to the relationship between knowledge and rational value orientation in the U.S. culture.

- (2) Path analysis was helpful to make the relationships among independent variables explicit as well as to show the relationship of each independent variable to the dependent variable visually.
- (3) The correction for attenuation was meaningful, since independent variables tended to correlate among themselves and they were subject to measurement error.

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APPENDIX A

The First Set of Measures

K_1 (Knowledge)¹

Insecticides

- 2 Chlordane is not a recommended residual fly control which can be sprayed on the walls in a dairy barn.
(Correct)
- 4 When Amino-triazole is applied to thistle patches in a pasture, it is recommended that livestock not be allowed on the treated area for eight months.
(Correct)
- 7 Two pounds per acre of actual Aldrin or Heptachlor which is broadcast and disked-in will control all major soil insects attacking corn on sod ground.
(Correct)

Fertilizer and its application

- 1 Under adequate moisture conditions, fertilizer applications which increase corn yields can:
 - (1) decrease the pounds of water needed to produce one bushel of corn
 2. increase the pounds of water needed to produce one bushel of corn
 3. decrease the total amount of water used by the crop
 4. decrease water loss through corn leaves

¹For the items measuring knowledge of insecticides, correctness or incorrectness of statements is indicated in the parentheses after each statement. For the items measuring knowledge of fertilizer and its application, the correct answer is indicated in the parentheses placed around the number. For the item measuring knowledge of management practices, see the scoring of responses in the discussion of operational measures in the chapter on methodology.

- 3 If used in the row of corn, the minimum percentage of water soluble phosphorus should be:
 1. 80%
 - (2) 50%
 3. 20%
 4. 100%
- 4 Fertilizer nutrients, if needed:
 - (1) can be insurance against drought for corn if subsoil water is adequate
 2. cause corn plants to use less total water
 3. draws corn roots toward it when placed deep in the soil
 4. cause lower leaves of corn to "fire" in dry weather
- 9 Nitrogen fertilizer can be applied in different ways. Which one of the following application methods is most effective in increasing corn yields assuming proper application equal N rates, similar weed control and normal rainfall?
 1. plow-down application
 2. disked-in on plowed ground
 3. pre-plant injections
 4. side-dressings up to the time the corn is 15 inches tall
 - (5) all methods are equally effective
- 10 If a farmer elects to apply all of his fertilizer for corn as a plow-down application at the medium rate, under which one of the following conditions could he expect the most effective use of his fertilizer?
 1. a wetter than average growing season
 2. growing season with temperatures higher than average
 - (3) a dryer than average growing season
 4. growing season with temperatures lower than average

Management practices

- 1 What is the best way to use financial statements in evaluating your business? Computing certain ratios and
 1. comparing with industry ratios
 2. comparing with last year's ratios
 3. comparing with your own goals

- 3 What additional information do you need to take full advantage of these statements?
- 6 The fertilizer department in a farm supply business showed this financial statement at the close of the last fiscal year.

<u>Sales</u>	<u>Margins</u>	<u>Direct costs</u>	<u>Overhead costs</u>	<u>Profit</u>
\$500,000	\$50,000	\$40,000	\$15,000	-\$5,000

What factors should a manager take into consideration in deciding whether or not to drop the fertilizer department? [Probe to get respondent to directly answer the question.]

- 7 When pricing products and services several factors must be taken into account. Under certain conditions it may be wise to maintain a wide margin even at the sacrifice of sales volume while in other instances it would be better to maintain a smaller margin to get increased sales volume.

For each situation, please state whether you would maintain a large margin with the possibility of decreasing the volume, or maintain a small margin with the possibility of increasing the volume.

[Encircle One]

- L S 1. Brand handled recognized by customers as superior to that of competitors.
- L S 2. Extra services wanted by customers cannot be (or are not) provided.
- L S 3. Many other dealers in the trade area have full competitive lines.
- L S 4. An aggressive sales and merchandising program is maintained.
- L S 5. Many expenses are fixed so that total per unit handling costs decrease sharply as volume increases.
- L S 6. Increased sales of this line have little value for increasing sales of other lines handled.

MO₁ (Motivational orientation toward profit making)

- 1 The only real goal in managing is to maximize business profits.
- 4 The most successful manager is the one who makes the most profit for his business.

VO₁¹ (Rational value orientation toward economic ends)

- 1 Having many friends is more important than being a financial success.
- 3 The major reason for going to college is to be able to make a better living.
- 6 There are so many desirable things in life that a person can afford to get along on a lower income to maintain these advantages.

Independent value orientation

- 1 In this day and age a person can no longer afford to be independent and to rely on his own judgment in making decisions.
- 4 A new manager would do well to find out the opinions of more experienced managers before making decisions.
- 5 Having the freedom to make up my own mind is, to me, one of the major advantages in management.
- 6 It is more important to me to be known as a person who gets along well with others and has a lot of friends rather than a person who likes to make decisions for himself.

Mental activity value orientation

- 1 A manager's most important asset is a "strong back".
- 6 Intelligence is more important in management than in most other business activities.
- 7 Hours spent by a manager evaluating and making future plans for his business are generally more profitable than hours spent helping with the mixing or grinding operations.
- 8 A good manager is the one who can use his head as well as his back.

¹Dimensions were disregarded when items were partitioned into two sets.

- 9 Thinking, reading, and planning are not really important to me in managing this business.

Scientific value orientation

- 1 One of the best guides in making decisions is what has worked in the past.

Risk taken value orientation

- 4 Managers who are willing to take more than average chances usually do better financially.
- 5 A manager should always have a contingency fund in case of emergency.

RS₁ (Role satisfaction)

- 1 How satisfied are you with the progress that you are making toward the goals which you set for yourself in your present position?
- 2 How satisfied are you with the amount of time which you must devote to your job?
- 3 How satisfied are you with your present job when you consider the expectations you had when you took the job?
- 4 How satisfied are you with the work that you do as the manager of a cooperative?
- 6 How satisfied are you with your present position when you compare it to similar managerial positions in the state?

PE (Past experience)

- 1 How long have you had full responsibility for the management of a business?

PT (Past formal educational training)

- 1 How many years of formal education have you completed?

RP₁ (Role performances)Organizing

- 1 What factors do you take into consideration in making decisions concerning how your business is organized into departments and functions? (Include decisions such as those concerning functions to be performed and departments to have.)
- 2 What methods do you use to determine the number and qualifications of the employees needed in your business firm?

Planning

- 4 Within the lines, how do you determine what brands and qualities of merchandise to handle?
- 5 Most businesses attempt to create a favorable image with their customers. What are the essential features or ingredients in the image you are trying to create for this business?
- 6 On what basis do you select your wholesale sources and outlets?
- 7 When purchasing supplies for resale, what factors (other than price and quantity) do you consider?

Controlling

- 2 Do you have a sales plan or projection for the next operating year?
 1. Have one written down
 2. Carry one around mentally
 3. None
- 3 Do you prepare a budget for your next operating year?
 1. No
 2. Yes(If yes) What types of budgets do you use and how are they employed?

Coordinating

- 2 Which one of these statements best describes the way you feel about key employee relationships with patron members?

- 3 Selling is a matter of getting your ideas and product information to purchasers. What factors do you take into consideration in getting this job done?

Directing

- 2 What techniques do you include to get top performance out of your employees?
- 3 How frequently do you work alongside your employees?
 1. never
 2. rarely
 3. occasionally
 4. frequently

ORP₁ (Outcome of role performances)

1. Return on fixed investments in 1964 (= X₁₃)
2. Net operating revenue in 1964 (= X₁₅)

The Second Set of Measures

K₂ (Knowledge)

Insecticides

- 1 The U.S. Department of Agriculture has the responsibility to enforce the proper use of insecticides. (Incorrect)
- 3 The recommended dosage for spraying 2,4-D on corn at "lay by" time using a drop-extension nozzle is one-half pound or one pint of ester per acre. (Incorrect)
- 5 Amiben is an effective perennial weed killer in soybeans. (Incorrect)
- 6 Corn treated with Toxaphene should not be made into silage. (Correct)

Fertilizer and its application

- 2 Potash deficiency symptoms on corn can be recognized by a:
 1. light green color of the corn field in general
 2. purpling of the upper corn leaves
 - (3) browning of the outer margins of the lower corn leaves
 4. yellowing of the mid-ribs of the lower corn leaves
- 5 A high percentage of water soluble phosphorus is desirable for:
 1. phosphorus being plowed down for corn
 2. top dressing established legume meadows
 - (3) row fertilizer for corn
 4. application on oat-legume seedings
- 6 Maximum chemical availability of P in fertilizer:
 1. occurs for low water soluble materials when they are finely ground and banded in the soil
 2. occurs for low water soluble materials when pelleted and widely dispersed in the soil
 - (3) occurs for high water soluble material when hill dropped or band applied
 4. occurs for high water soluble materials when finely ground and widely dispersed in the soil
- 7 When sampling soils in Iowa:
 1. take one core for every 10 acres
 - (2) separate fields into separate areas based on soil differences or differences in past management
 3. subsoil sampling is recommended
 4. allow samples to dry thoroughly before sending to the laboratory
- 8 In taking soil samples, the greatest mistake is to:
 - (1) mix soil from a wet area and a sloping area into one sample
 2. take too few cores from a single soil type
 3. take too many cores from a single soil type
 4. include more than ten acres into one sample

Management practices

- 2 Will you please give me an interpretation of the status of this business as represented on these financial sheets?

- 4 How precise are these financial statements?
- 5 What do you feel are the main purposes of financial statements?

You are advising a farmer who owns 360 acres of crop land. 300 acres are top quality land. 60 acres is land that will raise corn but not as well as the rest of the farm. It would be possible to raise trees on this land that would produce in 10 years.

- 8 Which of the following alternatives would you recommend to this farmer?
 1. raise corn on this 60 acres of land and receive a net profit of \$900 per year for 10 years
 2. raise trees on this 60 acres of land and receive \$10,000 net profit at the end of 10 years
- 9 What factors did you take into consideration in making this decision?

MO₂ (Motivational orientation toward profit making)

- 2 The greatest satisfaction in being a manager comes in running a highly profitable business.
- 3 In deciding about making changes in his business, a manager's first consideration should be "is it profitable."

VO₂¹ (Rational value orientation toward economic ends)

Economic value orientation

- 2 Families with modest incomes are happier than those who have lots of money.
- 4 One of the major problems in our country today is that people are too concerned with money and the things money will buy.
- 5 People who have been successful financially generally are more interesting people with whom to visit.
- 7 There are more important things in life than trying to make a few extra dollars.

¹Dimensions were disregarded and items partitioned into two sets.

Independent value orientation

- 2 One of parents' greatest obligations is to teach their children to make decisions on their own uninfluenced by what others may say or do.
- 3 Managing must be extremely difficult without the advice and help of my board.

Mental activity value orientation

- 2 If I had a choice I would rather work with my hands than read a book.
- 3 If a man is going to hire labor he should be willing to work right along with the man he hired.
- 4 Quite a few managers would be better off if they would spend less time going to meetings and more time in their business.
- 5 Physical work is more satisfying and rewarding to me than mental activity.

Scientific value orientation

- 2 Time spent in learning about new management practices is time well spent.

Risk taken value orientation

- 1 It is better to make a smaller profit each year than to attempt something where there is some chance of losing.
- 2 I regard myself as the kind of person who is willing to take a few more risks than the average manager.
- 3 A manager should try to reduce the risk in his business by keeping his operation diversified, even though it may mean the loss of some future income.
- 6 I would rather take more of a chance on making a big profit than to be content with a smaller but less risky profit.

RS₂ (Role satisfaction)

- 5 How satisfied are you with the amount of authority you are given for the tasks you are expected to perform?
- 7 How satisfied are you with the level of challenge and responsibility you are faced with in your present position?
- 8 How satisfied are you that the people of your community give proper recognition to your work as a manager of a cooperative?
- 9 How satisfied are you with your present salary?
- 10 How satisfied are you with the authority you have been given by your board of directors to do your job?
- 11 How satisfied are you with the amount of interest shown by the community in its cooperative?

PE (Past experience)

1. How long have you had full responsibility for the management of a business?

PT (Past formal educational training)

1. How many years of formal education have you completed?

RP₂ (Role performances)Organizing

- 3 How do you determine the responsibilities and work loads of each of your employees?
- 4 What type of job descriptions do you have for each employee position in your business?

Planning

- 1 In making a major decision, what steps or processes do you go through?
- 2 Once a major decision to make a change has been made, what are some of the things you would do to insure that the implementation of this decision will be

successful? (Include planning for change, and planning for the period after the change has been made.)

- 3 What are the major factors you take into consideration in deciding (or in making recommendations to your board) to add or to drop existing lines of business or reorganizing your business to place greater emphasis on a given line?
- 8 How do you protect yourself against market price changes on products and supplies in inventory?

Controlling

- 1 What method or methods do you use in your business for appraising the performance of employees in the jobs to which they are assigned?
- 4 What kinds of ratios do you use to determine how efficient you are in your business? What should these ratios be for your business? What are the factors you take into consideration in deciding on what these ratios should be?

Coordinating

- 1 How is information in your business communicated from you to your employees?
- 4 As you think of merchandising your products, do you classify your farmer customers into different groups and use different selling approaches on them?
 1. No
 2. Yes
 (If yes) What are the major factors you take into consideration in classifying them?

Directing

- 1 What methods are used to train and develop your employees?
- 4 How frequently do you help employees with important tasks to make sure they've done well?
 1. never
 2. rarely
 3. occasionally
 4. frequently

ORP₂ (Outcome of role performances)

1. Return on fixed investments in 1965 (= X₁₄)
2. Net operating revenue in 1965 (= X₁₆)

APPENDIX B

BALANCE SHEETASSETSCurrent Assets

Cash	\$135,000	
Accounts Receivable	65,000	
Inventory	<u>100,000</u>	\$300,000

Fixed Assets

Buildings and Equipment		<u>1,200,000</u>
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TOTAL ASSETS		<u>\$1,500,000</u>
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LIABILITIES AND MEMBERS' EQUITY

<u>Current Liabilities</u>	\$300,000
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<u>Long-Term Liabilities</u>	600,000
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<u>Members' Equity</u>	<u>600,000</u>
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TOTAL LIABILITIES AND MEMBERS' EQUITY	<u>1,500,000</u>
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STATEMENT OF OPERATIONS

<u>Sales</u>	\$1,400,000
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<u>Cost of Sales</u>	<u>1,300,000</u>
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<u>GROSS COMMODITY SAVINGS</u>	100,000
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<u>Other Income</u>	<u>100,000</u>
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<u>GROSS SAVINGS AND INCOME</u>	\$ 200,000
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<u>EXPENSES</u>	<u>130,000</u>
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<u>NET SAVINGS FROM OPERATIONS</u>	<u>\$ 70,000</u>
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APPENDIX C

Table 3. Intercorrelation of the variables

Variable No. ¹	1 (K ₁)	2 (K ₂)	3 (MO ₁)	4 (MO ₂)	5 (VO ₁)	6 (VO ₂)	7 (RS ₁)	8 (RS ₂)
1	1.0000							
2	0.3701	1.0000						
3	0.0427	0.1643	1.0000					
4	0.1275	0.1787	0.5567	1.0000				
5	0.0592	0.2118	-0.0844	0.0785	1.0000			
6	0.2855	0.3665	0.0241	0.1485	0.3992	1.0000		
7	-0.1065	0.0885	-0.0709	0.0261	-0.0205	0.0206	1.0000	
8	0.1068	0.0556	-0.0930	0.0903	-0.1821	-0.0301	0.6380	1.0000
9	-0.1749	-0.0295	0.0884	0.0718	0.0094	-0.1491	0.1356	0.0446
10	0.2268	0.1190	-0.0362	-0.0217	0.2299	0.3292	-0.1377	-0.0107
11	0.3200	0.3403	-0.0645	-0.0102	0.2785	0.4799	0.0950	-0.0675
12	0.4055	0.3901	-0.0493	0.1347	0.2361	0.5013	0.1461	0.1040
13	0.1326	0.1574	-0.0030	0.1146	0.0956	0.1289	0.1347	0.1485
14	0.1207	0.1490	0.0493	0.1151	0.0625	0.1073	0.1704	0.1809
15	-0.0180	0.1443	0.0356	0.0847	0.0953	0.1880	0.1019	-0.0448
16	-0.0003	0.2298	0.1245	0.1237	0.1157	0.2427	0.0976	-0.0749

¹K = Knowledge, MO = Motivational orientation toward profit making, VO = Rational value orientation toward economic ends, RS = Role satisfaction, PE = Past experience of being a manager, PT = Past formal educational training, RP = Role performances, ORP = Outcome of role performances.

Table 3. (Continued)

Variable No. ¹	9 (PE)	10 (PT)	11 (RP ₁)	12 (RP ₂)	13 (ORP ₁ ²)	14 (ORP ₂ ²)	15 (ORP ₁ ³)	16 (ORP ₂ ³)
9	1.0000							
10	-0.1490	1.0000						
11	-0.1381	0.3819	1.0000					
12	-0.1743	0.3423	0.7434	1.0000				
13	0.0629	-0.0134	0.1075	0.1315	1.0000			
14	0.0841	-0.0314	0.0992	0.0942	0.9385	1.0000		
15	0.3518	0.1201	0.2986	0.2385	0.2346	0.2241	1.0000	
16	0.2895	0.1533	0.4063	0.3278	0.2406	0.2491	0.8966	1.0000

²Variable 13 and 14 are ORP measured as return on fixed investments.

³Variable 15 and 16 are ORP measured as net operating revenue.