A STUDY OF DIFFERENTIAL ADOPTION OF IMPROVED FARM PRACTICES IN RELATION TO REFERENCE GROUP INFLUENCE AND COMMUNITY NORMS

By

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CHAPTER I

INTRODUCTION

One of the most important factors in promoting economic development is the application of modern technology to processes of production. In a relatively less developed economy like ours, the pace of economic development is dependent, to a large extent, on vast and enduring changes in farming economy. Such changes in farming economy must pre-suppose:

(1) The development of new technological practices in agriculture,

(2) The diffusion or spread of these practices to the farmers, and

(3) The ultimate decision of the farmers to adopt these practices.

However, while large resource investments are made in the development of new technological practices, much less effort is expended on the investigation of the processes by which the results of this research can be effectively communicated to the farmers and on the factors which might influence the farmers' ultimate decisions either to adopt or not to adopt the results of this research. Research on the dynamics of the process of diffusion and on decision-making with respect to adoption of practices is no less vital than research on the development of new technology.

The Problem

The phenomena of social change in Indian agriculture and rural life have acquired, of recently, considerable importance in

view of planning for development. The success of planning depends on the transformation of a traditional agriculture, with its limited maxima and based on its faith in traditional folk beliefs to a modern and scientific agriculture based on scientific knowledge in farm management and technology. Even though this is the general direction of social change visualised by planning and hoped to bring about through the Community Development Programme, the change which has occurred so far, has lacked uniformity in many rural areas. These rural societies thereby tend to exhibit the 'dualism' where the progressive or the modern coexist with the traditional form. In respect of agriculture, this dualism has manifested itself in the wide disparities in the adoption of new agricultural technology among farmers themselves as well as among village communities as social systems.

This phenomenon of diversity in social change offers numerous research opportunities for investigation of the probable causal factors contributing to this diversity.

Within the context of the present research, it has been a matter of common observation by extension workers that, in Khanjawala block, the locale of this study, wide differences exist among the farmers as well as among the villages in the level of adoption of recommended farming practices. While a few farmers in most of the villages and most of the farmers in a few villages have succeeded in developing a relatively efficient agriculture based on a consistently high level of adoption of improved farming practices, others have failed to keep abreast of this increasing agricultural development and efficiency and manifest a consistently

low level of adoption. Thus, the individual farmers as well as the different villages as social systems seem to be located at different points on a traditional-modern continuum[1]. To phrase it differently, individual farmers tend to exhibit different degrees of innovativeness and individual village communities or social systems tend to exhibit varying social system or community innovativeness norms.

In its most general form, the present research problem is that of explaining these diversities in social change.

During the last half a century or so, a large number of research studies[2] have been conducted mainly in the United States of America and elsewhere in other Western countries on diffusion and adoption of innovations. From these studies the relationship of various cultural, psychological and social factors with adoption have come to be more or less established. However, since it is not possible to cover all the pertinent aspects of a problem in any one research study, it was felt that it may prove more fruitful, to understand and explain differential adoption from some specific angles rather than from a broader approach in this study.

In as much as a later chapter deals directly with the theoretical framework of the present study, it appears necessary to indicate only briefly, at this point, the broadest outline of the study. Briefly, this research is primarily concerned with

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[1]The concept of traditional-modern continuum is based on Rogers (1962 pp. 59-62).

[2]The reference here is to the over 300 previous studies on the spread of farm innovations listed in the Bibliography of Research on the Diffusion of Innovations. Department of Communication, Michigan State Univ. 1964.

three distinct, although interrelated, propositions related to adoption of practices. One deals with the extent to which adoption of improved agricultural practices might be explained as a function of influence derived from reference groups. The other proposition is concerned with the extent to which individual innovativeness is influenced by community norms. The third proposition is concerned with the variation in community norms, and seeks to explain it in terms of other community characteristics.

Objectives of the study:

Clarification of the specific objectives detailed in this section will be facilitated if preceded by a brief discussion of the theoretical implications of the major purposes of the study in terms of the propositions indicated above.

1. In respect of the first proposition which seeks to explain differential adoption as a function of reference group influence, reference group theory provides the basic theoretical framework. Briefly stated, the reference group theory is that a considerable number of every individual's attitudes, judgements and consequently his decisions have their anchorages in one or more social groups in his environment. Thus, it deals with the relationship between social groups in the individual's environment, as he defines it and his prevailing attitudes, judgements and derived decisions. The recent development of reference group theory has provided a valuable conceptual tool in the design, analysis and interpretation of data relating to studies on group

influences. Within the context of the present study, this theory has a distinctive value in suggesting testable hypotheses and in the analysis and interpretation of data. In addition the concept of reference group has been incorporated in advance as the major empirical variable in the study design.

2. In respect of the second proposition, which deals with the influence of community norms on individual innovativeness, the theoretical basis is derived from the concept of the traditional-modern continuum of social system norms as discussed by Rogers (1962). The norms of a community are expected to have an important influence on whether an innovation is adopted as well as on the speed or rapidity with which it is adopted. In other words, the norms of a social system are expected to affect the innovativeness of members of the social system.

3. In addition to these two main propositions of the study, the social systems as represented by the different village communities which exhibit varying community innovativeness norms, will form the units of analysis in respect of the third proposition. The attempt, in this instance, is to explain as much as possible of the variation in village community norms on innovativeness, in terms of other community characteristics rather than the variation in individual innovativeness.

The specific objectives of the study will now be stated. These are:

(1) To study adoption of farm practices as a function of reference group influence.

(2) To find out the composition of reference groups which influence adoption behaviour.

(3) To study the influence of community innovativeness norms on individual innovativeness.

(4) To study the extent to which community innovativeness norms are related to other community characteristics.

The propositions and hypotheses following from them will be stated in the chapter on Methodology.

Need for the study:

The need of a study of the present nature seems to center about two distinct but related levels of potential significance. First of all, from a theoretical point of view the findings of this study may add to the already existing knowledge about the factors related to adoption. Most of the researches on adoption and diffusion have been conducted in the United States of America and other Western countries and the need of further research on adoption and diffusion under different cultural systems to test hypotheses based on the findings of these studies is called for. What has been found to be successfully explained in one cultural context need not hold good in another cultural context.

A second level of potential significance of this study is related to the practical aspect. A programme of planned change in farming economy must take into account the people whose behaviour is sought to be changed and consequently, the factors that enlarge or limit the possibilities of change in them. It is probable that we will be in a better position to devise methods

for promoting change or overcoming resistance to change, if there is a better understanding of the factors that influence promoting or preventing change.

The present study owes its justification on these grounds.

Definitions of terms and concepts:

The following is a short list of definitions designed to clarify the use of some terms and concepts employed in this thesis. The concepts as well as operational definitions are defined in greater detail in the chapter on Methodology.

1. 'Adoption' - Present use of farming practice regardless of extent of use.
2. 'Non-adoption' - Non-use of farming practice at the present time.
3. 'Norm' - A common and recurrent pattern of overt behaviour among members of a group.
4. 'Community norm' - The norm of a community on the traditional-modern dimension.
5. 'Traditional and modern norms' - They are conceptualizations of ideal types of norms designed to institute comparisons. The modern type is conceptualised to be more innovative, more progressive, more developed or more economically rational than the traditional type. The crucial dimension is that individuals in social systems with modern norms view innovations more favourably and are likely to adopt new ideas more rapidly than are members of traditional systems. The traditional and modern ideal types are actually end points on an innovativeness continuum.

6. 'Innovativeness' - At the individual level innovativeness refers to the degree to which an individual is relatively earlier to adopt new ideas than the other members of his social system. At the community level, innovativeness norms reflect the values which a community places on adoption of innovations and indicate its relative position on the traditional-modern continuum.

7. 'Reference groups' - Groups to which individuals 'refer' in their decision-making and are determinative of their behaviour. Conventionally, the term includes behaviour oriented both to groups as well as to individuals. In the latter instance, individuals to whom other individuals 'refer' in their decision-making are labelled by some authors as 'referents', 'reference individuals' or 'role-models'.

Organization of the thesis:

A brief description of the organisation of the thesis and the content of each chapter is presented below:

In chapter II which follows this introductory chapter an analytical review of reference group theory and research is attempted. The main aim is to clarify and identify the different dimensions and uses in previous work. Included in this chapter are also reviews of research on reference group influences and on community norms.

Chapter III reports the conceptual framework of the study and the propositions and hypotheses. Also given is an account of the area of study, the selection of villages and respondents and the instrument of observation.

Chapter IV is concerned with the findings of the study which are presented under different sections with brief discussions of the findings.

Chapter V deals with discussion of the findings and their interpretation.

Chapter VI, the last chapter, includes summary and conclusions and implications for future research.

CHAPTER II

REVIEW OF LITERATURE

The review of literature is presented under two sections. Section A deals with review of literature in respect of reference group influence and section B deals with review of literature in respect of community norms.

A. Reference Group Influence:

The importance of various sources of influence in a wide range of decision-making situations has been the subject of numerous research studies by sociologists, social-psychologists, rural sociologists, political scientists and others in recent years. In this connection, the development of the reference group theory during the last quarter of a century or so, has provided a valuable conceptual tool in analysing decision-making as a complex social process.

It seems logical that the theoretical framework to be utilised in a study of adoption of farm practice should be one that involves social-psychological factors that influence human behaviour. Reference group theory was, therefore, adopted to provide the basic theoretical framework for this study.

Since the introduction of the reference group concept by Hyman in 1942, a number of conceptually distinct usages of this concept have appeared in literature. Though Merton (1957) has attempted to clarify some of the basic concepts underlying the reference group theory, certain specific components of the theory still remain to be clarified and generally accepted. In the light

of this, this part of the review of literature will not follow the customary pattern of chronological sequence. Instead, what is proposed to be given is an analytical review of the origin and development of the theory and of the basic concepts, followed by a review of research studies using the reference group concept.

1. Origin and development of reference group theory:

The reference group concept was first introduced explicitly by Hyman (1942). In discussing the amount of satisfaction people derive from their own status, he found that it involved judging one's own status relative to certain specific groups. He speculated that two processes might be involved in the judgemental situation: (1) an emotional identification with the group and (2) self-appraisal with the group as a point of comparison. These processes denote relationships with the group which thus serves as a reference group.

More recently, the scope of this concept of the reference group has been enlarged by Sherif (1948, 1953); Newcomb (1948, 1950) and Merton and Kitt (1950).

Sherif (1948) defined reference groups as "those groups from which stem and to which are related the individuals' standards, attitudes and status aspirations".

In a later work Sherif (1953) defined reference groups as "those groups to which the individual relates himself as a part or to which he aspires to relate himself psychologically".

In these statements the element which is stressed is the psychological relatedness of the individual to a group or groups.

Merton and Kitt (1950) discussing the reference group theory note that "it aims to systematize the determinants and consequences

of those processes of evaluation and self-appraisal in which the individual takes the values and standards of other individuals and groups as a comparative frame of reference .....(it)..... centers on the processes through which men relate themselves to groups and refer their behaviour to the values of these groups".

In this statement is focussed (1) the processes through which the psychological relatedness occurs and (2) the future processes through which an individual refers his behaviour to the values of these groups.

Newcomb (1948) defined reference group as "that group which was the source of given norms or attitudes and which were taken over by an individual .... The significant thing about a reference group is that its norms provide frames of reference which actually influence the attitudes and behaviour of a person".

In this statement a new dimension to the reference group concept has been introduced by Newcomb - the role of the reference group as a source of influence towards conformity to its standards.

Kelley (1952) suggested that reference groups may serve two important functions - the comparative and normative functions. The comparative function of reference groups is to serve the individual as a point of reference in making evaluations of the self and others. The normative function of reference groups is to provide a source of norms or standards towards which the individual is influenced to conform. Kelley also pointed out that both functions are frequently, but not necessarily served by the same reference group.

Rogers and Beal (1958) have referred to reference groups as "those groups to which individuals 'refer' in their decision-

making ..... The expectations that the reference group have for the individual, then, are important in influencing his behaviour (if the individual accurately perceives these expectations)". They further state that the constituent parts of the reference group process are (1) the importance of the group to the individual, (2) the norms or standards of the group and (3) the expectations which the group holds for the individual, they being developed with respect to the norms of group and the individual's status - role in the group.

To summarize thus far: the reference group concept has been used to denote mainly three phenomena. These are:

(1) The process whereby an individual 'relates' himself to a group (implied here is the psychological relatedness).

(2) The process whereby a group is used as a point of reference in making evaluations of the self or others (implied here is the 'comparison' function).

(3) The process whereby the individual derives his attitudes, standards etc. from those of a group (implied here is the 'normative' function).

2. Basic concepts of reference group theory:

This section attempts to clarify the basic concepts of the reference group theory.

2(a). Functional types of reference groups: comparative and normative reference groups:

Two major types of reference groups have come to be distinguished in terms of their characteristic functions for the behaviour of those oriented toward them. These are the comparative

reference groups and the normative reference groups(Kelley,1952; Shibutani, 1955; Turner, 1956; Merton,1957; Rogers and Beal,1958). The two types of reference groups are only analytically distinct, since the same reference group can serve both functions (Merton,1957).

The concept of comparative reference groups is limited to those groups that function to provide a point of reference to the individual in his decision-making. The individual chooses between available alternatives by a process involving the comparison of his existing and/or projected behaviour with the standards, real or inferred, of relevant reference groups. Comparison groups provide a frame of reference. Rogers and Beal (1958) suggest that such groups might possibly be called 'orientation' groups.

The normative reference group sets and maintains standards toward which the individual is influenced to conform. Rogers and Beal (1958) suggest that they may be called 'influencing groups' or 'cause groups' in that these groups operate by various means to influence the individual in selecting certain alternatives that are available to him in the decision-making process. Essentially the way in which normative reference groups influence the individual includes what is usually referred to as personal influence (Rogers and Beal, 1958).

2(b). Membership groups and reference groups:

A distinction has sometimes been made between membership groups (reference groups to which the individual actually belongs)

and reference groups (any group to which the individual relates his behaviour) (Kelley, 1952; Newcomb, 1952; Hartley and Hartley, 1952; Sherif and Sherif, 1956). However, Merton (1957) has pointed out that the conceptual criteria of membership or non-membership in a group remains to be clarified and that group boundaries are not necessarily fixed but are dynamically changing in response to situational contexts.

Rogers and Beal (1958) have stated that this classification of reference groups on either a membership or non-membership basis may have little practical worth and that it is a difficult distinction to make in many empirical cases.

2(c). Positive and negative reference groups:

Newcomb (1950) has postulated the existence of 'positive' and 'negative' reference groups. The positive type involves motivated assimilation of the norms of the group as a basis for self-appraisal; the negative type involves motivated rejection.

Rogers and Beal (1958) have referred to positive and negative reference groups for each type of behaviour. A farmer's comparison of his behaviour with the behaviour of slowly adopting neighbours might be a factor in his reluctance to adopt new practices while the farmer's comparison of his behaviour with the behaviour of progressive farmers might tend to encourage him to adopt new practices. In relation to adoption behaviour the former group would act as a negative reference group while the latter group of progressive farmers would be a positive reference group. It is in the sense used by Rogers and Beal (1958) that the

terms 'positive reference groups' and 'negative reference groups' will be used in this study.

2(d). Reference norms:

The standards or norms of a reference group have been called 'reference norms' (Eisenstadt,1954; Rogers and Beal,1958). Reference norms reflect the values the group places on a certain type of behaviour. One reference group may place a high value on adoption of practices and have a positive reference norm on adoption while another may place a low value on adoption and have thus a negative reference norm on adoption (Rogers and Beal,1958).

2(e). Reference individuals:

Merton (1957) referred to the terminological convention of having reference group include behaviour oriented both to groups and individuals. He suggested that individuals to whom other individuals 'refer' in their decision or with whom other individuals identify themselves', may properly be called 'reference individuals' or 'role-models'. Rogers and Beal (1958) have labelled reference individuals as 'referents'. They may serve comparative or normative functions just as reference groups.

In the foregoing section the basic concepts of reference group theory were reviewed. Different conceptual usages were indicated.

The next section deals with researches using the reference group concept. Different methodological approaches will be indicated.

3. Studies on reference group influence:

Research studies on reference group influence have used the concept of reference group in two different ways. In the first place, it has been used as an interpretative or explanatory variable in a kind of secondary analysis of data. Secondly, it has been used as an empirical variable and incorporated into the study design in advance.

An analysis of the first nature is Merton and Kitt's (1950) re-examination of the findings of "The American Soldier", which provide specific contributions and implications related to reference group theory[1]. The application of reference group concepts to the data obtained from this study illustrates the relationships between a soldier's potential reference groups, frame of reference and his attitudes.

An individual's frame of reference formed in part as a result of his comparison of his situation with the situation of groups of others (a) with whom the individual was in actual association, (b) who were within relatively similar or different social categories or (c) any combination of the above two categories. These groups were seen to be related to the individual's frame of reference in a number of ways, namely, conflicting in some cases and mutually sustaining in other cases. In addition, conformative relationship to reference groups was also noted.

Newcomb (1952) working on the attitudes of conservatism and non-conservatism of women college students in his Bennington

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[1] Stouffer, S.A. et al. The American Soldier (Princeton, N.J. Princeton Univ. Press, 1949) vols. I & II.

Study found that "an individual's developing frame of reference results, at least in part, from the manner in which he relates or identifies with groups with which he has actual association as well as to those with which he has none". The methodology adopted in this study consisted of (1) the use of a Likert-type scale as a basic index of conservatism and non-conservatism, (2) the use of sociometry to select out types expressed along this continuum, (3) the use of a Likert-type scale to measure attitudes towards community issues, (4) the use of an index to measure identification with the community, (5) the use of divergence index to measure the degree of divergence or conformity to total group norms, and (6) non-schedule interviewing.

Kaplan (1955) in an analysis of data from a study on voting behaviour reported (1) the need for explicit criteria for positing the existence and operation of reference groups, (2) that there was greater awareness of the norm of primary groups which tended to indicate their potential importance as reference groups, and (3) that primary groups composed of family, friends and co-workers were crucial as points of reference for voting behaviour.

Fosen (1956) in a study of differential acceptance of farm practices using reference group relationship as an independent variable, found that (1) acceptors of practices tended to perceive high social support for their decisions to adopt, in other acceptors, (2) rejectors of practices tended to perceive fairly high social support in other rejectors, and (3) rejectors tended to have a low perception of others whose decisions varied from their own.

Rogers and Beal (1958) in a study of reference group influence in adoption of farm practices have utilised projective techniques for obtaining information about farmers' reference groups. The methodology adopted in this study consisted of the use of (1) a series of seven stimulus pictures with a set of probe questions for each picture, (2) obtaining a verbatim record of the interview by tape-recording and (3) content analysis of the tape-recorded interview replies for categorisation of data.

The major findings of this study were that (1) neighbours constituted one of the most important reference groups for most farmers, (2) family was an important reference group motivating adoption of practices, (3) farmers who were more dependent on family ties were slightly later adopters, (4) neighbourhood reference group was generally more important for later adopters than for earlier adopters and (5) farmers with more favourable attitudes towards innovators were more likely to be earlier adopters of new practices.

Bose and Basu (1963) in a study of influence of reference groups on adoption behaviour of farmers found that the adoption index of a farmer and the average adoption index of his relatives, friends and work-exchange groups were significantly correlated. They concluded that (1) a farmer's adoption rate of farm practices is influenced by the adoption rate of his reference groups consisting of friends, relations and work-exchange groups, (2) a farmer tends to conform to the norms of his reference groups in his adoption behaviour.

4. Role of personal influence in adoption:

Personal influence is defined as those communication contacts which involve a direct face-to-face exchange between the communicator and communicatee. Contacts with groups as well as with individual will be included. Personal influence is one of the ways in which normative reference groups function (Rogers and Beal, 1958).

A review of studies on factors influencing adoption has shown that personal sources of information and advice like friends, neighbours and relatives as well as extension agents, agricultural scientists, salesmen and others are important in the various stages of the adoption process. However, in many of these studies the role of personal influence is not explicitly stated, though in many cases it may be implicit. Again, in these studies concepts like 'dependency', 'closeness of ties', 'identification', 'extended group situation' and 'media' have been used. Many of these concepts would seem to be akin to the reference group concept. A few of such studies will also, therefore, be cited.

Ryan and Gross (1943) and Wilkening (1952) have found that personal influence is important in motivating adoption, more so for later adopters.

Lionberger (1951) found that personal sources of information were more important in influencing change than impersonal sources.

Wilkening (1950) studied the relationship of 'dependency' upon primary groups to adoption of practices and found that 'relative independence' was significantly associated with 'high

adoption', 'dependence' with 'medium adoption' and 'strong dependence' with 'low adoption'.

Lionberger (1954) and Lionberger and Hassinger (1954) have demonstrated the importance of informal social groups and neighbourhoods to adoption of practices.

Marsh and Coleman (1954 a) reported that the less the education and smaller the holding a farmer has, the more likely he is to consider friends, relatives or neighbours as being the most helpful means of obtaining farm information.

Marsh and Coleman (1954b) found that there was a direct relationship between the adoption scores of farmers and the adoption scores of others with whom he had kinship, visiting and work-exchange relations.

Coleman and Marsh (1955) have pointed out the importance of neighbourhood attitudes, norms and expectations as 'media' for the 'message' of agricultural agencies.

Katz and Lazarsfeld (1955) found that personal influence of primary associates had considerably greater effectiveness than any other media in influencing consumer purchase decisions.

Copp (1956) found that group affiliations or identifications exert a strong influence on the adoption of practices. His general conclusion was that the tendency to adopt recommended practices increases to the extent that the farmer's reference group ceases to be local neighbours and becomes one of professional and technical specialists.

Blair (1960) in his study of social structures and information exposure in Brazil concluded that the fact of being a

psychological member of a social group affects the individual's reactions to the means of exposure, to the content of messages transmitted and to the communicators of information.

B. Community Norms:

A norm is defined as the most frequently occurring pattern of overt behaviour for the members of a particular social system (Rogers, 1962). The two ideal types of norms are: traditional and modern. The traditional type resists change, is less innovative, less progressive, or lacks economic rationality while the modern type is more change-prone, more innovative, more progressive and economically rational. The traditional and modern types represent end points on an innovativeness continuum.

Four different approaches to measuring community norms have been reported.

1. Marsh and Coleman (1954), Van den Ban (1960), Rahudkar (1960) and Rogers and Burdge (1962) have used the average innovativeness method. This consisted of averaging the innovativeness scores of the members of a social system.

2. Bose and Dasgupta (1962) have used a village adoption index to measure variation among villages in adoption of practices. This method consisted of averaging the adoption indices of the farmer population in a village, the individual adoption index being calculated on the basis of the average number of years through which the individual had used recommended practices.

3. Rogers and Burdge (1962) have utilized an attitude-toward-innovators type of measure to measure community norms. Rogers

(1962) reports that such a measure is being used by Van den Ban.

4. Campbell and Holik (1960) and Rogers and Burdge (1962) have used judge's ratings as a measure of social system or community norms. Farm communities were rated on the traditional-modern dimension by judges acquainted with all the social systems under analysis.

Rogers (1962) has stated that although none of these measures of social systems are above methodological criticism, they provide an indication of a system's norms and are useful in comparing the norms of two or more social systems.

The use of community norms as an independent variable to explain individual innovativeness has been reported in two research studies.

Van den Ban (1960), in a study of farmers in 47 townships, found that township norms were better predictors of innovativeness than such farmer characteristics like education, size of farm and net worth.

Rogers and Burdge (1962) reported that community norms were found to statistically explain 20 per cent of the variation in farmer's innovativeness scores. This would indicate the importance of community norms on the innovativeness of individuals living in a community.

Marsh and Coleman (1954) found that community norms influence opinion leadership. In 'modern' neighbourhoods leaders were much more innovative than followers while in 'traditional' neighbourhoods they were relatively less innovative as compared to their followers. This finding has been supported by Van den Ban (1962).

Rahudkar (1960) found contradictory evidence to that reported above. In a 'modern' area in India, he found that opinion leaders' innovativeness scores were closer to those of all farmers than in a traditional area.

Two studies have been reported which seek to explain differences in community norms on the basis of other community characteristics.

Armstrong (1959) correlated community norms on innovativeness with other community variables like degree of urbanization, farm income level, and farm specialization.

Rogers and Burdge (1962) found wide differences in farmer characteristics like education, contact with experimental station, average acres of truck crops farmed, attitude towards innovations and average social status among communities ranked on an innovativeness continuum.

Bose and Dasgupta (1962) have reported that a study on the factors affecting village to village variation in adoption was under progress. The findings do not seem to have been reported so far.

Review of literature on the origin and development of the reference group theory and the basic concepts of the theory was given. Different definitions and usages of terms were indicated. Review of research on reference group influence revealed that the reference group concept was used as an interpretative variable in analysis of data and as an empirical variable included in the study design in advance. The use of different methodological approaches was indicated.

The review of research on personal influence indicated its importance in diverse decision-making situations.

The review of studies on community norms revealed different techniques in measuring norms. The influence of community norms on the innovativeness of individuals was shown. Attempts to explain inter-community variation in norms on the basis of other community characteristics were indicated.

Further, the review revealed paucity of research on the use of reference group concept in adoption studies and on the community norm variable.

The discussion now turns to the methodological considerations involved in the present study given in chapter III.

CHAPTER III

METHODOLOGY

This chapter is divided into three sections. Section A presents the theoretical framework of the study. Section B presents a description of the study area and selection of villages and sample of respondents. Section C deals with the instrument of observation and measurement, and methods of statistical analysis.

A. Theoretical Framework of the Study:

In this section is presented and discussed the theoretical framework in respect of the two main aspects of the study, namely, reference group influence and community norms.

1. Reference group influence:

It has already been indicated in the introductory chapter that reference group theory provides the basic theoretical framework of this study. The purpose of a theoretical framework in a research study is mainly two-fold (1) to suggest hypotheses which may be tested, and (2) to give meaning to the empirical findings and to aid in their interpretation. In respect of this study, the theoretical framework is being used with both of the above considerations in view. In the first place, with regard to this aspect, certain hypotheses will be postulated which attempt to explain adoption behaviour in terms of influence derived from reference groups and secondly, an attempt will be made to examine the findings on the basis provided by the theory.

One particular factor for selecting the reference group theory to provide a framework for this study was the use of the reference group concept as a basis for an explanation of adoption behaviour in the tentative general theory of diffusion and adoption proposed by Rogers (1962)[1]. Clarification of the use of the reference group concept in this study will, therefore, be facilitated by indicating initially the manner in which it is related to the theory of diffusion and adoption and then, in turn, the manner in which it has been related and incorporated into the study design.

In its most elementary form, at the basic level of conceptualization adoption of an innovation is a type of action or behaviour. This behaviour takes place in situations. Individuals do not exist as a mass of discrete, disconnected units, but they are members of social systems. In the situational fields[2], interaction with 'others' occur and this provides a sense of identity to the individual. The 'others' in a situational field are significant to the individual and influence his behaviour. These 'significant others' or 'reference groups' aid an individual in developing his self-identity and the manner in which he identifies himself influences his behaviour. For example, some individuals interact with earlier adopters, develop a similar self-identification and eventually take over the norms and values of the earlier adopters and orient their behaviour to these norms.

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[1]The present discussion is based directly on Rogers, E.M., The Diffusion of Innovations (N.Y.,Free Press of Glencoe, 1962):300-316.

[2]Situational field is defined as that part of the environment which is perceived by an actor as significant to him.

The diffusion and adoption of an innovation takes place within a social system which may embrace many different situational fields. The segments of a social system employed as frames of reference cause individuals to display varying degrees of innovativeness. Thus the norms on innovativeness of the social system as a whole or of its many component segments comprised of socially structured groups serve as incentives or restraints on adoption behaviour.

The foregoing brief analysis of adoption in terms of a behavioural theory has indicated the importance of the influence derived from 'significant others' in the situational field of an individual, on his behaviour. In the section which follows an attempt will be made to indicate how the reference group theory provides an explanation of the determinants and consequences of the influence derived from others.

Though in its most elemental form, the decision as to whether or not to adopt is made by the individual himself, he is apt to employ a frame of reference within the context of which he arrives at his decision. In other words, he 'refers' to others, whom he perceives as important or significant to him, in his decision-making. These 'significant others' have been referred to as 'reference groups'. Individuals may refer in their decision-making to other individuals, groups or social categories.

The reference group process involves two characteristic functions of reference groups, the normative and comparative functions. The normative function of reference groups is to provide a source of norms or standards toward which the individual

is influenced to conform. Such groups operate by various means to influence the individual in selecting certain alternatives that are available to him in the decision-making process. The reference norms of such groups determine the direction of the influence. The comparative function of reference groups is to serve the individual as a point of reference and the individual chooses between available alternatives by a process involving the comparison of his existing and/or projected behaviour with the standards or norms of such groups. Both the comparative and normative functions are frequently, but not necessarily served by the same reference group.

In respect of the present study, it was felt that an investigation of decision-making that leads to the adoption of recommended farm practices will reveal the existence and operation of distinctive normative and/or comparative relationships or orientations with reference groups in the life situation of the farmers. These relationships or orientations are conceptualized as synonymous with the normative and comparative functions of reference groups.

The situational field of a farmer might encompass different individuals, groups or social categories. While the number of such potential reference groups is infinitely large if individual idiosyncratic or private choices are considered, the number probably dwindles to a few as soon as the consideration is limited to reference groups more or less common to the population under study and in the context of a specific type of behaviour, namely, adoption of practices. This study will be limited to reference groups which are more or less common to the social category of farmers and not

on reference groups of specific individuals.

2. Community norms:

The second major purpose of this study relates to the investigation of community norms and their role in the adoption of practices. The significance of this approach is based on the indication that village communities may provide one of the most important group influences on adoption decisions.

The conceptual basis of this part of the study owes its ideas mainly to the discussion of traditional and modern social system norms by Rogers (1962)[1] and is recounted below.

A norm has been defined as the most frequently occurring pattern of overt behaviour for the members of a particular social system. Theoretically, two ideal types of norms may be distinguished: traditional and modern. Ideal types are conceptualizations that are based on observations of reality and designed to institute comparisons. The purpose of constructing ideal types (in this instance, traditional and modern types) is purely methodological as they provide tools for analysis and understanding of some dimensions. The ideal types of social system norms, traditional and modern, discussed by Rogers (1962), typify polar opposites on a continuum of innovativeness.

Social system norms have been termed as 'High Adoption', 'Medium Adoption' and 'Low Adoption' by Marsh and Coleman (1954). These may be regarded as representing the two end points and the midpoint on a continuum of innovativeness. In the present study, in addition to the traditional and modern types which are regarded

[1]Rogers, E.M., on. cit., 57-75.

as extremes on a continuum of innovativeness, is included another type - the transitional -which would represent the midpoint on the continuum.

The modern type is conceptualized to be more innovative, more progressive, more developed, or more economically rational. The crucial dimension is that individuals in social systems with modern norms view innovations more favourably and are likely to adopt new ideas more rapidly than are members of traditional social systems. Thus the norms of a social system are expected to affect the behaviour of members of the social system.

In respect of the present study, it has been pointed out earlier, that villages in the study area seem to reflect different degrees of innovativeness with regard to adoption of practices. This aspect of the study seeks to determine firstly, the influence of social system or village community innovativeness norms on individual innovativeness and secondly, the relationships between community innovativeness norms and other selected community variables.

In the foregoing sections have been discussed the theoretical framework of the study. The propositions and hypotheses that follow from them will now be specified.

3. Propositions and hypotheses:

Proposition I: Differential adoption of recommended agricultural practices is a function of reference group influence.

Hypothesis 1. The greater the positive reference group relationships, the greater the adoption.

Hypothesis 2: The greater the negative reference group relationships, the less the adoption.

Hypothesis 3: The more favourable the attitudes towards innovations of an individual's reference group, the more favourable will be his attitudes towards innovations.

Hypothesis 4: The greater the adoption score of an individual's reference group, the greater will be his adoption.

Hypothesis 5: The greater the closeness-of-ties between an individual and his reference group, the greater will be the agreement between them on attitudes towards innovations.

Proposition II: The norm of a social system affects the adoption behaviour of its members.

Hypothesis 6: A farmer's innovativeness varies directly with the norms of his village community on innovativeness.

Proposition III: The norm of a social system on traditionalism-modernism is related to other characteristics of the social system.

Hypothesis 7: The norm on traditionalism-modernism of a village community is significantly related to the level of education of its farmer members.

Hypothesis 8: The norm on traditionalism-modernism of a village community is significantly related to the socio-economic status of its farmer members.

Hypothesis 9: The norm on traditionalism-modernism of a village community is significantly related to the attitudes-towards-innovations of its farmer members.

Hypothesis 10: The norm on traditionalism-modernism of a village community is significantly related to the communication behaviour of its farmer members.

The concepts employed in the above statements are defined in a later section dealing with the instrument of observation and measurement.

4. Some specific problems in the study of reference group influence:

In the operational development of the study of reference group influence some specific methodological problems were encountered and it seems necessary to give an account of these in order to be clear about some of the limitations imposed by them on this study.

(1) Study design:

Since the focus of the study is on reference group influences operative in the adoption of practices, the study design was to be in the nature of an ex-post-facto analysis of decision-making as a complex social process. Such an analysis would require an inquiry into actual adoption decisions which a sample of farmers

had made and the influences which they had experienced in connection with their decisions. In the result, it was necessary to investigate not merely whether a respondent had adopted, not adopted or discontinued a specific practice but also it was necessary to explore and trace the impact of influences which bore upon such decisions. The necessity of an inquiry of this nature has, therefore, imposed limitations on the size of the sample of respondents to be selected as well as on the number of specific practices to be included in the study.

(2) Interview schedule:

In an empirical study of reference group influence, the problem of securing information from respondents regarding the influences which operated in this decision-making is fraught with difficulties. It was realised (during a pilot study) that attempts to get the respondents indicate, through direct questions whether they were influenced or not in their decisions were not successful in eliciting the desired type of information even though indirect allusions to the presence of such influences were made by them. It would seem that cultural values of independent thinking and decision-making are so dominant that any notion or suggestion of dependency on others for their decisions is not appreciated. In view of this, the procedure adopted was to ask a series of slightly directed questions to elicit the information. A similar procedure was adopted by Katz and Lazarsfeld (1955) in an essentially similar context.

(3) Dynamics of reference relationships:

Another problem in the study centered round the dynamics of reference relationships. An individual farmer in his situation may have contacts or relationships either with those who are positively oriented towards adoption or with those who are negatively oriented towards adoption or he may have contacts with both types. However, it seems unlikely that a farmer may have relationships or contacts exclusively with one type of persons whose orientations towards adoption are similar to his own. In other words, it would seem reasonable to assume, that the contacts and relationships of a farmer may be multi-dimensional in the sense that his perception or awareness of the situational field may encompass both those who are positively oriented towards adoption as well as those who are negatively oriented towards adoption. Here another dimension needs to be considered, namely, positive and negative reference relationships[1]. The positive dimension of reference relationships which means motivated assimilation of the norms and values of others is easily understandable and detectable. However, it is not so in respect of the negative dimension, which implies motivated rejection on the part of the individual of the norms or values of others. The motivation for rejection may have as its basis superior-inferior relationships, status-consciousness or perception of undesirable or deviant behaviour and the like. It was realised (during pilot study) that

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[1]The positive and negative dimensions of reference relationships indicated here are distinct from positive reference group relationships and negative reference group relationships. In the latter instance relationships to reference groups which have a positive or negative norm towards adoption are denoted (see Chapter II, pp 15-16).

interview rapport seemed to be reduced when information on negative relationships was sought, perhaps on account of the rather obvious social implications. The technique used in this study, namely, interview with schedule, does not seem to be a suitable one in eliciting information of this kind. The use of projective techniques in a study of the present nature has been reported by Rogers and Beal (1959). However, the requirements of using such techniques like the preparation of suitable stimulus pictures, tape-recording equipment for verbatim recording of the interview and content analysis were beyond the technical competence of the researcher as well as the resources available to him. In view of this the negative dimension of reference relationships could not be studied in any major way in this study.

(4) Designation of reference groups:

In respect of the analysis of reference group influence, the individual farmer is the unit of analysis in relation to his potential reference group which is perceived by him. Therefore, the operational unit of a reference group is the event of such a group as perceived by the individual. In the problem of examining reference group relationships such a procedure is appropriate because the group which is important or significant to the individual is the one perceived by him regardless of the fact how 'real' such a group may be by external criteria.

B. Design of the Study:

1. Description of the study area:

Khanjawala block, one of the five community development

blocks in the Union Territory of Delhi, formed the area of this study. This block is located in the north-west of Delhi Territory, bounded on the east by a part of Delhi City and Alipur block, on the south by Najafgarh block and on the north and west by Punjab State. The block comprises of 56 villages with a total land area of 68,600 acres of which about 50,000 acres are under cultivation.

The headquarters of the block is located at Nangloi since 1961, till when it had been at Khanjawala. Khanjawala was constituted as a separate block in 1958, though development activities were initiated in the area in 1952, when it formed a part of Alipur block. In addition to the development activities conducted through the block, this area is also served in the sphere of agricultural development by the Intensive Cultivation Scheme operated by the Division of Agricultural Extension under the Indian Agricultural Research Institute, New Delhi.

The population of the Khanjawala block according to the 1961 census is 60,065 an average of 1073 people per village. The average family size is about 9-10 persons comprised of six adults and four minors. Jats, Brahmins, Ahirs village artisans and Harijans form the major caste groups with 'Jats' accounting for about 50 per cent of the total population. Jats are also the most predominant caste group among land holders except in a few villages where other castes like Sainis and Rajputs form the majority of land holders. The percentage of literacy is 24, but is mostly accounted for by boys and girls still at school. Technical and higher education beyond the higher secondary stage is still not common.

The 'Bhumidari' system of peasant proprietorship is in vogue in this area. Leasing in and leasing out are uncommon and in the few cases where they exist such arrangements are based on verbal agreements only. The average size of holding comes to 9.3 acres, though 70 per cent of the holdings are smaller than the average. Of the total cultivated area, 60 per cent receive irrigation either from canals or wells.

The principal crops grown are wheat, gram, barley, oilseeds, pulses and vegetables in the Rabi season and jowar, bajra, sugarcane, paddy and fodder crops in the Kharif season.

2. Selection of villages:

This research study was confined to three villages in Khanjawala block. The selection of these villages was done in the following manner.

All of the 56 villages in the block area were intitially categorised into three classes, namely, 'High','Medium' and 'Low' with respect to the general level of adoption of practices. The categorisation was done on the basis of ratings by judges - staff of the Intensive Cultivation Scheme and Block - who were acquainted with all the villages. From each one of these three classes, one village was selected at random. The three villages thus selected were Naharpur from the High Adoption class, Ranhola from the Medium Adoption class and Nilwal from the Low Adoption class. This classification is essentially a relative one and the three villages may be taken as representative of the two end points and the midpoint in a traditional-modern continuum. In other words, the three villages reflect high adoption (modern),

medium adoption (transitional) and low adoption (traditional) social system norms respectively.

A validity check of the above classification became available during the course of the investigation. Computation of the innovativeness norms of these villages by the average-innovativeness method showed that the norms of the High Adoption, Medium Adoption and Low Adoption villages selected for this study were 6.75; 4.12; and 3.03 respectively. This provides evidence of the essential validity of the procedure adopted in the selection of villages.

3. The sample of respondents studied:

The total farmer population (heads of farming families) of each of the three villages was intended as the sample of respondents to be studied. The records of the Intensive Cultivation Scheme provided a complete list of farmers (heads of farming families) residing in these villages. Interviews were secured from 222 farmers thus listed, which comprised of 64 from the High Adoption village, 90 from the Medium Adoption village and 68 from the Low Adoption village. These 222 farmers formed the sample of respondents for this study.

4. Selection of farm practices:

The selection of farm practices included in the study was determined by the following considerations:

As indicated earlier, the nature of the study design tended to limit the number of farm practices on which the study could be centered within the time and resources available.

The second consideration was that lack of information about a practice was not to be a limiting factor in its adoption. If adoption of very recent innovations was sought to be studied, it would seem more likely that the main factor which limits their adoption may be lack of information about the practices rather than absence of influence motivating their adoption.

Another consideration which prevailed in the selection of practices was that they were to be of general applicability in all the three villages under study.

These considerations necessitated the selection of a few practices, of comparatively less recent nature and of general applicability in the study area. The practices indicated below were thus selected:

1. Use of nitrogenous fertilizers
2. Use of improved varieties of wheat
3. Use of green manuring.

C. Instrument of Observation and Measurement:

1. The technique employed in this study was a survey technique with an interview schedule as the instrument of observation. The following breakdown of items is given to indicate the nature of the interview schedule.

Items 1 -18.	Face data and socio-economic status scale items.
Item 19.	Adoption-of-farm practices scale.
Item 20.	Indicator of adoption or non-adoption of a practice.

Items 21-36. Items for indexing reference group scores in respect of adopters of a practice.

Items 37-49. Items for indexing reference group scores in respect of non-adopters of a practice.

Item 50. Item for indexing closeness-of-ties.

Item 51. Attitudes-towards-innovations scale.

The development of measuring devices and scales are indicated below:

2. Development of reference group scores:

The testing of the first and second hypotheses requires the development of scores to indicate the extent of relationship between a respondent and others in his situational field who are (1) positively oriented towards adoption and (2) those who are negatively oriented towards adoption. Since we are dealing with adoption decisions (either adoption or non-adoption) in respect of three practices, two sets of scores need to be developed for each respondent (either adopter or non-adopter) in relation to each of the three practices. For each respondent in respect of each practice these scores will be as follows:

(1) A score which represents a measure of the extent of the respondent's relationships with those who have adopted the practice or those who favour adoption i.e. those who have a positive norm on adoption.

(2) A score which represents a measure of the extent of the respondents' relationships with those who have not adopted the practice or those who do not favour adoption i.e. those who have a negative norm or adoption.

These scores will be referred to as positive reference group scores and negative reference group scores respectively since for each practice they represent the respondent's relationships with respect to a group of persons in his situational field which has a positive norm on adoption and negative norm on adoption respectively. The hypotheses are designed to test which of these two relationships has a bearing on the adoption decision of the respondent and to that extent will determine the existence and operation of reference group influences.

There are 23 items in the schedule (12 for adopters of a practice and 11 for non-adopters) which form the basis for computing the positive and negative reference group scores. Each of these items was assigned a weight of either 3, 4 or 5. The selection of the weight as either3, 4 or 5 was determined on the average number of persons typically given in response to each of the items throughout the entire group of 222 schedules. Items eliciting a few names were assigned a weight of 5, those eliciting a moderate number of names a weight of 4 and those eliciting a high number of names a weight of 3. The assignment of weights to the items was necessitated on account of the fact that it was found that some of items were solicitous of more names than others.

The score earned by a respondent for a particular item was determined by multiplying the number of persons elicited to that item with its weight. The total positive and negative reference group scores were obtained by adding the scores obtained for each set of items respectively.

3. Measurement of attitude:

The method of attitude measurement used in this study was a Likert-type scale. The general dimension purported to be measured was what may be called 'progressivism' or the 'state of readiness' to innovate and accept changed modes of technology. The items or statements included in the scale were adapted from Joshi[1] with some modifications. For each statement the responses were: strongly agree, agree, undecided, disagree and strongly disagree, with weights of 5, 4, 3, 2; 1 for favourable statements and weights of 1,2,3,4, 5 for unfavourable statements.

The reliability of the scale was determined by split-half and test-retest methods. The reliability coefficients of 0.83 and 0.85 respectively indicate that the scale is reasonably reliable. The construct validity of the scale was determined by correlating the attitude scores with adoption scores. The coefficient of correlation was found to be 0.76. The reliability and validity coefficients indicate that the scale is reasonably valid and reliable in respect of the population under study.

4. Measurement of 'closeness-of-ties':

The operational approach designed to measure closeness-of-ties between an individual and a group, combines into a single score closeness as determined by close association and frequency of social interaction, mutual aid and positive evaluation of the members of the group.

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[1] V. Joshi, 'Attitude Towards Reception of Technology', The Jl. of Socl. Psychology, 1962, 58: 3-7.

The following conceptual analysis preceded the selection of items for the instrument. It is conceivable that an individual holds a reference group and abides by its norms to the extent that the norm is reinforced in interpersonal contacts. Interpersonal interaction is thus conceptualised to be highly related to reference group behaviour. The extent of close association is also conceived to be revealed in addition to frequency of social interaction, by existence of mutual aid and reciprocity in relations. The degree of closeness is also conceived to be revealed by feelings of positive evaluations towards the group members. If an individual is perceived by the respondent as having 'good ideas', it is conceptualised that this would indicate that the individual's ideas as well as the individual himself are being positively evaluated since he is the possessor of the ideas. Similarly, if an individual is felt by the respondent as a source of 'good advice', the individual's advice as well as the individual himself are being positively evaluated. It is hypothesized that positive evaluation in this manner as well as the other elements of closeness indicated above will lead to a development of similarity or agreement in attitudes, which, in this particular instance is attitudes towards innovations. In respect of each respondent closeness-of-ties with his reference group is measured on the basis of the mean scores obtained by the members comprising the group.

5. Measurement of agreement:

The fifth hypothesis requires a measurement of the agreement or consensus between an individual and his reference group in

respect of attitudes towards innovations. In this instance, the members comprising the reference group designated by the individual may be expected to differ among themselves in the attribute under study, namely, attitudes towards innovations. A single quantitative measure to indicate the degree of agreement or consensus between a respondent and a group will, therefore, have to take into account the variability of attitude responses among the members of the group. An operational approach in this instance will be to use a measure of the dispersion of the attitude scores of the group members about the attitude score of the individual. In using such a measure two components will be confounded, the variance of the group members' attitude scores and the difference between the attitude score of the individual and the mean attitude score of the group. Thus the index of agreement or consensus will be given by the equation:[1]

$A = V + M$ where, A = index of agreement,

V = variance of the group members' attitude scores

M = Square of the difference between an individual's attitude score and the mean attitude scores of the group members.

6. Measurement of innovativeness:

In the present study innovativeness was measured by an adoption-of-farm-practices scale. The construction of the scale

[1]The use of such a measure in role analysis and the proof of this equation is given in Gross, N., Mason, W.S., and McEachern, A.W., Explorations in Role Analysis, N.Y., John Wiley, 1958.

and measurement of innovativeness was based on the method suggested by Rogers, Havens and Cartano (1962)[1] and is indicated here. In the scale which includes a number of items of recommended farm practices, weightings have been provided for earlier adoption and allowances have been given for items that do not apply to all individuals. In the result, there are three possible responses for each item (1) the time when the practice was first used,(2) the practice does not apply to the situation, or (3) the practice does apply but has not been adopted. From the data thus collected for all the respondents, for each practice the range of time of adoption, the number of adopters each year and the cumulative number of adopters each year are determined. The raw data obtained in this manner is then converted to 'sten' scores, a type of standard scores described by Canfield (1951)[2]. By converting the data to standard form, all raw data are converted to continuous, single-digit form and the resulting scores are normally distributed. The sten scores range from '0' to '9' and different percentages of the total number of respondents are assigned to each sten score as indicated below in the sten score guide.

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[1]Rogers,E.M.,Havens, A.E. and Cartano, D.G.,The Construction of Innovativeness Scales, Ohio Agr.Exp.Sta.Mimeo Bull.A.E.330. 1962.

[2]Canfield,A.A., "The 'sten' scale: A modified C scale,", Educational and Psychological Measurement, 11:295-298. 1951.

Sten Score Guide

Sten score	Percentage of respondents receiving each sten score	Cumulative percentage of respondents
9	2.3	2.3
8	4.4	6.7
7	9.2	15.9
6	14.9	30.8
5	19.2	50.0
4	19.2	69.2
3	14.9	84.1
2	9.2	93.3
1	4.4	97.7
0	2.3	100.0

It may be noted that it is the different percentages assigned to each sten score category that transforms the distribution into a normal one. The innovativeness score for each respondent is determined by adding the sten score received by him for each practice and dividing by the number of practices applicable to his situation.

7. Methods of statistical analysis:

The following statistical tests were used in the analysis of data:

(1) Correlation:

One of the correlation coefficients used in this study is Pearson's product-moment coefficient. The basic formula is

$$r_{xy} = \frac{\Sigma xy}{N \sigma x \sigma y}$$

where r_{xy} = correlation between X and Y

x = deviation of X from the mean of X

y = deviation of Y from the mean of Y

Σxy = sum of products x.y.

$\sigma x \sigma y$ = standard deviations of the distribution of X and Y.

(2) Point-Biserial correlation:

The point-biserial coefficient of correlation has been used where one of the variables is dichotomously classified. The formula for computing point-biserial coefficient of correlation is

$$r_{pbi} = \frac{M_p - M_q}{\sigma t} \sqrt{p.q}$$

where M_p = mean of X values for the higher group in the dichotomous variable.

M_q = mean of X values for the lower group.

p = proportion of cases in the higher group.

q = proportion of cases in the lower group.

σt = standard deviation of the total sample in the continuous variable.

(3) Chi-square:

The general formula for chi-square is given by

$$\chi^2 = \sum \left[\frac{(fo - fe)^2}{fe} \right]$$

where fo = observed frequency.

fe = expected frequency.

The chi-square has been utilised to test the association between different variables.

To sum up, Chapter III has presented the methodological considerations of the present study. The theoretical framework of the study was presented and discussed. In addition, were presented the propositions, hypotheses, description of study area, selection of villages and sample, and instrument of observation and measurement.

The extent to which the propositions constitute a valid system for the explanation of differential adoption remains to be discussed in the next chapter.

CHAPTER IV

FINDINGS

This chapter reports the findings from the present study. The propositions and the hypotheses following from them presented in the preceding chapter of this thesis have been tested with empirical data collected during the course of the study. The results will now be presented in sequence.

A. Differential Adoption and Reference Group Influence.

Proposition I: Differential adoption of improved agricultural practices is a function of reference group influence.

In respect of the first two hypotheses following from this proposition reference group relationships is the independent variable and adoption or non-adoption the dependent variables. Reference group relationships as an independent variable has been quantified into two separate scores. These are: (1) positive reference group scores and (2) negative reference group scores. The positive reference group score represents a measure of the respondent's relationships with potential positive reference groups (reference groups having a positive norm on adoption). Similarly, the negative reference group score represents a measure of the respondent's relationships with potential negative reference groups (reference groups having a negative norm on adoption). The extent to which these scores, representing the two relationships are associated with the adoption of farm practices will provide tests of the first two hypotheses.

In this instance, two approaches to the analysis were possible. In the first place, adoption of all the three practices could be considered jointly resulting in the categorisation of respondents into eight different categories. These categories of respondents will be one category of those who have adopted all the three practices, one category of those who have not adopted any of the three practices, three categories of those who have adopted any one of the three practices and three categories of those who have adopted different combinations of any two of the three practices. However, the number of respondents in certain of the categories was so small that no reasonable statistical treatment of the data was found possible.

In the second place, the analysis could proceed on the basis of the adoption or non-adoption of each practice separately, considering each as an instance of a decision-making episode. It is this type of analysis which was attempted in this instance and the first two hypotheses were tested accordingly.

The three villages included in the study represent three distinct social systems having different social system norms on innovativeness. An opportunity is, therefore, afforded to examine whether patterns of reference group influence would differ among the three social systems. In the result, the first two hypotheses will be tested with respect to the adoption of three farming practices in the three villages separately.

In the following sections the three farming practices, namely, nitrogenous fertilizers, improved wheat varieties and green manuring will be referred to as P_1, P_2 and P_3 respectively for the sake of brevity.

The first hypothesis will now be stated.

Hypothesis 1:

> The greater the positive reference group relationships, the greater the adoption.

In respect of this hypothesis, positive reference group score will be the independent variable and adoption, the dependent variable. The positive reference group scores were expected to be significantly related to adoption. Table 1 has been developed in order to examine the association between adoption of P_1, P_2 or P_3 and positive reference group scores in the 'High Adoption' village and represents tests of the first hypothesis.

The null hypothesis:

> In the 'High Adoption' village there is no relationship between adoption of P_1, P_2 or P_3 and positive reference group scores.

Table 1

Relationship between adoption of P_1, P_2 or P_3 and positive reference group scores in High Adoption village

Positive reference group scores	P_1		P_2		P_3	
	Adoption of P_1	Non-adoption of P_1	Adoption of P_2	Non-adoption of P_2	Adoption of P_3	Non-adoption of P_3
0-10	0	12	0	9	0	12
11-20	4	10	3	6	4	12
21-30	5	4	11	3	4	5
31-40	14	0	14	0	12	1
41-50	9	0	12	0	9	0
51-60	6	0	6	0	5	0
	N = 64		N = 64		N = 64	
	M_1 = 37.6		M_1 = 37.02		M_1 = 37.55	
	M_2 = 12.04		M_2 = 12.17		M_2 = 13.84	
	S.D. = 16.15		S.D. = 15.2		S.D. = 15.6	
	r_{pbi} = 0.77**		r_{pbi} = 0.73**		r_{pbi} = 0.75**	
	t = 9.72		t = 8.51		t = 9.09	

(a) Relationship between adoption of P_1 and positive reference group scores in 'High Adoption' villages

With the group of 64 farmers, the 't' value of 9.72 derived from Table 1 is significant at the 1 per cent level of probability. The mean scores for adopters and non-adopters are 37.6 and 12.04 respectively. The standard deviation of this distribution is 16.15. The point-biserial coefficient of correlation measures the degree of association as 0.77 and the direction of the

association is positive. This distribution's significance at the 1 per cent level leads to the rejection of the null hypothesis. Hence, the first hypothesis is supported in this instance.

(b) Relationship between adoption of P_2 and positive reference group scores in 'High Adoption' village:

With the group of 64 farmers the 't' value of 8.51 derived from Table 1 is significant at the 1 per cent level of probability. The mean scores for adopters and non-adopters are 37.02 and 12.17 respectively. The standard deviation of this distribution is 15.2. The point-biserial coefficient of correlation measures the degree of association as 0.73 and the direction of this association is positive. The distribution's significance at the 1 per cent level leads to the rejection of the null hypothesis. Hence, the first hypothesis is supported in this instance.

(c) Relationship between adoption of P_3 and positive reference group scores in 'High Adoption' village:

With the group of 64 farmers, the 't' value of 9.09 is significant at the 1 per cent level of probability. The mean scores for adopters and non-adopters are 37.55 and 13.84 respectively. The point-biserial coefficient of correlation measures the degree of association as 0.75 and the direction of this association is positive. This distribution's significance at the 1 per cent level leads to the rejection of the null hypothesis. Hence, the first hypothesis is supported in this instance.

The findings examined in Table 1 indicate the manner in which positive reference group relationships constitute an

explanation of adoption of P_1, P_2 or P_3 in 'High Adoption' village. The findings to be examined below will indicate the extent to which positive reference group relationships provide an explanation of the adoption of practices in the 'Medium Adoption' village.

Table 2 has been developed in order to examine the association between adoption of P_1, P_2 or P_3 and positive reference group scores in the 'Medium Adoption' village and represents tests of the first hypothesis.

The null hypothesis:

In the 'Medium Adoption' village there is no relationship between adoption of P_1, P_2 or P_3 and positive reference group scores.

Table 2

Relationship between adoption of P_1, P_2 or P_3 and positive reference group scores in 'Medium Adoption' village

Positive reference group scores	P_1		P_2		P_3	
	Adoption of P_1	Non-adoption of P_1	Adoption of P_2	Non-adoption of P_2	Adoption of P_3	Non-adoption of P_3
0-10	0	26	4	20	0	28
11-20	2	24	5	16	1	25
21-30	1	18	14	11	1	20
31-40	5	0	14	1	4	2
41-50	8	0	4	0	4	0
51-60	6	0	1	0	5	0
	N = 90		N = 90		N = 90	
	M_1 = 42.31		M_1 = 27.35		M_1 = 41.83	
	M_2 = 13.69		M_2 = 13.04		M_2 = 13.97	
	S.D. = 15.0		S.D. = 12.31		S.D. = 13.87	
	r_{pbi} = 0.81**		r_{pbi} = 0.58**		r_{pbi} = 0.74**	
	t = 13.34		t = 6.65		t = 10.54	

(a) Relationship between adoption of P_1 and positive reference group scores in the 'Medium Adoption' village:

With the group of 90 farmers the 't' value of 13.34 derived from Table 2 is significant at the 1 per cent level of probability. The mean scores for adopters and non-adopters are 42.31 and 13.69 respectively. The standard deviation of this distribution is 15.0. The point-biserial coefficient of correlation measures the degree of association as 0.81 and the direction of this association is positive. This distribution's significance at the 1 per cent level leads to the rejection of the null hypothesis. Hence, the first hypothesis is supported in this instance.

(b) Relationship between adoption of P_2 and positive reference group scores in the 'Medium Adoption' village:

With the group of 90 farmers, the 't' value of 6.65 derived from Table 2 is significant at the 1 per cent level of probability. The mean scores for adopters and non-adopters are 27.35 and 13.04 respectively. The standard deviation of this distribution is 12.31. The point-biserial coefficient of correlation measures the degree of association as 0.58 and the direction of this association is positive. This distribution's significance at the 1 per cent level leads to the rejection of the null hypothesis. Hence, the first hypothesis is supported in this instance.

(c) Relationship between adoption of P_3 and positive reference group scores in the 'Medium Adoption' village:

With the group of 90 farmers, the 't' value of 10.54 derived from Table 2 is significant at the 1 per cent level of probability. The mean scores for adopters and non-adopters are 41.83 and

13.97 respectively. The point-biserial coefficient of correlation measures the degree of association as 0.74 and the direction of this association is positive. This distribution's significance at the 1 per cent level leads to the rejection of the null hypothesis. Hence, the first hypothesis is supported in this instance.

The findings examined in Table 2 indicate the manner in which positive reference group relationships provide an explanation of the adoption of P_1, P_2 or P_3 in the 'Medium Adoption' village. The findings to be examined below will indicate the extent to which positive reference group relationships provide an explanation of the adoption practices in the 'Low Adoption' village.

Table 3 has been developed in order to examine the association between adoption of P_1, P_2 or P_3 and positive reference group scores in the 'Low Adoption' village and represents tests of the first hypothesis.

The null hypothesis:

> In the 'Low Adoption' village there is no relationship between adoption of P_1, P_2 or P_3 and positive reference group scores.

Table 3

Relationship between adoption of P_1, P_2 or P_3 and positive reference group scores in 'Low Adoption' village

Positive reference group scores	P_1		P_2		P_3	
	Adoption of P_1	Non-adoption of P_1	Adoption of P_2	Non-adoption of P_2	Adoption of P_3	Non-adoption of P_3
0-10	0	20	0	18	0	20
11-20	1	20	1	16	1	20
21- 30	1	13	3	11	1	15
31-40	4	1	4	1	2	1
41-50	4	0	7	0	4	0
51-60	4	0	7	0	4	0
	N = 68		N = 68		N = 68	
	M_1 = 41.92		M_1 = 41.77		M_1 = 43.0	
	M_2 = 14.58		M_2 = 13.42		M_2 = 14.97	
	S.D. = 14.21		S.D. = 16.3		S.D. = 14.08	
	r_{pbi} = 0.77**		r_{pbi} = 0.79**		r_{pbi} = 0.75**	
	t = 9.91		t = 10.79		t = 9.37	

(a) Relationship between adoption of P_1 and positive reference group scores in 'Low Adoption' village:

With the group of 68 farmers, the 't' value of 9.91 derived from Table 3 is significant at the 1 per cent level of probability. The mean scores for adopters and non-adopters are 41.92 and 14.58 respectively. The standard deviation of this distribution is 14.21. The point-biserial coefficient of correlation measures the degree of association as 0.77 and the direction of the

association is positive. This distribution's significance at the 1 per cent level leads to the rejection of the null hypothesis. Hence, the first hypothesis is supported in this instance.

(b) Relationship between adoption of P_2 and positive reference group scores in 'Low Adoption' village:

With the group of 68 farmers, the 't' value of 10.79 derived from Table 3 is significant at the 1 per cent level of probability. The mean scores of adopters and non-adopters are 41.77 and 13.42 respectively. The standard deviation of this distribution is 16.3. The point-biserial coefficient of correlation measures the degree of association as 0.79 and the direction of the association is positive. This distribution's significance at the 1 per cent level leads to the rejection of the null hypothesis. Hence, the first hypothesis is supported in this instance.

(c) Relationship between adoption of P_3 and positive reference group scores in 'Low Adoption' village:

With the group of 68 farmers, the 't' value of 9.37 derived from Table 3 is significant at the 1 per cent level of probability. The mean scores of adopters and non-adopters are 43.0 and 14.97 respectively. The standard deviation of this distribution is 14.08. The point-biserial coefficient of correlation measures the degree of association as 0.75 and the direction of the association is positive. This distribution's significance at the 1 per cent level leads to the rejection of the null hypothesis. Hence, the first hypothesis is supported in this instance.

In the foregoing tables we have examined the findings of the present study with respect to the first hypothesis following from Proposition I. This hypothesis stating that the greater the positive reference group relationships the greater the adoption has been supported by the data of the study. This finding will provide one of the bases for interpreting the extent to which the general theoretical construct of the study constitutes an explanation of differential adoption of improved farm practices.

Tables4 to 6 below have been developed in order to examine the association between non-adoption of P_1, P_2 or P_3 and negative reference group scores in the 'High Adoption', 'Medium Adoption' and 'Low Adoption' villages respectively and represent tests of the second hypothesis following from Proposition I.

Hypothesis 2:

> The greater the negative reference group relationships the less the adoption.

The negative reference scores are expected to be significantly related to non-adoption. In respect of testing this hypothesis 'non-adoption' will be considered as the favoured category in the dichotomous classification of adopters and non-adopters for computing the point-biserial coefficient of correlation [1](Guilford, 1956).

Table 4 has been developed in order to examine the association between non-adoption of P_1,P_2 or P_3 and negative

[1]Guilford, J.P., Fundamental Statistics in Psychology and Education, N.Y., McGraw Hill,1956 pp 301-305, 510.

reference group scores in the 'High Adoption' village.

The null hypothesis:

In the 'High Adoption' village there is no relationship between non-adoption of P_1, P_2 or P_3 and negative reference group scores.

Table 4

Relationship between adoption of P_1, P_2 or P_3 and negative reference group scores in 'High Adoption' village

Negative reference group scores	P_1		P_2		P_3	
	Non-adoption of P_1	Adoption of P_1	Non-adoption of P_2	Adoption of P_2	Non-adoption of P_3	Adoption of P_3
0-10	2	8	2	12	2	9
11-20	5	11	6	14	5	8
21-30	11	13	5	14	12	12
31-40	4	3	4	3	6	2
41-50	4	3	1	3	4	3
51-60	0	0	0	0	1	0
	$N = 64$		$N = 64$		$N = 64$	
	$M_1 = 26.63$		$M_1 = 23.28$		$M_1 = 28.17$	
	$M_2 = 20.77$		$M_2 = 19.20$		$M_2 = 20.21$	
	$S.D. = 11.69$		$S.D. = 12.15$		$S.D. = 13.74$	
	$r_{pbi} = 0.24$		$r_{pbi} = 0.15$		$r_{pbi} = 0.28$	
	$t = 1.99$		$t = 1.20$		$t = 2.36$	

(a) Relationship between non-adoption of P_1 and negative reference group scores in the 'High Adoption' village:

With the group of 64 farmers, the 't' value of 1.99 derived from Table 4 is not significant at the 1 per cent level of probability. The mean scores for non-adopters and adopters are 26.63 and 20.77 respectively. The standard deviation of this distribution is 11.69. The point-biserial coefficient of correlation measures the degree of association as 0.24 and the direction of the association is positive. This distribution's lack of significance at the 1 per cent level would indicate that there is no significant relationship between non-adoption of P_1 and negative reference group scores. Hence, there is not sufficient evidence to reject the null hypothesis. Since the null hypothesis is not rejected the second hypothesis has not been demonstrated in this instance.

(b) Relationship between non-adoption of P_2 and negative reference group scores in the 'High Adoption' village:

With the group of 64 farmers, the 't' value of 1.20 derived from Table 4 is not significant at the 1 per cent level of probability. The mean scores for non-adopters and adopters are 23.28 and 19.20 respectively. The standard deviation of this distribution is 12.15. The point-biserial coefficient of correlation measures the degree of association as 0.15 and the direction of the association is positive. This distribution's lack of significance at the 1 per cent level would indicate that there is no significant relationship between non-adoption of P_2 and negative reference group scores. Hence, there is not sufficient

evidence to reject the null hypothesis. Since the null hypothesis is not rejected, the second hypothesis has not been demonstrated in this instance.

(c) Relationship between non-adoption of P_3 and negative reference group scores in the 'High Adoption' village:

With the group of 64 farmers the 't' value of 2.36 derived from Table 4 is not significant at the 1 per cent level of probability[1]. The mean scores of non-adopters and adopters are 28.17 and 20.21 respectively. The standard deviation of this distribution is 13.74. The point-biserial coefficient of correlation measures the degree of association as 0.28 and the direction of the association is positive. This distribution's lack of significance at the 1 per cent level would indicate that there is no significant relationship between non-adoption of P_3 and negative reference group scores. Hence, there is not sufficient evidence to reject the null hypothesis. Since the null hypothesis is not rejected, the second hypothesis has not been demonstrated in this instance.

The findings examined in Table 4 indicate that there is no significant relationship between non-adoption of the three practices and negative reference group scores in the 'High Adoption' village. The findings to be examined below will indicate the extent to which non-adoption of the three practices is associated with negative reference group scores in the 'Medium Adoption' village.

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[1] In this instance, the 't' value is significant at 5 per cent level of probability. The selected level of probability here is 1 per cent. Hence, significance at the 5 per cent level is not considered.

Table 5 has been developed in order to examine the association between non-adoption of P_1, P_2 or P_3 and negative reference group scores in the 'Medium Adoption' village and represents tests of the second hypothesis.

The null hypothesis:

> In the 'Medium Adoption' village, there is no relationship between non-adoption of P_1, P_2 or P_3 and negative reference group scores.

Table 5

Relationship between adoption of P_1, P_2 of P_3 and negative reference group scores in 'Medium Adoption' village

Negative reference group scores	P_1		P_2		P_3	
	Non-adoption of P_1	Adoption of P_1	Non-adoption of P_2	Adoption of P_2	Non-adoption of P_3	Adoption of P_3
0-10	3	6	3	12	3	4
11-20	11	4	9	12	12	3
21-30	18	7	14	14	18	5
31-40	17	3	8	2	18	1
41-50	10	2	4	2	14	2
51-60	9	0	10	0	10	0
	$N = 90$		$N = 90$		$N = 90$	
	$M_1 = 42.41$		$M_1 = 31.96$		$M_1 = 33.23$	
	$M_2 = 21.41$		$M_2 = 18.36$		$M_2 = 19.50$	
	S.D. = 14.28		S.D. = 16.04		S.D. = 13.5	
	$r_{pbi} = 0.63^{**}$		$r_{pbi} = 0.45^{**}$		$r_{pbi} = 0.37^{**}$	
	$t = 7.62$		$t = 4.72$		$t = 3.83$	

(a) Relationship between non-adoption of P_1 and negative reference group scores in the 'Medium Adoption' village:

With the group of 90 farmers, the 't' value of 7.62 derived from Table 5 is significant at the 1 per cent level of probability. The mean scores of non-adopters and adopters are 42.41 and 21.41 respectively. The standard deviation of this distribution is 14.28. The point-biserial coefficient of correlation measures the degree of association as 0.63 and the direction of the association is positive. This distribution's significance at the 1 per cent level leads to the rejection of the null hypothesis. Hence, the second hypothesis is supported in this instance.

(b) Relationship between non-adoption of P_2 and negative reference group scores in the 'Medium Adoption' village:

With the group of 90 farmers, the 't' value of 4.72 derived from Table 5 is significant at the 1 per cent level of probability. The mean scores of non-adopters and adopters are 31.96 and 18.36 respectively. The standard deviation of this distribution is 15.04. The point-biserial coefficient of correlation measures the degree of association as 0.45 and the direction of the association is positive. This distribution's significance at the 1 per cent level leads to the rejection of the null hypothesis. Hence, the second hypothesis is supported in this instance.

(c) Relationship between non-adoption of P_3 and negative reference group scores in the 'Medium Adoption' village:

With the group of 90 farmers, the 't' value of 3.83 derived

from Table 5 is significant at the 1 per cent level of probability. The mean scores of non-adopters and adopters are 33.23 and 19.50 respectively. The point-biserial coefficient of correlation measures the degree of association as 0.37 and the direction of the association is positive. This distribution's significance at the 1 per cent level leads to the rejection of the null hypothesis. Hence, the second hypothesis is supported in this instance.

The findings examined in Table 5 indicate that there is significant relationship between non-adoption of the three practices and negative reference group scores in the 'Medium Adoption' village. The findings to be examined below will indicate the extent to which non-adoption of the three practices is associated with negative reference group scores in the 'Low Adoption village.

Table 6 has been developed in order to examine the relationship between non-adoption of P_1, P_2 or P_3 and negative reference group scores in the 'Low Adoption' village and represents tests of the second hypothesis.

The null hypothesis:

> In the 'Low Adoption' village there is no relationship between non-adoption of P_1, P_2 or P_3 and negative reference group scores.

Table 6

Relationship between adoption of P_1, P_2 or P_3 and negative reference group scores in 'Low Adoption' village

Negative reference group scores	P_1		P_2		P_3	
	Non-adoption of P_1	Adoption of P_1	Non-adoption of P_2	Adoption of P_2	Non-adoption of P_3	Adoption of P_3
0-10	2	4	2	6	2	4
11-20	8	2	8	6	8	2
21-30	12	5	10	7	12	3
31-40	12	1	12	1	14	1
41-50	10	2	7	2	10	2
51-60	10	0	7	0	10	0
	$N = 68$		$N = 68$		$N = 68$	
	$M_1 = 34.75$		$M_1 = 33.08$		$M_1 = 34.78$	
	$M_2 = 21.93$		$M_2 = 19.59$		$M_2 = 21.34$	
	S.D.= 15.16		S.D.= 14.1		S.D. =11.2	
	$r_{pbi} = 0.34^{**}$		$r_{pbi} = 0.43^{**}$		$r_{pbi} = 0.45^{**}$	
	$t = 2.94$		$t = 3.97$		$t = 4.14$	

(a) Relationship between non-adoption of P_1 and negative reference group scores in 'Low Adoption' village:

With the group of 68 farmers, the 't' value of 2.94 derived from Table 6 is significant at the 1 per cent level of probability. The mean scores for non-adopters and adopters are 34.75 and 21.93 respectively. The standard deviation of this distribution is 15.16. The point-biserial coefficient of

correlation measures the degree of association as 0.34 and the direction of the association is positive. This distribution's significance at the 1 per cent level leads to the rejection of the null hypothesis. Hence, the second hypothesis is supported in this instance.

(b) Relationship between non-adoption of P_2 and negative reference group scores in 'Low Adoption' village:

With the group of 68 farmers the 't' value of 3.97 derived from Table 6 is significant at the 1 per cent level of probability. The means scores for non-adopters and adopters are 33.08 and 19.59 respectively. The point-biserial coefficient of correlation measures the degree of association as 0.43 and the direction of the association is positive. This distribution's significance at the 1 per cent level leads to the rejection of the null hypothesis. Hence, the second hypothesis is supported in this instance.

(c) Relationship between non-adoption of P_3 and negative reference group scores in 'Low Adoption' village:

With the group of 68 farmers the 't' value of 4.14 derived from Table 6 is significant at the 1 per cent level of probability. The mean scores for non-adopters and adopters are 34.78 and 21.34 respectively. The standard deviation of this distribution is 11.2. The point-biserial coefficient of correlation measures the degree of association as 0.45 and the direction of the association is positive. This distribution's significance at the 1 per cent level leads to the rejection of the null hypothesis. Hence, the second hypothesis is supported in this instance.

Adoption or Non-adoption of Practices and reference group relationships:

In the foregoing Tables 1 to 6 have been examined the findings of the present study in respect of Proposition I and the first two hypotheses that follow from it. Relationships with potential reference groups as an independent variable has been quantified into two separate scores that correspond to the needs of the first two hypotheses. The first hypothesis stating that the greater the positive reference group relationships, the greater the adoption is supported by the data of the present study (Tables 1, 2 and 3). The second hypothesis stating that the greater the negative reference group relationships, the less the adoption is rejected by the data of the present study in respect of the 'High Adoption' village (Table 4) but supported by the data in respect of the 'Medium Adoption' and 'Low Adoption' villages (Tables 5 and 6).

These findings provide the bases for interpreting the extent to which the general theoretical construct of the study constitutes an explanation of the differential adoption of recommended agricultural practices. The fact that the first hypothesis has been supported by the data of the present study leads to the conclusion that adoption of practices is significantly related to positive reference group relationships. In other words, farmers who adopt practices tend to rely for their adoption decisions on others who are positively oriented towards adoption. Operationally, such a demonstration of reliance of decisions to adopt upon distinctive positive reference relationship or

orientations, reveal the existence and operation of influence derived from positive reference groups as a motivational basis for adoption. In respect of adopters, they tend to employ as frames of reference for their behaviour, 'others' in their situational field, who have a positive norm on adoption. In short, for adopters other farmers or persons in their situational field who are adopters or who are positively oriented towards adoption form their reference groups.

The rejection of the second hypothesis in respect of the 'High Adoption' village taken in conjunction with the fact that it has been supported in respect of the 'Medium Adoption' and 'Low Adoption' villages indicates (1) non-adoption is not significantly related to negative reference group relationships in the 'High Adoption' village and (2) non-adoption is significantly related to negative reference group relationships in the 'Medium Adoption' and 'Low Adoption' villages.

One fact which emerges from these findings is that in the 'High Adoption' village, non-adopting farmers do not seem to rely for their decisions not to adopt on other non-adopters or those who are negatively oriented towards adoption. In other words, reliance of their decisions on distinctive negative reference group relationships (or on positive reference group relationships since they are non-adopters) has not been clearly demonstrated. In this instance, therefore, the existence of a reference group is not clearly discernible. However, in respect of non-adopters in the 'Medium Adoption' and 'Low Adoption' villages

the existence and operation of reference groups are discernible. For non-adopters in these two villages, other farmers or persons in their situational field who are non-adopters or who are negatively oriented towards adoption from their reference groups.

A discussion on these findings and their interpretations will be given in the next chapter of this thesis.

The discussion now turns to an examination of the third hypothesis following from Proposition I.

Hypothesis 3:

> The more favourable the attitude towards innovations of an individual's reference group, the more favourable will be his attitudes towards innovations.

In this instance, the attitude dimension which has been measured is not in respect of attitudes towards adoption of individual practices as such but in respect of attitudes towards innovations in general. In testing this hypothesis, the unit of analysis was the individual in relation to his designated reference group and coefficients of correlation between the attitude scores of the respondent farmers and their reference groups were calculated. The attitude score of a reference group is represented by the mean of the attitude score of its members. In this analysis the respondents have been classified into three classes, namely, those who have adopted all the three practices, those who have not adopted any of the three practices and those who have adopted either any one or two practices. The results are presented in Table 7.

The null hypothesis:

There is no association between the attitude scores of respondents and the attitude scores of their respective reference groups.

Table 7

Coefficients of correlation between attitude scores of respondents and reference groups

Class of respondents	Number of cases	Coefficients of correlation
1. Adopters of all three practices	50	0.74**
2. Adopters of any one or two practices	66	0.41**
3. Adopters of no practice	106	0.45**

With the group of 50 adopters of all the three practices, the coefficient of correlation measures the degree of association between attitude scores as 0.74 which is significant at the 1 per cent level of probability. With the group of 66 adopters of one or two practices the coefficient of correlation measures the degree of association between attitude scores as 0.41 which is significant at the 1 per cent level of probability. With the group of 106 adopters of no practices, the coefficient of correlation measures the degree of association between attitude scores as 0.45 which is significant at the 1 per cent level of probability. In all these cases the direction of the association

is positive. The positive direction of the associations and their significance lead to the rejection of the null hypothesis. Hence, the third hypothesis is supported by the data of the study.

In the next section the relationship between the adoption scores of the respondent farmers and the adoption scores of their reference groups will be examined.

Hypothesis 4:

> The greater the adoption score of an individual's reference group, the greater will be his adoption.

If the adoption of practices is in part a function of influence derived from reference groups we would expect a direct relationship between the adoption score of a farmer and the adoption score of his reference group. The fourth hypothesis stated above postulates a direct relationship between the adoption scores of the respondent farmers and their reference groups. An individual farmer's adoption score was expressed as a ratio of the number of practices adopted to the number of practices that applied to his farming situation. The adoption score of a reference group was computed as the mean of the adoption scores of its farmer members and is indicative of its reference norm on adoption. In this analysis the respondents have been classified into three classes, namely, those who have adopted all the three practices, those who have not adopted any of the three practices, and those who have adopted any one or two practices.

The null hypothesis:

There is no association between the adoption scores of respondents and the adoption scores of their respective reference groups.

Table 8 presents the coefficients of correlation between adoption scores and adoption reference norms (adoption scores of reference groups).

Table 8

Coefficients of correlation between adoption scores of respondents and reference groups.

Class of respondents	Number of cases	Coefficients of correlation
1. Adopters of all three practices	50	0.56
2. Adopters of one or two practices	66	0.38
3. Adopters of no practice	106	0.42

In respect of the three classes of respondents, namely, adopters of all three practices, adopters of one or two practices and adopters of no practice, the coefficients of correlation measure the degree of association between adoption scores and adoption reference norms as 0.56, 0.38 and 0.42 respectively, which are significant at the 1 per cent level of probability. The positive direction and the significance of the correlation coefficients lead to the rejection of the null hypothesis. Hence, the fourth hypothesis is supported by the data of the study.

In the following section is examined the fifth hypothesis following from Proposition I.

Hypothesis 5:

> The greater the 'closeness-of-ties' between an individual and his reference group, the greater will be the agreement between them on attitudes towards innovations.

The concept 'closeness-of-ties' as measured by an index is employed in the above statement as the independent variable and 'agreement on attitudes' measured by an index, the dependent variable. 'Closeness-of-ties' is conceptualized as one of the important mechanisms which might operate in the reference group process and 'agreement on attitudes' as the resultant of this process. Measures of these variables have already been described. It must be pointed out here that the greater the closeness-of-ties between an individual and a reference group (i.e. the closer the ties) the greater will be the value of the measure while in respect of the agreement measure, the greater the agreement on attitudes, the smaller will be the value of the measure. Coefficients of correlation between these two measures were computed in testing this hypothesis. The results are given in Table 9.

The null hypothesis:

There is no association between the closeness-of-ties scores and agreement on attitudes scores of respondents and their reference groups.

Table 9

Coefficients of correlation between closeness-of-ties scores and agreement on attitudes scores.

Class of respondents	Number of cases	Coefficients of correlation
1. Adopters of all three practices	50	-0.53**
2. Adopters of any one or two practices	66	-0.41**
3. Adopters of no practice	106	-0.36**

In respect of the three classes of respondents, namely, adopters of all three practices, adopters of any one or two practices and adopters of no practice, the coefficients of correlation measure the degree of association as -0.53, -0.41 and -0.36 respectively and are significant at the 1 per cent level of probability. This would indicate that the greater the value of the closeness-of-ties measure, the lesser the value of the agreement measure (greater the agreement). The negative direction and the significance of the correlation coefficients lead to the rejection of the null hypothesis. The fifth hypothesis is, therefore, supported by the data of the study.

Additional Findings:

This study has yielded some pertinent data which have relevance to the influence of reference groups. Even though these data are not directly related to the specific hypotheses which have been postulated, they are expected to provide some basis for understanding the role of reference group influence in adoption. As such these data are included as additional findings in this section.

1. Composition of reference groups:

In addition to information on other individuals who have relevance to their adoption decisions, the respondents were also asked to indicate the nature of their social relations with each of them. Thus, each respondent was asked whether the individual mentioned is a friend, a relative, a neighbour and so on. The data obtained in this manner have provided the basis for examining the composition of reference groups designated by the respondents. Two facts need to be pointed out here. Firstly, as has been indicated earlier, the operational basis for the designation of a reference group is the responses of the respondents themselves. The event of the existence of a reference group is inferred as it is observed or perceived by the individual respondent. Secondly, the membership of the reference groups is interrelated. Since the unit of analysis in this instance is the individual, in relation to other persons perceived by him as significant to his decisions and operationally designated as his reference group, the potential number of such groups is the

same as the number of respondents studied. In the result it is conceivable that the same persons may belong to more than one reference group so designated by different individual respondents. The membership of reference groups is thus interrelated. The composition of reference groups has, therefore, been estimated on the basis of the frequencies of each social category mentioned by the total group of 222 respondents. The results are given in Table 10.

Table 10

Composition of reference groups.

Social category	Frequencies in percentage
1. Friends	52
2. Neighbours	22
3. Relatives	16
4. Acquaintances (just a person known)	3
5. Persons not known personally	3
6. Extension staff	4

The relative frequencies in percentage of the different social categories revealed in Table 10 provide one indication of their relative role as reference groups. Thus membership reference groups composed of friends, neighbours and relatives would seem to be of crucial significance in influencing adoption decisions. The classification of social relationships into the fourth and fifth categories shown in Table 10 was intended to

delineate individuals who were perceived as relevant to adoption decisions by the respondents but with whom they had scarcely any inter-personal relations or who were not known to the respondents personally. It was hoped that responses indicating these relationships would reveal the presence of non-membership reference groups. The findings revealed in Table 10, however, fail to demonstrate that non-membership reference groups are of any great significance in the present instance. More specifically, these findings require the conclusion that for the group of farmers studied, the existence and operation of non-membership reference groups in respect of adoption behaviour has not been demonstrated. The findings also indicate the limited role of extension agents as referents in adoption decisions.

Again, among the membership categories, the heirarchy of relative frequencies seem to indicate that friends form by far the most significant social group which serves as reference groups in adoption, followed by neighbours and relatives in that order.

2. Perceived importance of friends, neighbours and relatives:

The findings examined in the previous section have indicated the crucial significance of primary groups of friends, neighbours and relatives as reference groups in adoption. In this section an attempt will be made to find out the importance of each of these groups as perceived by different classes of respondents. Information on the perceived importance of social groups of friends, relatives and neighbours as source of opinion

and advice on farming matters was secured on the basis of a forced-choice response of three categories. The categories provided were 'important', 'some importance' and 'not important'. The responses of the three classes of respondents in respect of the three social groups - friends, neighbours and relatives - are indicated in Table 11, 12 and 13 below:

Table 11

Perceived importance of 'friends'

Class of respondents	Responses		
	Important	Some importance	Not important
1. Adopters of all three practices	26	15	9
2. Adopters of one or two practices	38	18	10
3. Adopters of no practice	62	26	18

The frequencies of responses given in Table 11 indicate that there is very little difference among the three classes of respondents in their perception of importance of friends as sources of opinion and advice. Thus, the percentage of farmers who perceive friends as either important or of some importance is 82 per cent, 84.8 per cent and 83 per cent among the three classes of respondents respectively in the order given in the table. The data also demonstrated that a majority of the 222 respondents regarded friends as 'important'.

Table 12

Perceived importance of 'neighbours'

Class of respondents	Responses		
	Important	Some importance	Not important
1. Adopters of three practices	22	14	14
2. Adopters of one or two practices	36	18	12
3. Adopters of no practice	64	22	20

The frequencies of responses given in Table 12 indicate that a majority of the 222 respondents regarded neighbours as 'important'. However, while only 72 per cent of the adopters of three practices perceived neighbours as important or of some importance, 81.8 per cent and 81.1 per cent of the latter two classes of farmers perceived neighbours likewise.

Table 13

Perceived importance of 'relatives'

Class of respondents	Responses		
	Important	Some importance	Not important
1. Adopters of all three practices	22	16	12
2. Adopters of one or two practices	34	24	8
3. Adopters of no practice	65	26	15

The frequencies of responses given in Table 13 indicate that in this instance also a majority of the respondents perceived

relatives as 'important'. Again, while 76 per cent of the adopters of the three practices perceived relatives are important or of some importance, 87.8 per cent and 85.8 per cent respectively of the latter two classes of farmers perceived relatives as important or of some importance as sources of opinion and advice.

The findings shown in Tables 11, 12 and 13 indicate that, in general, 80 per cent or more of the respondents tended to perceive friends, neighbours and relatives as important or of some importance. However, relatively speaking, the percentage of adopters of all three practices, who tended to perceive friends, neighbours and relatives as important or of some importance, is lesser than in the case of the other two classes of respondents.

These findings would seem to indicate a trend in which adopters of more practices tend to perceive primary groups as less important sources of opinion and advice than adopters of lesser number of practices and non-adopters.

B. Influence of Community Norms on Individual Innovativeness:

The second major purpose of the present study relates to the investigation of the role of community norms in the adoption of improved agricultural practices. Because the respondents belong to three villages, representing three distinct village communities or social systems, the present study has afforded an opportunity to determine the effect of group norms on the adoption of practices.

As indicated earlier, the three villages included in this study, were selected on the basis of judges' ratings to represent three segments on a traditional-modern continuum of innovativeness. These villages, therefore, reflect three different social system or community innovativeness norms; the High Adoption village representing a modern norm, the Low Adoption village representing a traditional norm and the Medium Adoption village representing a transitional norm. It was expected that the community norms would have an influence on the adoption behaviour of farmers living in each village community.

1. Community norms on innovativeness:

The relative traditionalism or modernism of these village communities has been initially distinguished by means of ratings of judges as indicated above. In the present instance, in order to test the hypothesis derived from Proposition II, it was found necessary to have a quantitative measure which would indicate the norms of a social system or community on the traditional-modern continuum. Therefore, a norm measure has been utilised in this study to test the hypothesis. This measure is based on the average innovativeness method in which the innovativeness scores of the members of a social system are averaged to provide a norm measure for the social system. Marsh and Coleman (1954), Van den Ban (1960), Rahudkar (1960) and Rogers and Burdge (1962) have utilised such a method in measuring the traditional-modern dimension.

The three villages and the norms on innovativeness for each calculated by the method described, is given in Table 14.

Table 14

Norms on innovativeness

Village	Norm on innovativeness
1. Naharpur (High Adoption village)	5.75
2. Ranhola (Medium Adoption village)	4.12
3. Nilwal (Low Adoption village)	3.03

The innovativeness norms of the three villages given in the above table indicate that the High Adoption village with a norm of 5.75 represents most innovativeness, the Low Adoption village with a norm of 3.03 represents least innovativeness and the Medium Adoption village with a norm of 4.12 represents medium innovativeness.

2. Individual innovativeness and community norms:

The conceptual basis of this part of the study rests on the sociological principle that norms of a social system affects the behaviour of the members of the system. Accordingly, on this basis, Proposition II and the hypothesis that follows from it, have been formulated.

Proposition II:

The norm of a social system affects the adoption behaviour of its members.

The unit of analysis in this instance is the individual farmer in relation to the norm of the social system of which he is a member. In testing this proposition, the variables are the innovativeness of the individual farmer and the norm on innovativeness of his community. The hypothesis following from this Proposition is stated below:

Hypothesis 6:

A farmer's innovativeness varies directly with the norm of his village community on innovativeness.

In testing this hypothesis, coefficients of correlation between innovativeness scores of individual farmers and the innovativeness norms of the respective village communities were computed. The result is presented in Table 15.

The null hypothesis:

There is no relationship between individual innovativeness scores and village community norms on innovativeness.

Table 15

Relationship between innovativeness scofe and community innovativeness norm.

Variables	Number of respondents	Coefficient of correlation
Innovativeness score and community innovativeness norms	222	0.624**

With the group of 222 respondents the coefficient of correlation measures the degree of association between innovativeness scores and community innovativeness as 0.624 which is significant at the 1 per cent level of probability. The null hypothesis is, therefore, rejected. Hence, the hypothesis is supported by the data of the study.

This finding shows the importance of community norms on the innovativeness of farmers living in the community and offers support for Proposition II of the study which implies that group norms affect the behaviour of members of a group. It may be mentioned here that this interpretation of the finding needs to be qualified with one reservation. The relationship between individual innovativeness and community norms on innovativeness may in one sense be circular and the correlation between these two variables is influenced by the range of individual innovativeness scores around the norm. However, as Rogers (1962) has pointed out, none of the measures of social system norms so far developed is above methodological criticism and the use of the average innovativeness method as a measure of social system norms is,

perhaps, justified till improved measures are developed.

In the next part of this report is discussed the third major objective of this study which deals with the relationship between certain selected characteristics of the village communities and their norms on the traditional-modern dimension.

C. Relationship between Characteristics of Village Communities and their Norms on Traditional-Modern Dimension:

In this part of the study is attempted an analysis of the characteristics which distinguish and differentiate the three village communities. These village communities are located at three different points on a traditional-modern continuum. The High Adoption village (Naharpur) represents a modern social system while the Low Adoption village (Nilwal) represents a traditional social system. The Medium Adoption village (Ranhola) represents a transitional social system, which is in between the modern and traditional types.

Before proceeding with the analysis of the specific characteristics which differentiate the three village communities among themselves a general overview of the characteristics of the villages will be presented. This will provide the setting within which the proposition and hypotheses following from it will be tested.

Table 16 has been developed in order to indicate the general characteristics of the farmer members comprising each village community or social system.

Table 16

General characteristics of village communities

Characteristics of farmer members	High Adoption village (N= 64)	Medium Adoption village (N=90)	Low Adoption village (N=68)
1. Average age of farmers	58	56	61
2. Average size of holding in acres	6.38	10.34	9.92
3. Percent of farmers with formal education	48.4	15.5	10.9
4. Average socio-economic status score	31.7	29.4	30.8
5. Average educational status score	2.2	1.3	1.2
6. Percent of farmers with favourable attitudes towards innovation	54.6	26.6	19.1
7. Communication behaviour (per cent contact with cosmopolite sources of communication)	46.8	24.4	25.0

From the table, wide differences among farmers in each of the villagesin respect of certain characteristics may be observed while in respect of other characteristics the differences are not so apparent. Those characteristics which are expected to differentiate between the three villages form the variables of the hypotheses derived from Proposition III. The proposition and hypotheses will now be stated.

Proposition III:

The norm of a social system on traditionalism - modernism is related to other characteristics of the social system.

In this instance, the units of analysis are the three village communities representing three different types of social system norms. Four variables, have been assumed to differentiate the village communities among themselves and are represented by four hypotheses derived from the proposition. These will now be examined in sequence.

Hypothesis 7:

The norm on traditionalism-modernism of a village community is significantly related to level of education of its farmer members.

In order to test this hypothesis farmers have been classified into three groups, on the basis of their level of education. Farmers not knowing how to read and write the local language are classified as 'illiterates', those who can read and write the local language and/or educated in schools upto primary level are classified under 'primary' and those who are educated in schools beyond the primary level are classified under 'above primary'.

Table 17 has been developed in order to examine hypothesis 7.

Table 17

Level of education and community norms

Educational status	High Adoption village (N = 64)	Medium Adoption village (N = 90)	Low Adoption village (N = 68)
1. Illiterate	12	48	37
2. Primary	21	28	24
3. Above primary	31	14	7

N = 222

X^2 = 30.074, P(4df) is less than 0.01

With the group of 222 farmers, the chi-square of 37.074 derived from Table 17 is significant at the 1 per cent level of probability. It may be noted that while 31 or 48.4 per cent of the farmers in the High Adoption village are educated above the primary level, 14 or 15.5 per cent of the farmers in the Medium Adoption village and 7 or 10.3 per cent of the farmers in the Low Adoption village are educated above the primary level. These findings indicate that the three village communities differ considerably with respect to the level of education of their farmer members. Therefore, the data presented support hypothesis 7 derived from Proposition III.

Hypothesis 8:

The norm on traditionalism-modernism of a village community is significantly related to socio-economic status of its farmer members.

In order to test this hypothesis farmers have been classified into four classes on the basis of their socio-economic status as measured by a socio-economic status scale validated for the area of study (Pareek and Trivedi, 1964). The four classes are 'upper', 'upper middle', 'middle' and 'lower middle'. There were no farmers in the fifth class of the scale, namely the 'lower' class.

Table 18 has been developed in order to examine hypothesis 8.

Table 18

Socio-economic status and community norms

Socio-economic status classes	High Adoption village (N=64)	Medium Adoption village (N=90)	Low Adoption village (N=68)
1. Upper	5	4	4
2. Upper middle	26	27	24
3. Middle	28	45	32
4. Lower middle	5	14	8

N = 222

X^2 = 10.049, P(6 df) is greater than 0.05

With the group of 222 farmers, the chi-square of 10.049 derived from Table 18 is not significant at the 5 per cent level of probability. As the table indicates, there is very little difference among the three village communities, with respect to socio-economic status of their farmer members. Therefore, the

data presented do not support hypothesis 8 derived from Proposition III.

Hypothesis 9:

The norm on traditionalism-modernism of a village community is significantly related to the attitudes towards innovations of its farmer members.

In order to test this hypothesis, the farmers have been classified into five classes on the basis of their attitude responses as revealed by the attitudes-towards-innovations scale. The five classes of farmers corresponding to the five response categories are 'very favourable', 'slightly favourable', 'neutral or undecided', 'slightly unfavourable' and 'very unfavourable'.

Table 19 has been developed in order to examine hypothesis 9.

Table 19

Attitudes towards innovations and community norms.

Attitude responses	High Adoption village (N= 64)	Medium Adoption village (N = 90)	Low Adoption village (N= 68)
1. Very favourable	17	9	5
2. Slightly favourable	18	15	8
3. Neutral	17	28	34
4. Slightly unfavourable	4	27	10
5. Very unfavourable	8	11	11

$N = 222$

$X^2 = 44.799$, P(8 df) is less than 0.01.

With the group of 222 farmers, the chi-square of 44.799 derived from Table 19 is significant at the 1 per cent level of probability. It may be noted that while 35 or 54.6 per cent of the farmers in the High Adoption village have favourable attitudes towards innovations, 24 or 26.6 per cent of the farmers in the Medium Adoption village and 13 or 19.1 per cent of the farmers in the Low Adoption village have favourable attitudes towards innovations. These findings indicate that the three village communities differ considerably with respect to the attitudes towards innovations of their farmer members. Therefore, the data presented support hypothesis 9 derived from Proposition III.

Hypothesis 10:

> The norm on traditionalism-modernism of a village community is significantly related to the communication behaviour of its farmer members.

In order to test this hypothesis farmers have been classified into three classes on the basis of their communication behaviour. These three classes correspond to the most important communication source utilised by them namely, impersonal-cosmopolite, personal-cosmopolite and personal-localite (Rogers and Meynen, 1965)[1]. Impersonal-cosmopolite sources of communication are represented by mass media, personal-cosmopolite sources

[1]Rogers E.M. and Meynen, W.L., "Communication sources for 2,4-D spray among Columbian peasants", Rural Sociology, 30: 213-219, (1965).

of communication are represented by extension personnel, trade representatives, salesmen etc. and personal-localite sources of communication are represented by friends, neighbours or relatives.

Table 20 has been developed in order to examine hypothesis 10.

Table 20

Communication behaviour and community norms

Communication sources	High Adoption village (N =64)	Medium Adoption village (N= 90)	Low Adoption village (N= 68)
1. Impersonal-cosmopolite	11	5	5
2. Personal-cosmopolite	19	17	12
3. Personal-localite	34	68	51

N = 222

X^2 = 10.846, P (4 df) is less than 0.05.

With the group of 222 farmers, the chi-square of 10.846 derived from Table 20 is significant at the 5 per cent level of probability. It may be noted that, while for 51 or 75 per cent of the farmers in the Low Adoption village and 75.6 per cent of the farmers in the Medium Adoption village personal-localite sources of communication are most important, only for 34 or 53.2 per cent of the farmers in the High Adoption village are they most important as communication sources. This would indicate that the High Adoption village differs from the other two village communities in the communication behaviour of its member farmers. Therefore, the data presented generally support

hypothesis 10 derived from Proposition III.

To sum up, examination of the four hypotheses, derived from Proposition III has revealed the following findings:

(1) The three village communities representing three types of social system norms on traditionalism-modernism, differ among themselves in the level of education of their farmer members. The higher the level of education in a community, the more modern tends to be its norm.

(2) The three village communities representing three types of social system norms on traditionalism-modernism, do not differ among themselves in respect of the socio-economic status of their farmer members. In other words, whether a social system is modern or transitional or traditional does not seem to be determined by the socio- economic status of its farmer members.

(3) The three village communities differ among themselves in the attitude-towards innovations of their farmer members. The more favourable the attitudes of the farmers towards acceptance of new technology in a community, the more modern tends to be its norm.

(4) Among the three village communities, a modern norm tends to be associated with less localiteness in the communication behaviour of farmers of the community while traditionalism tends to be associated with more localiteness in the communication behaviour of the farmers of the community.

The foregoing section completes the findings of the study in respect of the specific hypotheses which were formulated. The following section, dealing principally with 'reference

influentials' represents some supplementary findings of the study.

Supplementary findings of the study -'Reference influentials':

During the course of the study it became evident that a few individuals in each of the three village communities were perceived by a number of other respondents as belonging to their designated reference groups. In other words, these individuals have provided frames of normative and/or comparative evaluation for and to this extent have affected the adoption decisions of a number of other respondents. Conceptually, these individuals would seem to be similar to, but not identical with, the category referred to in diffusion and adoption literature as 'influentials' or 'opinion leaders'. The basic difference seemsto be the manner in which they are identified and also in their operation. In respect of studies on 'opinion leaders' and 'influentials', they are identified or located by means of sociometric techniques. In the present study, these individuals have been identified on the basis of what might be termed as 'impact analysis' - an analysis of their 'influence' or 'impact' in affecting specific decision-making episodes. Again, in respect of their influence on certain decision alternatives, the factor which is of importance is the normative and/or comparative relationships between these individuals and the others whom they influence. The direction of the influence of these individuals will be either in promoting or preventing adoption of practices depending upon the values they place upon adoption and their adoption

behaviour. In view of these considerations the present investigator has preferred to label these 'influencing individuals' as 'reference influentials' and those other respondents who adopt them as sources of normative and/or comparative evaluations for their adoption decisions as "influencees".

Table 21 shows a comparison of some of the characteristics of the 'reference influentials' with that of the 'influencees' in respect of the three village communities.

Table 21

Characteristics of 'reference influentials' and 'influencees'

Characteristics	High Adoption village		Medium Adoption village		Low Adoption village	
	Reference influentials	Influencees	Reference influentials	Influencees	Reference influentials	Influencees
1. Average age	59	57	57	55	63	59
2. Average educational status scores	2.5	2.0	1.4	1.2	1.2	1.2
3. Average size of farm in acres	6.4	2.7	10.1	8.9	10.7	9.3
4. Average innovativeness score	6.25	4.82	4.52	3.62	3.12	2.82
5. Deviancy from norms score	0.28	0.54	0.17	0.21	0.13	0.21

The findings in respect of the characteristics of 'reference influentials' shown in the above table may be summarized

as follows:

In respect of age, reference influentials have slightly older age than influencees in all the three village communities.

The educational status scores which measure the level of education on the basis of the scores assigned in the socio-economic status scale (Pareek and Trivedi, 1964) indicate that in the High Adoption and Medium Adoption villages, the level of education of reference influentials is more than that of the influencees while in the Low Adoption village the reference influentials and influencees are of the same educational status.

In respect of size of farm, in all the three villages 'reference influentials' are characterised by larger sized farms than influencees. The difference between reference influentials and influencees in respect of size of farm is wider in the High Adoption village than in the other two villages.

In respect of innovativeness, in all the three villages, reference influentials are characterised by higher innovativeness scores than influencees. The difference in innovativeness scores between reference influentials and influencees is highest in the High Adoption village and lowest in the Low Adoption village. The innovativeness scores also indicate that in the High Adoption village reference influentials tend to belong to earlier adopter categories while in the other two villages they tend to belong to the later adopter categories.

The extent of deviation of the innovativeness of both reference influentials and influencees from the community innovativeness norms has been measured by the deviancy-from-norms

score following Rogers and Burdge (1962). This deviancy score was calculated as a ratio of absolute difference between the individual's innovativeness score and the community norm on innovativeness, to the range in all innovativeness scores in the community, as indicated in the equation given below:

$$\text{Deviancy-from-norms score} = \frac{(X_i - X_n)}{\sigma}$$

where X_i = each respondent's innovativeness score;

X_n = Community norms on innovativeness for the community in which the respondent lives. The individual's adoption score was not included in computing the mean community innovativeness score to avoid possible redundancy.

σ = Standard deviation of the innovativeness scores in the respondent's community.

Table 21 shows that the deviancy scores of 'reference influentials' are 0.28, 0.17 and 0.13 for the High Adoption, Medium Adoption, and Low Adoption villages respectively while the deviancy scores of the influencees are 0.54, 0.21 and 0.21 respectively. This would indicate that the reference influentials conform to the norms of their community much more closely than the influencees. In the High Adoption village where the norms favoured innovativeness the reference influentials tended to be those who were earlier adopters while in the Medium Adoption village and the Low Adoption village where the norms were less favourable toward innovativeness the reference influentials tended to be those who were later adopters. The findings also indicate that

reference influentials tend to conform much more closely to community innovativeness norms in the Low Adoption and Medium Adoption villages than in the High Adoption village.

This section concludes the examination of the findings of the present study. The next chapter will be devoted to discussion of these findings and their interpretations.

CHAPTER V

DISCUSSION

The present chapter will be devoted to discussion of the findings of the study reported in the preceding chapter. As mentioned before, researches in the area of diffusion and adoption of farm practices dealing with the conceptual variables included in the present investigation are not numerous. This fact will, therefore, be reflected in the general difficulty experienced in the present discussion in citing past research findings related specifically to farm practice adoption. Hence, the discussion will also be based on related research in allied disciplines as well as on theories bearing upon the research problem.

The present study is concerned with three theoretical propositions which deal with three distinct but related aspects of the research problem. The findings of the study relating to these propositions will be discussed in sequence.

The first of these propositions seeks to explain differential adoption of farm practices as a function of influence derived from reference groups. In respect of this proposition, five separate but interrelated hypotheses have been postulated. These hypotheses, in turn, seek to explain decisions, actions and attitudes, as different dimensions of adoption behaviour in terms of reference group influence.

With respect to the testing of the first two hypotheses, the operational design of the study was to investigate specific,

decision-making situations related to the adoption or non-adoption of three recommended farm practices. It was felt that such an investigation would reveal the existence and operation of distinctive reference orientations which were hypothesised as causally necessary to or determinative of the specific adoption decisions. An essentially similar approach was adopted by Katz and Lazarsfeld (1955) in their study of personal influence in consumer purchase decisions.

The findings of the present study indicate that there is a direct relationship between adoption of the three practices by the farmers and their reference orientations to groups which place a positive value on adoption of these practices. This relationship obtains in all the three village communities selected for the study. In accordance with these findings, the farmer who adopts tends to be one whose frame of reference, within which he draws his decisions, is provided by others in his situational field who are positively oriented towards adoption. Stated differently, an adopter appears to be an individual to whom behaviour norms have been transferred from a rather definite segment of the social system which is significant to him and which regulates his behaviour through comparative and/or normative influence.

In moving to the second hypothesis, the findings of the study indicate a direct relationship between non-adoption of improved practices by farmers and their reference orientations to groups which place a negative value on adoption except in respect of non-adopters of improved practices in the High

Adoption village. In accordance with these findings no orientation to distinctive reference groups is clearly discernible in respect of non-adopters of improved farm practices in the High Adoption village. It would seem that in the High Adoption village this small group of farmers probably develop ambivalent attitudes towards others who favour adoption as well as with others who do not favour adoption and find themselves in a position between two groups with opposite norms. In the result they may be said to be in a situation of 'cross-pressures'. Lazarsfeld et al. (1958), Stouffer (1949), Berelson et al. (1954) and Campbell et al.(1954) have reported other empirical studies of behaviour in cross-pressures. The general finding is that cross-pressures lead to lack of action and indecision. Another explanation of the behaviour of this group of farmers, which seem plausible is that they are probably social isolates with little or no contacts with others and in this sense their 'other' orientations seem to be quite restricted. Their behaviour norms do not seem to be derived or transferred from distinct reference groups which place a low value on adoption, but probably have their sources in traditional values. In short, it would seem that in the structural context of a social system with a relatively modern norm, the 'other' orientations of non-adopting farmers are extremely restricted and that these farmers tend to be social isolates and consequently reference group behaviour is not clearly discernible. This suggests a hypothesis which might be tested in future research.

In respect of non-adopters in the Medium Adoption and Low Adoption villages the findings of the study demonstrate the existence and operation of reference groups. Non-adoption of the three practices is seen to be highly related to reference orientations to groups which place a low value on adoption.

The data presented as additional findings indicate that the membership of designated reference groups of the farmers under study is mainly confined to persons with whom they have close, primary relations like friends, neighbours and relativqs. This requires the conclusion that it is the primary group composed of friends, neighbours or relatives which serves as reference group for the adoption behaviour of farmers. Lazarsfeld et al. (1948), Katz and Lazarsfeld (1955), Rogers and Beal (1958) and Bose and Basu (1963) have indicated the importance of primary group members as reference groups in decision-making situations. These findings lend corroborative evidence to the findings of the present study.

In this regard certain observations which might explain the functioning of primary groups as reference groups in adoption behaviour may be made. Primary group members are probably essentially similar to the farmer in many respects. Their holdings usually face similar agro-climatic conditions. Soil types, climate and problems of pest and diseases are probably similar. Therefore, we would expect that the primary groups might serve as comparison groups and/or normative groups which provide a frame of reference to the individual or influence him in his decision-making. The norms of the group serve as a 'standard' or 'model' by which the individual evaluates or

compares himself and this process of self-evaluation or comparison affects his behaviour. Thus, the findings of the study indicate that a factor in the reluctance of farmers to adopt practices lies in their comparison or evaluation of their behaviour with the behaviour of primary group members who are themselves non-adopters. In this instance the primary group serves as a negative reference group for adoption behaviour (Rogers and Beal, 1958). The findings of this study with respect to adopters indicate that a factor which contributes to their decision to adopt practices is the comparison or evaluation of their behaviour with the behaviour of their primary group members who are themselves adopters. In this instance the primary group serves as a positive reference group for adoption behaviour (Rogers and Beal, 1958). The findings of the study also demonstrate that primary groups function as normative sources of the behaviour of individuals in that they provide sources of opinions, suggestions and advice on farm problems to which the individuals are influenced to conform. The farmer tends to be influenced by the norms as well as expectation of his friends, neighbours and relatives. In making alternative choices in decision-making farmers tend to have their decisions based on the opinions, suggestions and advice of their primary groups which serve as normative reference groups. To this extent reference group process which normatively regulates behaviour of individuals is a form of social control. The writings of Slocum (1962) and Emery and Oeser (1958) have emphasized the significant role of primary groups as reference groups on adoption behaviour.

The third hypothesis is concerned with the influence of reference groups on the maintenance of attitudes towards innovations. The absence or presence of agreement or similarity between the attitudes of individuals and those of significant others have been taken into account in an explicit manner as a criterion to infer the existence and operation of reference group influence in previous analyses by Newcomb (1952) and Merton (1950). In the present study inference of the operation of reference group relationships has been made from the individual's own attitude response vis-a-vis the mean attitude response of designated groups. The findings of the study demonstrate that there is a close similarity or agreement between the attitude responses of individuals and groups designated by them. This fact is indicative of the operation of reference group influence. The inference which can be drawn following Newcomb (1952) and other investigators is that in the present instance the attitudes towards innovations are maintained by an individual in common with his associates in primary groups which thus serve as reference groups. The influence of reference groups as a factor in attitude development and maintenance has been illustrated by Newcomb in his Bennington College study, and Stouffer et al.(1949) in their case studies reported in 'The American Soldier'. Experimental studies by Festinger, Schachter and Back (1950) and Schachter (1951) have also indicated that an individual's opinions and attitude are substantially affected by the opinions of others with whom they relate themselves or aspire to relate themselves.

The fourth hypothesis is concerned with the influence of reference groups on adoption behaviour of farmers. The attempt in this instance was to find out whether the adoption of improved practices by farmers were influenced by the adoption behaviour of their designated reference groups. The presence of a direct relationship or agreement between the adoption behaviour of farmers as measured by their adoption scores and the adoption behaviour of designated groups as measured by their mean adoption scores has been taken as indicative of the operation of reference group influence by previous investigators like Bose and Basu (1963). In an essentially similar context Marsh and Coleman (1954) have utilised a similar operational approach. In the present study inference of the operation of reference group influence was made by comparing the adoption score of a respondent farmer with the adoption norms of his designated refefence group. The data of the present study lend evidence that there is a direct relationship between adoption scores of individuals and adoption scores or norms of their reference groups. This would indicate that a farmer's adoption behaviour is influenced by the adoption norms of his reference groups. In other words, a normative reference group relationship has been established between the farmers and their associates in primary groups. This requires the conclusion that the difference in norms or standards in respect of adoption of associated groups which serve as reference groups is a factor which contributes to differential adoption behaviour.

The empirical findings relating to the first four hypotheses so far discussed have generally supported the theoretical construct of the study bearing upon the first proposition which states that differential adoption is a function of reference group influence. The empirical model of the present investigation did not envisage the explicit study of the mechanisms involved in reference group processes. Such a detailed analysis would probably lie in the realm of social psychology dealing exclusively with the study of reference groups and is beyond the scope of an investigation of the present nature. However, an attempt was made in this study through the fifth hypothesis to treat one aspect of the reference group process in a tentative fashion. This aspect involved the concept of closeness-of-ties. Broadly speaking, this concept incorporates a social-psychological mechanism which might be suggested as being involved in the reference group process. No attempt has been made to isolate the key elements and study them separately.

The fifth hypothesis, thus, postulates that an individual's attitudes conform to the attitudes of others in associated groups which serve as reference groups and that the degree of conformity is limited in a large measure by the extent of his closeness-of-ties with those groups. The findings of this study have supported this hypothesis. It would seem that the ostensibly private attitudes of the individual farmers to innovations are in fact attitudes which are generated and maintained in close interaction with small groups of other people whom the individual

evaluates positively and with whom he has close social relations. Other research findings by Festinger, Schachter and Back (1950) and Sherif (1952) have indicated that interaction among individuals operates to produce shared standards of judgements, opinions, attitudes and ways of behaving.

To this point, the findings of this research in respect of the first proposition have been related to the theoretical construct employed in this study. The main element upon which this construct has been formulated is the reference group concept. At the outset, the investigation of decisions relating to the adoption or non-adoption of three farm practices has indicated the existence and operation of reference group influence as a factor contributing to these differential adoption decisions. Next, inference of reference group influence on the maintenance of attitudes towards innovations as well as on general adoption behaviour was drawn from the findings of the study. And finally, some indications were given that interaction between the individual farmer and others in small groups whom he positively evaluates, operates to produce uniformity in attitudes towards innovations. To sum up, these findings support the proposition that differential adoption of farm practices in a function of reference group influence.

The second proposition of this study embodies the sociological principle that the norms or standards of a social system tend to affect or influence the behaviour of its members. Following from this proposition one hypothesis was formulated which states that an individual's innovativeness

varies directly with the norms of his social system on innovativeness. In view of the fact that the respondent farmers live in three distinct village communities, the present study has provided an opportunity to determine the effect of community norms on the adoption of improved farm practices. For studying this aspect of the research problem the norm of a community on the traditional-modern dimension was measured by means of a norm measure of innovativeness with respect to adoption of practices. The findings of the study in this regard indicates that the norms of the community in which the farmer lives has a bearing on his innovativeness, along with other social and economic characteristics. Other research findings by Van den Ban (1960) and Rogers and Burdge (1962) lend corroborative evidence to this finding of the present study. The present finding points to the importance of the community norm variable as an important factor which contributes to differential acceptance of practices.

The third aspect of this research study relates to an analysis of the relationships between community norms on traditionalism-modernism and other characteristics of the community. Relatively speaking, the 'High Adoption' village where the farmers are consistently high in adoption of recommended practices, represents a community with a modern norm while the 'Low Adoption' village with a low level of adoption of recommended practices represents a community with a traditional norm. The 'Medium Adoption' village where the level of adoption of recommended practices is medium represents a community with

what might be called a trasitional norm. The present analysis has indicated that the differences in norms among the three villages are highly related to the differences among them with respect to the level of education, attitudes towards innovations and communication behaviour of the farmers residing in each of the villages. However, it was found that there was little variation among the villages communities in respect of the socio-economic status of their farmer members. In a study of truck-growers by Rogers and Burdge (1962) rank-order correlations of community innovativeness norms with characteristics like average years of education, average acres of truck (vegetable) crops, average social status, per cent with favourable attitudes towards innovation and per cent contact with research station were found to be positively correlated while average age of respondents as well as average size of farms were found to be negatively correlated. In a study of variations in farm innovativeness among Kentucky counties, Armstrong (1959) correlated an average-innovativeness measure of norms with other county varibles like degree of urbanization, farm income level and farm specialization.

The findings of the present study indicate that farmers in a modern community have a high level of education, more favourable attitudes towards innovations and more cosmopoliteness in communication behaviour, while farmers in a 'traditional' community have a relatively low level of education, less favourable attitudes towards innovations and less cosmopoliteness in communication behaviour. The findings of Marsh and Coleman(1954)

show that in respect of 'Low Adoption' neighbourhoods, the farms were small, the educational level of the farmers was low, contacts with communication channels was low and communication behaviour was oriented more to localite sources.

In respect of the present study it would seem that the impact of urbanization has contributed to the variation in innovativeness observed among the villages. For instance, the 'High Adoption' village is located nearest to Delhi City and the 'Low Adoption' village farthest from the City. Nearness to the city has brought about a perceptible change in the cropping pattern of the 'High Adoption' village where the production of fodder (mainly jowar) and vegetables (green peas) is on the increase. These enterprises are reported to be highly profitable. Again the general level of education of the residents (farmers as well as non-farmers) is quite high combined with a high rate of occupational mobility. It would seem that the impact of urban influence has led to exposure to new ideas, information and opinion i.e. new social knowledge which, in turn,has led to motivations and aspirations to higher standards of living. Being a social and psychological member of a social system, the farmer's attitudes, reactions, and behaviour are affected by the social system's norms. Thus, in a modern social system, the farmers tend to be influenced by its dominant characteristics like economic rationalization and cosmopoliteness which is reflected in the high level of adoption of improved practices. Similarly, in a traditional social system represented by the 'Low Adoption' village where the impact of urban influence has been least, the

dominant characteristics would seem to be lack of economic rationality, and localiteness. These characteristics are reflected in the low level of adoption of improved practices by the farmer members of the social system.

Another factor which might have contributed to high level of adoption in the modern social system is the 'interaction' or 'snowball' effect. (Ryan and Gross, 1943; Coleman et al. (1957; and Rogers, 1962). The increasing number of farmers who adopt recommended practices over a time period offers new stimulus to the remaining farmers and affects their adoption behaviour in a positive fashion in the form of what might be called a 'chain-reaction'. Conversely, in the traditional social system the adoption model would seem to be a static one, in which, for the majority of farmers, no stimulus is offered for change.

The discussion now turns to an examination of the findings in respect of 'reference influentials'. Reference influentials are those persons who serve comparative and/or normative functions in relation to adoption of practices. They function to provide points of comparative reference and/or as sources of normative reference for other individuals or 'influencees' in their decision-making in respect of adoption of practices. The role of the reference influentials will be either in promoting or retarding adoption of practices among the influencees depending upon their own adoption behaviour and the value they place upon adoption of practices. Reference influentials who are low adopters and place a low value on adoption of practices serve to retard adoption of practices while reference influentials who are high adopters and who place a high value on adoption of practices

serve to promote adoption of practices. Thus in the present study the dimension of 'reference influence' includes both the positive and negative aspects. Klapper (1960) and Rogers (1962) have pointed out that little research attention has been paid on the negative aspect of the opinion leadership dimension in discouraging adoption.

In the present investigation a community-wise comparison has been made between the characteristics of reference influentials and those whom they influenced in adoption decisions, namely, the influencees. The findings indicate that, in general, reference influentials were consistently higher than influencees in respect of age, educational status, size of farm and innovativeness except in the Low Adoption village, where no difference was discernible between reference influentials and influencees in respect of educational status. The deviancy-from -norms scores have indicated that reference influentials conform more closely to social system norms than other members of the social system.

The findings of the study indicate that in all the three village communities reference influentials were slightly older in age than influencees. This points to the fact that those who serve as points of reference or role-models in respect of adoption behaviour probably command respect and their opinions and advice are positively evaluated on account of their older age than the influencees. It would also seem to indicate the power-dominance of older persons over younger persons or the cultural value of respect for older persons.

In respect of educational status, reference influentials were found to be higher in educational status than influencees in the High Adoption and Medium Adoption villages while in the Low Adoption village no such difference was discernible. This finding would go to show that in a social system with relatively modern norms, education confers a higher social status and educated individuals are looked upon as models for evaluation and comparison. The educated individuals serve as potential sources for regulation, through comparative and normative relationships, of the behaviour of the majority of farmers. In contrast to this, reference influentials in the Low Adoption village were found to be of the same educational status as that of the influencees. The majority of the farmers in the Low Adoption village have little formal education and the source of their behaviour norms seem to be located in persons who are themselves having little formal education. There would seem to be a wide social and psychological gap between those who have little or no education and those who are educated and this would account for the fact that reference orientations of the majority of the farmers in the Low Adoption village are not directed towards persons who have more education in the formal sense.

With regard to the size of farm, reference influentials were found to be characterised by farming larger holdings than influencees in all the three communities. Ownership of land is considered a highly valued possession as well as a symbol of social status in the area of study. In view of the functional relationships obtaining in the village society, advice and

opinions emanating from sources having a higher social status tend to be highly valued and accepted. Persons with higher social status usually have higher degree of power dominance and have a greater potential for influencing others.

The findings of the present study relating to age, educational status and size of farms of the reference influentials are in general agreement with the findings on the characteristics of opinion leaders, by Lionberger (1953, 1959), Emery and Oeser (1958), Rahim (1961) and Rogers and Burdge (1962).

The findings of the present study with respect to innovativeness of reference influentials indicate that in general, in all the three villages, they are more innovative than influencees. The findings also demonstrate that reference influentials in the High Adoption village tend to belong to the early adopter category while in the Medium Adoption and Low Adoption villages they tend to belong to the early majority and late majority category respectively. The difference between reference influentials and influencees in respect of their innovativeness does not appear to be too wide. This would indicate that individual farmers tend to adopt as role-models others who are not very far different from them in their behaviour. This finding is supported by the findings of Lionberger (1953, 1955), Van den Ban (1961) and Rogers and Burdge (1962).

The findings of the study in respect of deviancy-from-norms indicate that in general reference influentials conformed more closely to social system norms than influencees. In the

High Adoption village, the reference influentials were much more innovative than their influencees while in the Medium Adoption and Low Adoption villages reference influentials were relatively less innovative, as compared to their influencees. This finding is supported by the findings of Marsh and Coleman (1954) and Rogers and Burdge (1962).

The present chapter has related the findings of this research to the theoretical framework employed. Relevant findings from previous research studies have also been cited. In the next chapter will be presented a summary of the findings and conclusions, their implications for extension work and also a few suggestions for further research.

CHAPTER VI

SUMMARY AND CONCLUSIONS

This research study, entitled "A Study of Differential Adoption of Improved Farm Practices in Relation to Reference Group Influence and Community Norms" was conducted during the period 1964 -1965 in Khanjawala block in the Union Territory of Delhi. The objectives of the study have been:

(1) To study adoption of farm practices as a function of reference group influence.

(2) To find out the composition of reference groups which influence adoption behaviour.

(3) To study the influence of community innovativeness norms on individual innovativeness.

(4) To study the extent to which community innovativeness norms are related to other community characteristics.

Three villages, out of the total of fiftysix villages in Khanjawala block, representing three different types of community or social system norms, namely, modern, transitional and traditional were selected for the study. The respondents of the study consisted of 222 farmers representing the total number of heads of farming families residing in these three villages.

Field interviews were conducted with a prepared schedule. The analysis of data revealed the following summarized findings:

1. There was a direct relationship between adoption of practices by the farmers and their reference orientations or relationship to groups which place a positive value on

adoption. This relationship obtained in all the three villages. The frames of reference of adopters within which they draw their decisions to adopt were found to be provided by distinctive segments of the social systems which are positively oriented towards adoption. These distinctive segments or groups of persons formed the reference groups of adopters of practices and their motivation to adopt were derived from the influence of these reference groups.

2. There was no direct relationship between non-adoption of practices by farmers in the High Adoption village and reference orientations to groups which place a negative value on adoption. In respect of non-adopters in the High Adoption village distinctive reference group relationships were not clearly discernible. It would seem that the 'other' orientations of these non-adopting farmers are extremely restricted and these farmers tend to be more or less social isolates.

3. There was a direct relationship between non-adoption of practices by farmers and their reference orientations to groups which place a negative value on adoption in the Medium Adoption and Low Adoption villages. The frames of reference of non-adopters of practices in these villages appeared to be anchored or based on distinctive segments of the social systems which are negatively oriented towards adoption. These distinctive segments or groups of persons formed the reference groups of non-adopters of practices

and their reluctance to adopt were derived from the influence of these reference groups.

4. There was a direct relationship between attitudes towards innovations of farmers and the attitudes towards innovations of reference groups. This indicated the existence and operation of reference group influence in the maintenance of attitudes towards innovations.

5. The presence of direct relationships between the adoption behaviour of farmers and their respective reference groups indicated that reference groups influenced the adoption behaviour of farmers.

6. The mechanism involved in reference group processes which tend to create uniformity in attitudes towards innovations between farmers and their reference groups consist of interpersonal contacts, mutual aid and reciprocity in relations and positive evaluation of the members of the group.

7. The membership of reference groups of farmers was found to be composed mainly of persons with whom they had close, primary relationships like friends, neighbours and relatives. This leads to the conclusion that in the situation studied primary groups serve as reference groups for adoption behaviour.

8. The foregoing findings lead to the conclusion that adoption of improved farm practices is, to a meaningful extent, a function of the influence derived from reference groups. The question of adoption and non-adoption of improved

practices can be more adequately understood as a question of adoption and non-adoption among groups of farmers who share common attitudes and behaviour patterns rather than as isolated individual farmers.

9. Community innovativeness norms were found to determine, at least in part, the innovativeness of individual farmers. Thus farmers residing in the High Adoption village tend to be more innovative or relatively earlier to adopt practices than farmers residing in the Medium Adoption or Low Adoption villages.

10. The norm of a village community on the traditional-modern dimension was found to be significantly related to the level of education, attitudes towards innovations and communication behaviour of its farmer members, while there was no significant relationship with the socio-economic status of its farmer members. The general level of education of farmers was found to be higher, their attitudes towards innovations were found to be more favourable and their communication behaviour showed more cosmopoliteness in the High Adoption village than in the Medium Adoption and Low Adoption villages.

11. A comparison of the characteristics of reference influentials with influencees revealed that, in general, reference influentials were characterised by slightly older age, more education, larger-sized holdings and closer conformity to community norms. Reference influentials in the High Adoption village tended to belong to the early

adopter category while in the Medium Adoption and Low Adoption villages they tended to belong to the early majority and the late majority categories respectively.

Implications for extension work:

The findings of the present study have indicated the crucial role of group influences in adoption of improved farm practices. In as much as, attitudes, judgements and consequently, the decisions of farmers have been found to have their anchorages in close, primary groups which serve as reference groups, changes in their mental orientations, attitudes and judgements which might result in adoption of recommended farm practices cannot obviously be a purely individual matter.

Now, programmes of extension focus directly on planned change. They attempt to influence people to change their ways of thinking and behaving in a desired direction. And since, the findings of the present study demonstrate that attitudes and modes of behaviour of individuals which are the targets of extension programmes, may well be the products of individual-group relationships, the problem from the point of view of extension work is how individual attitude and behaviour can be changed given the fact that the individuals are not so free to change unilaterally but are likely to change in the direction of a group norm with the group serving as the medium of change. Intra-group influences or influences stemming from within the group are highly relevant to the problem of adoption.

In a way, extension work would imply attempts at influence which originate outside the group. When what is communicated

runs counter to the prevailing attitudes, opinions and modes of behaviour of individuals that are shared with significant others in the situational fields, then that external influence attempt will surely be resisted. Similarly, individuals will more readily respond to such influence attempts if they perceive that significant others in their situational fields favour the proposed change. In this way, influences of significant others in the situational fields or reference groups intervene crucially in the diffusion-adoption processes by inducing resistance to those influences which go counter to their norms or standards and also, on the other hand, by encouraging positive responses to those influences which are in harmony with or are acceptable to be incorporated with, their norms of standards.

The crucial intervening role of reference group influences in the diffusion-adoption processes would suggest that extension methods to be utilised in influencing farmers should rather be in the nature of group contacts than mass or individual contacts. Even though mass communications may serve to provide information on new ideas or innovations, extension personnel may well remember that farmers' decisions to use the information will be conditioned and regulated by the reference group media. In the same way, change agents should bear in mind that advice and information concerning innovations which they provide by individual contacts are likely to be interpreted by the individuals in terms of the norms or standards of their reference groups and their reactions and responses will, to this extent, be limited or determined by these norms. Therefore,

it may be more logical for an extension agent to attempt to influence his clientele by group methods rather than to attempt to induce or influence an individual to deviate from his group's norms. To the extent that an extension agent uses group methods as the basic ingredient for promoting extension programmes, his chances of success are likely to be more. Then, again, since attitudes or the state of readiness to innovate or use changed modes of technology which are originated and maintained in association with reference groups are relatively enduring, the strategy of action utilised by extension agents might encompass a long range approach to change through altering basic attitudes and values rather than promoting single innovations in the sequence in which they are developed by agricultural scientists.

Suggestions for further research:

In the light of the present study, certain suggestions for future research are indicated below:

(1) In this study a survey with schedule design was employed. It is suggested that future studies might use alternative designs like observational or experimental designs. The presence of villages as distinct units indicate that such designs might prove useful and feasible.

(2) In view of the fact that certain dimensions of reference group phenomena are not amenable to study by the interview schedule method, it is suggested that alternative methodological approaches like the use of projective techniques might be employed for eliciting information.

(3) Future research efforts might also be directed towards the construction of a linear scale for the measurement of reference group orientations. The development of such a measure might enable the use of reference group orientations as an independent variable in multiple correlation approaches to prediction of innovativeness.

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APPENDIX 'A'

INTERVIEW SCHEDULE

Name of Village: .....

1. Name of cultivator: .....
2. Familial status
   a) Head of the family
   b) Member of the family
3. Age
4. Caste
5. Education:
   Illiterate ..... Can read only .....
   Can read and write ..... Primary .....
   Middle ..... High School ..... Graduate .....
6. House:
   a) Number: One ... Two .... Three .....
   b) Type: Kucha .... Mixed .... Pucca .....
7. Material possessions:
   Bullock cart .... Cycle ... Radio .... Chairs ....
8. Family Structure:
   Joint family ..... Single .....
9. Number of family members: Adults .... Children.....
10. Information on adult family members:

S. No.	Name	Age	Education	Occupation	Place of occupation	Monthly income

11. Social Participation:

Sarpanch of Panchayat ..... Member of Panchayat .....

Office-holder of Coop. Society .....

Member of Coop. Society .....

Member of other organization .....

12. Land owned:

Cultivated ..... Cultivable waste .... Total .....

13. Land cultivated:

Owned ..... Rented ..... Total .....

14. Area under irrigation:

Canal ..... Well - Persian wheel .....

- Pump set .....

15. Area under crops:

Name of crop	Area		Yield/acre	
	Irrigated	Un-irrigated	Irrigated	Un-irrigated

16. Livestock

a) Draft animals - Bullocks .... Camels .....

b) Dairy cattle - Buffaloes .... Cows .....

c) Sheep and goats ...d) Poultry .....

e) Horses .....

17. Implements:

Tractors .... Iron ploughs .... Thresher .....

Harrows ..... Pump set .....

18. Annual Net Income:

(i) From Agriculture .....

(ii) From Non-Agricultural sources .....

19. Adoption-of-Farm-Practices-Scale

Name of Recommended Practice	Whether adopted or not	Year of adoption	Does not apply	'Sten' score
1. Improved varieties of wheat: NP 718, NP 823, NP 824, C 281				
2. Improved varieties of gram: NP 58				
3. Improved varieties of sugarcane: CO 312, CO1104				
4. Improved varieties of bajra: T 55, Pusa moti				
5. Improved varieties of vegetables: Peas (Bonneville), Onion (Pusa red), Tomato (Pusa Ruby), Bhindi (Pusa Sawani), Radish (Jap. white), Carrot (Pusa Kesar), Brinjal (Pusa Purple long), Bottle Gourd(Pusa Prolific)				
6. Green manure crops: Sannhemp, Dhaincha or guar.				
7. Fodder crops: Berseem, Pusa Giant Napier, Jowar(Malwa)				

Name of Recommended Practice	Whether adopted of not	Year of adoption	Does not apply	'Sten' score
8. Fertilizers				
Ammonium Sulphate				
Calcium Ammonium Nitrate				
Urea				
Superphosphate				
9. Compost pits				
10. Weedicide				
11. Plant Protection				
Seed treatment with Agrosan GN				
Rat control with zincphosphide				
Control of termites				
Stored grain pest control with BHC				
Control of other insect pests with BHC				
12. Improved Implements:				
Iron Soil turning ploughs				
Olpad thresher				
Triphali				
Bullock drawn disc Harrow				

20. Do you use* .....

(1) Yes ..... (2) No .....

(Items 21 - 36 for adopters)

21. When did you first start using .....

*Here enter name of practice.

22. Who or what suggested the use of ..... to you

(1)
(2)
(3)
(4)
(5) Personal sources (specify below)

Name	Village	Social relationship
(1)		
(2)		
(3)		
(4)		
(5)		

22(a) Is ..... a friend, ... a neighbour .....
a relative ..... just a person known .....
not known personally ..... extension agent .....
others ..... (Specify under social relationship above).

23. What made you decide to try .....

(1)
(2)
(3)
(4)
(5) Personal sources ..... (Specify below)

(5-a) Followed advice of others .....

(5-b) Followed example of others .....

Name	Village	Social relationship
(1)		
(2)		
(3)		
(4)		
(5)		

24. Do you know any one else in this village or nearby who prefers to use ..... (Specify below)

Name	Village	Social relationship
(1)		
(2)		
(3)		
(4)		
(5)		

25. When did you first hear about .....

26. How or from where did you first get information about .....

Mass media ..... Friends ..... Neighbours .....

relatives ..... extension agents .....

others ..... (specify)

27. Have you heard any opinion that encourage the use of ..... ? Yes ..... No .....

27(a) From whom did you hear these opinions? (specify below)

	Name	Village	Social relationship
(1)			
(2)			
(3)			
(4)			
(5)			

28. Have you received any suggestions or advice encouraging the use of ..... Yes ..... No .....

28(a) From whom did you receive such suggestions or advice? (specify below)

	Name	Village	Social relationship
(1)			
(2)			
(3)			
(4)			
(5)			

29. Who would you say is doing a good job as a farmer in this village or nearby?

	Name	Village	Social relationship
(1)			
(2)			
(3)			
(4)			
(5)			

30. Who do you usually see for help and advice in farming matters?

	Name	Village	Social relationship
(1)			
(2)			
(3)			
(4)			
(5)			

31. Compared to these persons do you feel that you are doing a good job as a farmer?

32. How important is to you as a farmer the opinion and advice of these persons?

	Important	Some importance	Not important
(1)			
(2)			
(3)			
(4)			
(5)			

33. Do you know anyone in this village or nearby who prefers not to use ..... (specify below)

	Name	Village	Social relationship
(1)			
(2)			
(3)			
(4)			
(5)			

34. Have you heard any opinions that do not encourage the use of ..... Yes ..... No .....

34(a) From whom did you hear these opinions? (specify below)

	Name	Village	Social relationship
(1)			
(2)			
(3)			
(4)			
(5)			

35. Have you received any suggestions or advice that do not encourage the use of ..... Yes .... No .....

35(a) From whom did you receive such suggestions or advice ..... (specify below)

	Name	Village	Social relationship
(1)			
(2)			
(3)			
(4)			
(5)			

36. Compared to these persons do you feel that you are doing a good job as a farmer?

(Items 37 to 49 for non-adopters)

37. Have you heard of ..... Yes .... No .....

37(a) If yes, how or from whom did you hear about .....

Mass media ..... Friends ..... Neighbours .....

Relatives ..... Extension agents .....

Others ..... (specify)

38. Have you ever used ..... Yes ..... No .....

38(a) If yes, why did you stop using .....

If no, what made you decide not to use .....

(1)
(2)
(3)
(4)
(5) Personal sources (specify below)

(5-a) Followed advice of others .....

(5-b) Followed example of others .....

	Name	Village	Social relationship
(1)			
(2)			
(3)			
(4)			
(5)			

39. Do you know anyone in this village or nearby who prefers not to use ..... (specify below)

Name	Village	Social relationship
(1)		
(2)		
(3)		
(4)		
(5)		

40. Have you heard any opinions that do not encourage the use of ..... Yes ..... No .....

40(a) From whom did you hear these opinions ..... (specify below).

Name	Village	Social relationship
(1)		
(2)		
(3)		
(4)		
(5)		

41. Have you received any suggestions or advice that encourage not to use ..... Yes .... No .....

41(a) From whom did you receive such suggestions or advice ..... (specify below)

Name	Village	Social relationship
(1)		
(2)		
(3)		
(4)		
(5)		

42. Who would you say is doing a good job as a farmer in this village or nearby ..... (specify below)

Name	Village	Social relationship
(1)		
(2)		
(3)		
(4)		
(5)		

43. Who do you usually see for help and advice in farming matters?

	Name	Village	Social relationship
(1)			
(2)			
(3)			
(4)			
(5)			

44. Compared to these persons do you feel that you are doing a good job as a farmer?

45. How important is it to you as a farmer the opinions and advice of these persons .....

	Important	Some importance	Not important
(1)			
(2)			
(3)			
(4)			
(5)			

46. Do you know anyone in this village or nearby who prefers to use ..... (specify below)

	Name	Village	Social relationship
(1)			
(2)			
(3)			
(4)			
(5)			

47. Have you heard any opinions that encourage the use of ..... Yes ..... No .....

47(a) From whom did you hear these opinions? (specify below)

	Name	Village	Social relationship
(1)			
(2)			
(3)			
(4)			
(5)			

48. Have you received any suggestions or advice that encourage the use of ..... Yes .... No .....

48(a) From whom did you receive such suggestions or advice ..... (specify below)

	Name	Village	Social relationship
(1)			
(2)			
(3)			
(4)			
(5)			

49. Compared to these persons do you feel that you are doing a good job as a farmer?

50. Closeness-of-ties Index:

Items	
1.	Do you like to discuss farming matters with .....
2.	Do you feel that he has 'good ideas' on farming matters .....
3.	Do you like to discuss your personal problems with .....
4.	Do you feel that ..... will give you 'good advice' on personal problem .....
5.	Do you meet with ..... frequently..... occasionally....
6.	Do you enjoy talking and discussing with .....
7.	Would you help ..... financially or socially if he is in need of it.....
8.	Would you ask ..... for his help financially or socially if you are in need of it .....

(Scores: Yes = 1)
(No = 0)

51. Attitudes towards Innovations scale

Items	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
1. Hand made cloth is better than mill made cloth.					
2. New farming methods destroy the richness of the product grown.					
3. It is desirable to save time and energy by using machinery rather than doing work by hand.					
4. Mill made sugar is less rich, tasty than 'khandsari'.					
5. Life is better when one has electrical and mechanical conveniences for use.					
6. The food problem can be solved only by using new farming methods.					
7. New crop varieties are less tasty, nutritious than ordinary varieties.					
8. Having new things or more things simply adds to unhappiness.					
9. Use of machinery will upset the simple, happy life we Indians have always had.					
10 The problem of poverty and unemployment can be solved only by establishing industries.					

Reference Group Scores

In computing the reference group scores items in the schedule have been assigned the following weights:

Items	Weight assigned
22, 23, 30, 35, 38, 43 and 48	5
27,28, 34, 40, 41 and 47	4
24,29,33, 39,42 and 46	3