CROSS-CULTURAL COMPARISON OF CHARACTERISTICS OF ADOPTERS AND NON-ADOPTERS OF FARMER COOPERATIVES AMONG VILLAGERS

THESIS

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ABSTRACT

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OF ADOPTERS AND NON-ADOPTERS OF FARMER
COOPERATIVES AMONG VILLAGERS

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In recent years considerable research has been done on the adoption of recommended farm practices. However, little has been done to apply the conceptual framework from these previous research studies to other areas of human behavior, such as adopting an ideology or joining a cooperative. Furthermore, most of the past research has been done in very developed countries, mainly in the United States and Europe. It seems that those factors which have been found to be associated with the adoption of technological changes in agriculture would also be associated with the adoption of farmer cooperatives.

The general hypotheses of positive associations between cooperative adoption and farmers', resources, knowledgeability, and attitudes towards innovations, were tested in the present study.

The dependent variable, cooperative adoption, was correlated with twelve independent variables: knowledgeability of new farm practices, education, extension contact, size of farm, agricultural innovativeness, social participation, social status, aspiration, opinion leadership, mass media exposure, and empathy.

A non-experimental research design was used in the study. Data gathering was carried out through personal interviews with farm households in eight Indian villages in Uttar Pradish and with farm households in two Andean villages in Colombia.

The findings show that all twelve independent variables were significantly related, and in the predicted direction, to cooperative adoption in India. In Colombia, however, only three independent variables, change agent contact, social participation, and empathy, were significantly related, and in the predicted direction, to cooperative adoption.

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CHAPTER I

INTRODUCTION

Cannon (1945, p. 76) said, "The seeds of great discoveries are constantly floating around us, but they only take rest in minds well prepared to receive them."

Why and when do or do not people adopt new ideas? What are the characteristics of those who do or do not adopt a particular idea? Can we predict the type of individuals who welcome a particular idea? What are the most successful methods of convincing individuals to adopt recommended ideas?

These questions have occupied and still are occupying the minds of behavioral scientists. Social scientists generally agree that social values and personal characteristics influence the acceptance or rejection of an innovation, and that one must understand these social values and personal characteristics before understanding the behavior of the people. As Linton (1952, p. 74) stated, "If we know what a society's culture is, including its particular system of values and attitudes, we can predict with a fairly high degree of probability whether the bulk of its members will welcome or resist a particular innovation."

The present study is concerned with a comparison of characteristics of adopters and non-adopters of an idea in two different cultures. The innovation studied is the act of joining a farmer cooperative organization. The respondents are villagers in Colombia and India.

IMPORTANCE OF THE PROBLEM

Throughout the world, developing countries are attempting in a relatively brief span of time to narrow the gap between themselves and those nations with a richer technology and a higher level of living. Developing countries are launching and carrying forward nationwide programs of directed social change and are inviting from outside thousands of specialists to strengthen these programs. Cooperative development is given a high priority and a prominent role in these programs of change.

Much has been stressed about the benefit of farmer cooperatives. In spite of the potential benefit of cooperatives and the deep interest and strong support of local governments, a very small minority of rural people in developing countries have joined cooperatives. Also, very few of the cooperatives that have been organized have succeeded.

Cooperatives have been tried in many different countries and in every type of economic activity. They succeeded and failed simultaneously among people of similar and widely different cultures and political systems, such as in communist, capitalist, democratic, and dictatorial types.

Many research studies have attempted to determine the factors influencing the success or failure of cooperatives. One of the largest studies,* of 11,272 farmer cooperatives in the United States which went out of business during the 77 years from 1863 to 1939, showed the following reasons as causes of failure: difficulties of management; difficulties in membership; natural or unavoidable causes; insufficient business;

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*Farmer's Cooperative Service (1958).

financing and credit difficulties; transportation problems; opposition from competing firms; declining prices; consolidations and mergers; and technological changes.

Of the many hundred studies that have been completed about cooperatives to date, a review of literature showed that only Campbell and Lionberger (1964) and Beal (1956) studied the personal characteristics of those who join farmer cooperatives. This occurred even though, as mentioned earlier, difficulties in membership were the second most often mentioned reason for the failure of cooperatives. Most past research emphasis was on the material, economic, and management aspects of cooperative activity. It is evident that more research needs to be done on the influences which induce people to join cooperatives and to continue as active members.

Furthermore, all of the past research studies were completed on cooperatives in the United States. It cannot safely be generalized that the same factors which operated in the United States would also be operative under widely different cultural conditions without further testing to take into account the unique factors of such cultures. Here lies the main importance of the present study, in which an attempt will be made to analyze and compare data gathered from two different countries: India and Colombia. An attempt will also be made to compare the findings of the present study with those of earlier studies from the United States in order to determine relationships that held true across several cultures.

The eventual goal of this type of research is to accelerate the adoption and successful operation of cooperatives in developing countries. The present investigation may also be useful to shorten the time period

required for technically-sound innovations, other than cooperatives, to reach widespread use among rural families in developing societies.

PURPOSES

The purpose of the present study is to determine the personal and social characteristics of cooperative adopters and non-adopters in two different developing countries: India and Colombia. It is hoped that once the general characteristics of the audiences are known, those who are concerned and working with cooperatives and those engaged in planning action programs, will develop better communication strategies and construct more effective means to deal with membership problems. They may also be able to achieve maximum effect in dealing with non-adopters of other innovations.

A minor purpose of the present study will be to compare the consistency of the findings of the present study with those found in earlier research studies in the United States.

The present study will also suggest hypotheses for future research.

DEFINITION OF CONCEPTS

1. A farmer cooperative is a voluntary and non-profit organization which is organized, operated, and controlled by its members. It renders services at cost to its member patrons.
2. An adopter is an individual who is presently a member of a cooperative organization.
3. A discontinuer is anyone who has ceased to be a member after previously having been a cooperative member.
4. A non-adopter is a person who never was a cooperative member.

CHAPTER II

REVIEW OF LITERATURE

For the past few decades, scientists have attempted systematic studies both of the adoption of new ideas and of social participation. Hundreds of variables were utilized in order to determine their relationship to the adoption of new ideas and to social participation.

A look at past research will help us to understand as to why and when people accept or reject certain recommended new ideas. Thus, we should be able to construct a conceptual model for adoption of farmer cooperatives.

THE INNOVATION PROCESS

It has been suggested by past research that an individual passes through a series of steps as he decides to adopt or reject an innovation. The innovation process is the series of steps, over time, through which an individual progresses while deciding whether or not to adopt a new practice, idea, or product.

Among the first scientists who recognized that the adoption of a new idea consisted of stages were Ryan and Gross (1943, p. 79). Ryan and Gross distinguished between "awareness" of hybrid seed corn, "conviction" of its usefulness, trial "acceptance," and "complete adoption" of the innovation.

Pedersen's study of cultural differences in the acceptance of recommended farm practices in Wisconsin suggested that the events leading to adoption were similar for two nationality groups: Danes and Poles.

This finding concurs with that of Ryan and Gross's (1943) study in which they found that all farmers, regardless of their time of adoption, required an individual and time-consuming self-demonstration before they converted to hybrid seed corn.

Wilkening (1952, p. 16) pointed out that an individual's decision to adopt an innovation is a process composed of stages or steps. Wilkening (1953, p. 9) described the adoption of an innovation as "a process composed of learning, deciding, and acting over a period of time. The adoption of a specific practice is not the result of a single decision to act but of a series of actions and thought decisions."

Since these early studies, considerable research has been completed by different scientists as to the validity of the adoption process. Although there is a general consensus on the existence of stages, there is not complete agreement as to the number of these stages. The number of stages utilized by different researchers varied from three to seven. The North Central Rural Sociology Subcommittee (1955, pp. 3-6) described five adoption stages. These stages are:

1. Awareness - The individual knows about the innovation but lacks complete information about it.
2. Interest - The individual develops interest in the new idea and seeks additional information about it.
3. Evaluation - The individual makes mental application of the idea and weighs its merits for his own situation.
4. Trial - The individual uses the innovation, usually on a small scale.
5. Adoption - The individual is satisfied with the innovation

and decides to continue its full use.

The conceptual model of the innovation process,* which was developed by White (1965, p. 3), consists of three stages or "meta-processes":

Information + Persuasion + Decision-Making ⟶ Acceptance

The information meta-process was defined as the point at which an individual becomes aware of and informed about a new idea. The important aspects of this stage are centered around information flow and information-seeking and exposure.

The persuasion meta-process is defined as that stage at which an individual develops a favorable or unfavorable attitude toward a new idea. Once information is available, an individual will develop a favorable or unfavorable attitude toward the new idea. If the attitude is unfavorable, he may reject. This rejection may be permanent or temporary. If further positive information is forthcoming at a later time, an unfavorable attitude may become favorable, and the individual will pass to the decision-making stage.

The decision-making meta-process is the final stage in the model. It is defined as the procedures that one goes through in choosing among alternatives. At this stage the idea is evaluated in terms of its relation to the individual's self-perceived role and self-image.

At each of these stages there are certain situational, personal, and social factors that influence how an individual reacts to a given innovation. A large amount of past research has been done to determine the

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*White called it the "acceptance process," but the present author prefers to term it the innovation process, as this nomenclature does not imply that it necessarily terminates in adoption rather than rejection.

effects of these various dimensions on the adoption of an innovation by an individual in a given social system. It was shown by numerous studies that the personality of the individual, social structure, nature of his enterprise, communication channels, and characteristics of the innovation, play an important role in the innovation process, and partially determine the final adoption or rejection of the innovation. Figure 1 shows the main variables that influence the final adoption or rejection of an idea.

PERSONALITY AND SOCIAL STRUCTURAL FACTORS RELATED TO ADOPTION

Social structural factors such as family norms, rigidity of the social system, group pressures, religion, and the degree of traditionalism all influence the beliefs, attitudes and values of the members of a social system.

Rogers (1962, p. 59) stated "... the spread of innovations is not a simple matter of economic advantage, although economic factors may be important in many instances. Economic considerations are more likely of greater significance in modern societies than in traditional ones." Rogers further said, "... cultural values influence not only the original adoption or rejection of an innovation but also how the new idea will be integrated into the existing way of life."

In Hoffer's (1942) study of the acceptance of approved farming practices among Michigan farmers of Dutch descent, he found his respondents' values on frugality were a major barrier to the adoption of new celery-growing ideas. They refused to adopt disease-control sprays developed by agricultural scientists. In a later study, Hoffer and Stangland (1958, pp. 112-120) found that Michigan farmers who were

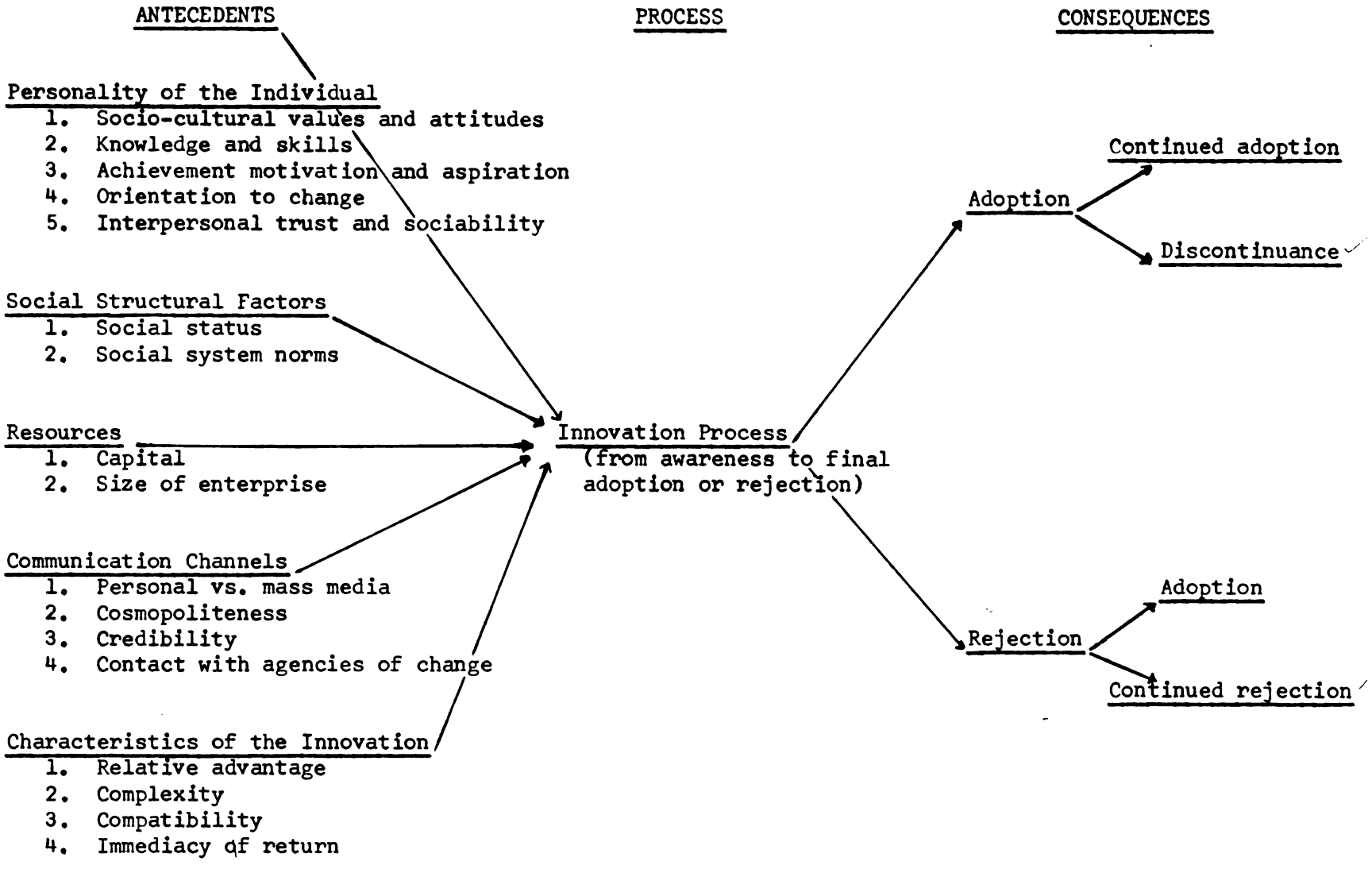

Fig. 1. Paradigm of the innovation process

efficient, willing to take risks, and valued progress tended to adopt improved practices. Those who valued security highly and were conservative in their outlook generally failed to adopt new practices.

Wilkening's statement that acceptance on innovations may be viewed "as a function of the social and of the ideological system (ideas, values, and sentiments) of the farmers" has served as a guide in formulating research questions and explanatory models. Redfield's model of the folk-urban continuum postulated that people with folk value systems would resist change in agricultural techniques and those with "urban" value systems would accept them. The question that naturally arises is whether value orientations of villagers in Colombia and India interfer with or contribute to the success of efforts at promoting cooperatives.

Adopters of new ideas generally have characteristics which are distinctive from those of non-adopters. It was found that adopters of new farm practices have larger farms, higher incomes, higher educational levels, greater rationality in decision-making, more business orientation, more information sources, more cosmopoliteness, and have other distinctive characteristics when compared to non-adopters. Our concern in the present study is to determine whether these characteristics are consistent for adopters and non-adopters of farmer cooperatives, a different kind of innovation than has generally been studied in past investigations.

THE COOPERATIVE AS AN INNOVATION

Becoming a cooperative member, like the adoption of any voluntary innovation, is not the result of a simple and single decision to act, but a series of actions and thought decisions. An individual must hear, know about, and develop favorable attitudes towards a cooperative before

adopting it. An individual must also perceive a relative advantage in becoming a cooperative adopter that he would not get otherwise, before he decides to join a cooperative society.

Adoption of a cooperative, however, differs from adoption of technological innovations to the extent that:

1. A cooperative is a non-material innovation. Its results may have low visibility.
2. Joining a cooperative requires a value-orientation on interpersonal trust,* which is seldom, according to many anthropological studies, found in peasant societies.
3. A cooperative must be group-adopted. The unit of adoption is the individual, but he can adopt only after the group adopts. It is a non-compliance (the individual is not forced to adopt by a group decision) but also a non-independence decision.
4. A cooperative, as compared to most technological innovations, is highly complex for farmers to understand.
5. A cooperative cannot be tried on a small basis before full adoption.

In their study of characteristics of adopters and non-adopters of the American Farmer's Cooperative (AFC) in two Northern and Western States, Campbell and Lionberger (1963, p. 30) found that the characteristics of operators in each of the three categories, adopters, past-adopters, and

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*Interpersonal trust is the predisposition of an individual to enter into an ambiguous situation where the outcome depends on another person and where the possible loss is greater than the possible gain.

non-adopters, were distinctive with the adopters (members) and discontinuers (past-members) having the most similar characteristics and the never-adopters (never-members) the most distinctive. For example, adopters and discontinuers had, as contrasted with never-adopters, larger-sized farms, larger gross dairy incomes, higher production ratios of grade A milk, and more favorable attitudes toward cooperatives.

The variations that were found between categories were similar to those found in the studies of the adoption of material practices; that is, adopters were found to have larger farms, higher farm incomes, a higher proportion were favorable to dairying, more knowledge about the AFC, and used more sources of information, and to have distinctive attitudes.

SUMMARY

Past research studies on the adoption of new ideas by individuals indicated that:

1. The adoption of a new idea may be conceptualized as a mental process through which an individual passes from first hearing about an innovation to final adoption. The innovation process is conceptualized in five stages or steps: awareness, interest, evaluation, trial, and adoption.
2. There are certain personal, social, and situational factors that influence the individual's behavior at each stage, and hence the final adoption, rejection, or discontinuance of the idea.
3. Adopters, as contrasted with non-adopters and past-adopters, have larger enterprises, higher incomes, higher educational

levels, more rationality in decision-making, more business orientation, higher social status, more information sources, are more cosmopolite, and have more favorable attitudes toward new ideas.

CHAPTER III

THEORETICAL APPROACH

Many past research studies have sought to explain differences in individuals' adoption of innovations. Some writers emphasized that farmers lack knowledge of the principles involved in correct use of the new idea, of the production coefficients (including marginal rates of substituting one production element for another, and production relationships between alternative products), and of price data concerning production inputs and products. Others maintain that farmers have this knowledge, but that there are other variables such as institutional arrangements (leasing agreements, pricing policies, and marketing restrictions), capital rationing, or economic risks and uncertainties that condition their adoption of new ideas. Still other analysts stress that the individual's value orientations, attitudes, and his aspirations are the important determinant of innovativeness.

ROLE OF KNOWLEDGE

Adoption of recommended farm practices may be a rational decision, that is, what experts or professionals consider as appropriate. If other factors are present, a decision is partly a function of an individual's knowledge about a new idea. Thus, knowledge provides the basis for decisions and actions.

ROLE OF RESOURCES

Lack of resources such as capital frequently limits adoption of new farm ideas. Many, but not all, innovations require economic resources.

For example, joining a cooperative, except for a very small membership fee, does not require capital.

Size of farm is one indication of the amount of potential resources available for investment in innovations.

ROLE OF ATTITUDE

Even if knowledge and resource limitations were removed, it cannot be assumed that a farmer will automatically adopt profitable innovations. An individual must have a favorable attitude and be motivated to make use of his knowledge and resources in order for adoption of the innovation to occur.

1. Social status is one's position in the social structure or system. It may either inhibit or enhance an individual's access to sources of information and his willingness to deviate from group norms.
2. Norms are the most frequently occurring patterns of overt behavior for the members of a particular social system. Community norm on innovativeness is a matter of group expectation to which the individual generally feels obligated to conform.
3. Opinion leadership is the ability to influence informally other people's attitudes in a desired way and with a relatively high frequency. Opinion leaders often have a diverse range of relevant contacts with individuals outside their social system. Opinion leaders are expected to be more innovative than their followers.

4. Social participation is the act of joining and taking part in formal or informal social groups or organizations. An individual who participates more in social organizations, is expected to be more cosmopolite, knowledgeable, and informed than a person who does not. Hence, an individual who participates in social organizations is expected to be more innovative than those who do not.

Rogers (1962, p. 291) found that five independent variables, (1) social status, (2) norms, (3) communication behavior, (4) size of farm, and (5) opinion leadership, were related to innovativeness. The results indicate that 64.1 percent of the variation in innovativeness, the dependent variable, was explained by the combined effect of the five independent variables.

HYPOTHESES

General Hypothesis I: Adoption of farmer cooperatives is positively related to knowledgeability.

Empirical Hypothesis Ia: Cooperative adoption is positively related to knowledge about agricultural innovations. An individual who knows more about different farm practices is more likely to know about cooperatives, and to adopt them, than an individual who knows less about various farm practices.

Empirical Hypothesis Ib: Cooperative adoption is positively related to education. An individual who has a higher education, as compared to a person who has less education, is more likely to read, understand, and internalize what a cooperative is and what its benefits are.

Empirical Hypothesis Ic: Cooperative adoption is positively related to change agent contact. A person who contacts a change agent will be more exposed to favorable information about cooperatives than a person who does not contact a change agent.

General Hypothesis II: Adoption of farmer cooperatives is positively related to resources.

Empirical Hypothesis II: Cooperative adoption is positively related to size of farm.

General Hypothesis III: Adoption of farmer cooperatives is positively related to favorable attitudes toward innovations.

Empirical Hypothesis IIIa: Cooperative adoption is positively related to favorable attitudes towards agricultural innovations.

Empirical Hypothesis IIIb: Cooperative adoption is positively related to social participation. Participation in social organizations is an index of one's attitudes toward association with and trust in peers.

Empirical Hypothesis IIIc: Cooperative adoption is positively related to social status. One's position in the social system may either inhibit or enhance his access to sources of information and his willingness to deviate from group norms.

Empirical Hypothesis IIId: Cooperative adoption is positively related to aspirations. An individual with high aspirations for improving himself, as compared with an individual of low aspirations, is more likely to develop more favorable attitudes toward innovations that help him to achieve that which will contribute to his improvement.

Empirical Hypothesis IIIe: Cooperative adoption is positively

related to opinion leadership. Opinion leaders often have a diverse range of relevant contacts with individuals outside of their social system. Thus, they are more likely to develop more favorable attitudes toward innovations, and adopt them than will their followers.

Empirical Hypothesis IIIf: *Cooperative adoption is positively related to mass media exposure*. Exposure to mass media widens one's vision and understanding of the real world. Thus, an individual with high mass media exposure is more likely to develop more favorable attitudes toward innovations than a person with low media exposure.

Empirical Hypothesis IIIg: *Cooperative adoption is positively related to empathy*. An individual who can put himself in the role of others is more likely to understand others, and hence, is more likely to associate with other people in a cooperative activity than an unempathetic person.

CHAPTER IV

METHODOLOGY

The present study uses data from part of a larger communication research study in India and Colombia. The respondents in both countries were heads of farm households, who lived in cluster villages in India and on scattered farmsteads in Colombia.

The investigation in India was designed as the benchmark survey of a before-after field experiment. Measures of effect are the knowledge, attitudes, and adoption of agricultural and health practices in villages, certain of which will receive 1.5 year-long communication treatments of (1) literacy and reading materials, (2) radio farm forums, and (3) animation (or village leader training).

The research study in Colombia was designed to examine the process of diffusion of innovations as affected by opinion leaders in peasant villages.

GATHERING THE DATA

In India, the study was sponsored by UNESCO under the supervision of Dr. Prodipto Roy in the National Institute of Community Development at Hyderabad. A research team of four anthropologist and sociologists completed personal interviews in eight selected villages in April, May, and June, 1964.

In Colombia, the data were collected from three peasant villages on the diffusion of innovations by Dr. Everett M. Rogers, a Fulbright Lecturer at the Faculty of Sociology in the Universidad Nacional de

Colombia, Bogotá, during 1963-1964. The data-gathering was sponsored by PIIP. Only two of these villages, Pueblo Viejo and San Rafael, had cooperatives, and hence only their data will be used in the present study.

Advanced students in sociology at the National University of Colombia, all of whom had had previous interviewing experience, conducted the personal interviewing in 1963 and 1964. A virtual census was obtained of farm operators in the two villages; almost 90 percent of the eligible respondents were successfully interviewed. The number of farmers interviewed in Pueblo Viejo was 67 and in San Rafael, 36.

Pueblo Viejo and San Rafael are located in the Andean Mountains in Central Colombia, about an hour's drive from Bogotá, and are relatively modern in their norms (when compared to all Colombian peasant villages). These two communities are characterized by extremely small farms which are operated by subsistence farmers of mixed Indian-Spanish stock with relatively low levels of education, low mass media exposure, and limited economic opportunities.

The eight Indian villages are located in Uttar Pradesh, near Lucknow. These villages are typical Indian villages as to size, composition, norms, and ways of life. A virtual census was obtained of the farm operators in all of the eight villages. Nearly 92 per cent of the eligible respondents were successfully interviewed. A total of 702 respondents were interviewed in the eight villages. The India study had observers in each village to gain rapport before the interviewing. Some India respondents (perhaps 5 per cent) were non-agriculturists, and about 10 per cent were non-land owners.

All interviews in both India and Colombia were carried out in the local language of these countries.

The data from India and Colombia were coded, transferred to large data sheets, and punched on IBM cards at the Computer Center, Michigan State University.

MEASUREMENT OF VARIABLES

Relevant portions of the interview schedules that were used in India and Colombia are found in Appendix A.

Cooperative Membership

Cooperative membership was dichotomized into adopters and non-adopters in both India and Colombia.

Knowledgeability

In India, agricultural practices knowledge scores were computed as the number of 14 practices that the respondent was aware of at the time of interviewing. There were no data as to knowledgeability in Colombia.

Education

Education was computed as the actual number of years of schooling completed by the respondent.

Extension Contact

In India, an extension contact index was computed as the total number of contacts that the respondent made with each of six extension agents in the year prior to interviewing. In Colombia, the extension

contact index was computed as the number of contacts the respondent made with the extension worker or workers in the past year.

Size of Farm

Farm size was computed as the actual number of bighas (1 acre = 1.75 bighas operated in India. In Colombia, it was computed as the actual number in fanegadas (1 fanegada = acres) operated.

Agricultural Innovativeness

In India and Colombia, an agricultural innovativeness index was computed as the relative time that the respondents first used each of the new farm practices.

Social Participation

Social participation was computed as the actual number of organizations to which the respondents belonged in India and Colombia.

Social Status

Social status, in both India and Colombia, was rated by interviewers at the end of the interview, on the basis of criteria such as appearance of the farm and home, wealth, etc.

Aspiration

Aspirations in India and Colombia were computed as the number of years of education and the level of occupational prestige the respondents wished for their sons.

Opinion Leadership

In India, opinion leadership was computed as the ratio of choices received by the respondent, divided by the total number of choices made in the respondent's village.

Mass Media Exposure

Mass media exposure in India and Colombia was computed as the exposure to the five mass media, radio, newspapers, magazines, movies, and TV.

Empathy

Empathy, in both India and Colombia, was computed as the actual scores the respondents made to a series of questions which were rated by the interviewer.

CHAPTER V

FINDINGS

The findings presented in the present chapter follow the same order as the hypotheses presented in Chapter III.

Point biserial correlation was the statistic used to analyze the data in both India and Colombia (see Tables 1,2,3, and 4). Point biserial correlation was used instead of product moment correlation because the dependent variable, cooperative adoption, was a dichotomy.

General Hypothesis I

G.H.I: Adoption of farmer cooperatives is positively related to knowledgeability.

Empirical Hypothesis Ia: Cooperative adoption is positively related to knowledge about agricultural innovations. r_{pb} in India is .336, which is significant at the one per cent level. Thus, E.H.Ia is supported. There are no data as to knowledgeability in Colombia.

Empirical Hypothesis Ib: Cooperative adoption is positively related to education. r_{pb} in India is .186, which is significant at the one per cent level. r_{pb} in Colombia is -.070, which is not significant at the five per cent level. Thus, E.H.Ib is supported in India and not supported in Colombia.

Empirical Hypothesis Ic: Cooperative adoption is positively related to change agent contact. r_{pb} in India is .140, which is significant at the one per cent level. In Colombia, r_{pb} is .385 which is

Table 1. Relationships of farmer cooperative adoption to selected independent variables in India.*

Independent Variables	r_{pb}**	p***
Agricultural knowledgeability	.336	.0005
Education	.186	.0005
Extension contact	.140	.0005
Size of farm	.277	.0005
Agricultural innovativeness	.357	.0005
Social participation	.637	.0005
Social status	.294	.0005
Aspiration	.229	.0005
Opinion leadership	.285	.0005
Mass media exposure	.153	.0005
Empathy	.284	.0005

*N = 702.

**Point biserial correlation was the statistical method used to test the hypotheses.

***One tail test.

Table 2. Relationships of farmer cooperative adoption to selected independent variables in Colombia.*

Independent Variables	r_{pb}**	p***
Education	-.070	N.S.
Extension contact	.385	.0005
Size of farm	-.129	N.S.
Agricultural innovativeness	.159	N.S.
Social participation	.511	.0005
Social status	-.006	N.S.
Aspiration for education of son	-.116	N.S.
Aspiration for occupation of son	.051	N.S.
Opinion leadership	.159	N.S.
Mass media exposure	.145	N.S.
Empathy	.211	.025

*N = 103.

**Point biserial correlation was the statistical method used to test the hypotheses.

***One tail test.

Table 3. Comparison of adopters and non-adopters of farmer cooperatives in India.

Independent Variables	Total Mean (N = 688)	Mean for Adopters (N = 299)	Mean for Non-Adopters (N = 413)
I. KNOWLEDGEABILITY			
1. Knowledgeability of farm practices	18.252	21.465	16.113
2. Education	0.776	1.123	.544
3. Extension contact	15.581	17.316	14.426
II. RESOURCES			
Size of farm	4.203	5.694	3.210
III. ATTITUDE			
1. Agricultural innovativeness	8.597	10.694	7.201
2. Social participation	1.016	1.854	0.457
3. Social status	5.062	5.927	4.486
4. Aspiration	3.753	4.174	3.474
5. Opinion leadership	1.053	1.895	0.492
6. Mass media exposure	10.478	12.669	9.019
7. Empathy	1.609	2.312	1.140

Table 4. Comparison of adopters and non-adopters of farmer cooperatives in Colombia.

Independent Variables	Total Mean (N = 103)	Mean for Adopters (N = 31)	Mean for Non-Adopters (N = 72)
I. KNOWLEDGEABILITY			
1. Knowledgeability of farm practices			
2. Education	2.223	1.967	2.333
3. Extension contact	1.242	2.645	0.638
II. RESOURCES			
Size of farm	10.572	6.677	12.250
III. ATTITUDE			
1. Agricultural innovativeness	42.223	45.741	40.700
2. Social participation	4.776	7.290	3.694
3. Social status	3.660	3.645	3.666
4. Aspiration for son's education	3.543	3.096	3.736
5. Aspiration for son's occupation	2.320	2.451	2.263
6. Opinion leadership	4.902	7.387	3.833
7. Mass media exposure	42.058	44.967	40.805
8. Empathy	4.514	5.451	4.111

significant at the one per cent level. Thus, E.H.Ic is supported in both India and Colombia.

General Hypothesis I is supported in the case of the three empirical hypothesis in India and supported in only one of the two empirical hypotheses in Colombia.

General Hypothesis II

G.H.II: Adoption of farmer cooperatives is positively related to resources.

Empirical Hypothesis II: Cooperative adoption is positively related to size of farm. In India, r_{pb} is .277, which is significant at the one per cent level. In Colombia, r_{pb} is -.129, which is less than .164 required for significance at the five per cent level. Thus E.H.IIa is supported in India and not supported in Colombia.

General Hypothesis II is supported in the case of the empirical hypothesis in India and not supported in the case of Colombia.

General Hypothesis III

G.H.III: Adoption of farmer cooperatives is positively related to attitudes.

Empirical Hypothesis IIIa: Cooperative adoption is positively related to agricultural innovativeness. In India, r_{pb} is .357, which is significant at the one per cent level. In Colombia, r_{pb} is -.251, which is in the opposite direction of E.H.IIIa, and significant at the one per cent level. Thus, E.H.IIIa is supported in India and not supported in Colombia.

Empirical Hypothesis IIIb: Cooperative adoption is positively related to social participation. In India, r_{pb} is .637, which is significant at the one per cent level. In Colombia, r_{pb} is .511, which is significant at the one per cent level. Thus, E.H.IIIb is supported in both India and Colombia.

Empirical Hypothesis IIIc: Cooperative adoption is positively related to social status. In India, r_{pb} is .294, which is significant at the one per cent level. In Colombia, r_{pb} is -.006, which is not significant at the one per cent level. Thus, E.H.IIIc is supported in India and not supported in Colombia.

Empirical Hypothesis IIId: Cooperative adoption is positively related to aspiration. In India, r_{pb} is .229, which is significant at the one per cent level. In Colombia, r_{pb} is -.116 and .051 for education and occupation of sons, both of which are not significant at the five per cent level. Thus, E.H.IIId is supported in India and not supported in Colombia.

Empirical Hypothesis IIIe: Cooperative adoption is positively related to opinion leadership. In India, r_{pb} is .285, which is significant at the one per cent level. In Colombia, r_{pb} is .159, which is less than the .164 required for significance at the five per cent level. Thus, E.H.IIIe is supported in India and not supported in Colombia.

Empirical Hypothesis IIIf: Cooperative adoption is positively related to mass media exposure. In India, r_{pb} is .153, which is significant at the one per cent level. In Colombia, r_{pb} is .145, which is less than the .114 required for significance

at the five per cent level. Thus, E.H.IIIf is supported in India and not supported in Colombia.

Empirical Hypothesis IIIg: Cooperative adoption is positively related to empathy. In India r_{pb} is .284, which is significant at the one per cent level. In Colombia, r_{pb} is .211, which is significant at the five per cent level. Thus, E.H.IIIg is supported both in India and Colombia.

General Hypothesis III is supported in the case of all seven empirical hypotheses in India and supported in the case of two of the seven empirical hypotheses in Colombia.

CHAPTER VI

SUMMARY AND CONCLUSIONS

Summary

The present research study dealt with comparison of characteristics of adopters and non-adopters of farmer cooperatives among villagers in India and Colombia.

Data gathering was carried out through personal interviews with farm households in eight Indian villages in Uttar Pradish and with farm households in two Andean villages in Colombia. A total of 702 and 103 respondents were interviewed in India and Colombia respectively.

The findings of the present study show that farmer cooperative adoption is positively related, in both India and Colombia, to extension contact, social participation, and empathy. The study shows also that cooperative adoption in India is positively related to size of farm, mass media exposure, extension contact, social participation, education, aspiration, empathy, agricultural innovativeness, social status, opinion leadership, and agricultural knowledgeability. In Colombia, there was not a significant relationship between cooperative adoption and size of farm, mass media, education, aspiration, agricultural innovativeness, social status, and opinion leadership.

Conclusion

The findings of the present study in India, and in the case of extension contact, social participation, and empathy in Colombia, are consistent with the findings of past research studies of material

practices in the United States. They are also consistent with those found by Campbell and Lionberger's study of the American Farmer's Cooperatives in two Northern and Western States. Campbell and Lionberger found that cooperative adopters, as contrasted with non-adopters, had larger sized farms, larger gross dairy incomes, higher production ratio of grade A milk, and more favorable attitudes toward the need for cooperatives.

The difference between the findings in India and Colombia could be explained by: 1) In India, there is a strong government promotional program for cooperatives while there is no such government program in Colombia. 2) In India, as contrasted with Colombia, farmers use more mass media. 3) In India, the government's aide, providing cooperative specialists to help the local cooperatives, made these latter very efficient and hence, highly recommended innovations. This was not the case in Colombia where the cooperatives still are inefficiently run.

An important conclusion may be drawn from the present study. Government promotional programs, including technical and financial assistance, and mass media play a vital role in the acceptance of farmer cooperatives in developing countries.

LIMITATIONS OF THE STUDY

The major limitation of the present study is that the data collected for the two larger studies in India and Colombia were not specifically designed for the analysis of the adoption of cooperatives. As a consequence, data for the present study was limited to that available. For example, membership in the cooperatives was dichotomized into adopters and non-adopters, without taking into consideration their time of adoption. Thus, early adopters and late adopters were grouped into one category: adopters.

Non-adopters included past-adopters as well as discontinuers. Such lack of isolation of homogeneous categories could be dangerously misleading.

Another shortcoming of the present study is the failure to specify the type of existing cooperatives in the villages concerned, and to determine whether cooperative membership was applicable for each respondent. For example, it would be illogical and unwise to expect a fruit grower to join an egg marketing cooperative. The failure to take into consideration the economic feasibility of a village cooperative is a further weakness of the present study. For example, it would be unsafe to assume that all farm cooperatives are economically feasible and hence, recommended innovations. It might be possible for many farmers, especially larger ones, to profit more from buying and selling of products through other firms than a cooperative. This is especially true when cooperatives are inefficiently run. Thus, cooperatives might be non-recommended innovations, at least in some villages and for some farmers.

FUTURE RESEARCH

Further research can lead to more definite generalizations about the cross-cultural comparison of characteristics of adopters and non-adopters of farmer cooperatives.

Future research should take into consideration the factors mentioned in the limitations of the present study; that is, it should distinguish between early adopters and late adopters on one hand, and between non-adopters and past-adopters on the other. The present hypotheses should also be tested in several developing countries. The type of farmer cooperatives and the farmers to whom they apply, and the economic feasibility of the cooperatives, should be taken into account.

Further research is also needed to explore new variables, especially more "dynamic" factors related to cooperative adoption. Most past social participation research has been concerned with "static" factors such as age, occupation, family status, education, and size of farm. These factors are static in the sense that, for the most part, they cannot be altered readily by change agents. Knowledge of the relationship of such static factors to cooperative adoption may be valuable for a description of existing patterns of participation. Such knowledge may also be of value to those attempting to organize new cooperatives or gradually change the membership of established cooperatives, if the assumption can be made that group participation patterns can be predicted from "static" characteristics. But findings on "static" variables alone appear inadequate for those members, leaders, and change agents interested in altering participation patterns without changing membership. Beal (1956, p. 251) pointed out that "dynamic" variables such as understanding of the principles and operation of the cooperative, satisfaction, and perceived benefit obtained from cooperatives, can be changed. Beal found ten "dynamic" variables were significantly associated with cooperative participation: understanding of basic cooperative principles, knowledge of facts about the cooperative, satisfaction with the cooperative, having a "say" in running the cooperative, feeling of responsibility to the cooperative, identity with the cooperative, definition of the role of cooperative, number of neighbors who belong to the cooperative, greatest benefit from cooperatives, and knowledge of existence of wholesale or regional cooperatives.

The importance of "dynamic" variables is that their utilization broadens the scope of social research to include new variables that will allow for a more complete analysis of the factors related to participation.

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APPENDIX A

DATA GATHERING INSTRUMENT USED IN INDIA AND COLOMBIA

APPENDIX A

DATA GATHERING INSTRUMENT USED IN INDIA AND COLOMBIA

I. Cooperative Membership

A. India

Are you or any member of your family a member of a cooperative?

B. Colombia

Are you a member of the cooperative?

II. Knowledgeability of Farm Practices

A. India

Have you heard about...?	yes	no	no answer
1. Line sowing for wheat	___	___	_____
2. Japanese method of paddy cultivation	___	___	_____
3. Green manure	___	___	_____
4. Amonium sulphate	___	___	_____
5. Modern plough	___	___	_____
6. Insecticide	___	___	_____
7. Cultivator	___	___	_____
8. Improved paddy seed	___	___	_____
9. New variety of potatoes	___	___	_____
10. Inoculation for animal diseases	___	___	_____
11. Sadabaher	___	___	_____

Have you heard about...?	yes	no	no answer
12. Superphosphate	___	___	_____
13. Rat poison	___	___	_____
14. Punjab 591 improved variety of wheat	___	___	_____

Agricultural Practices Knowledge Scores were computed as the number of the 14 practices that the respondent was aware of at the time of interviewing in 1964.

B. Colombia

No measure of this concept was available in the Colombia data.

III. Education

A. India

How many years did you go to school?

Education was indexed as the number of years of education that the head of the household received.

B. Colombia

How many years did you go to school?

Education was indexed as the number of years of education that the head of the household received.

IV. Extension Contact

A. India

How many times have you talked with the extension agent (V. L. W., B. D. O., A. D. O. [Agriculture], A. D. O. [Cooperative], Vet Doctor, or Pradhan).

Total contact with change agents is computed as the number of contacts with each of six extension agents in the past year.

B. Colombia

Have you talked to people from the Extension Service in the past 12 months?

V. Size of Farm

A. India

How many bighas do you farm in total(one acre = 1.75 pucca bighas)?

B. Colombia

What is the total area of your farm in fanegadas (one acre = fabegadas)?

VI. Agricultural Innovativeness

A. India

When did you first adopt?

1. Line sowing
2. Japanese method of paddy cultivation?
3. Green manure?
4. Amonium sulphate?
5. Modern plough?
6. Insectiside?
7. Cultivator?
8. Improved paddy seed?
9. New varieties of potatoes?
10. Inoculation for animal diseases?

11. Sadabar?

12. Superphosphate?

13. Rat poison?

14. Punjab 591 improved variety of wheat?

Agricultural Practices Adoption Index is computed by awarding a higher score for relatively earlier adoption of each innovation.

B. Colombia

Do you use:

1. Insecticide?

2. Potato fungicide?

3. Chemical fertilizer?

4. Weed-killer 2,4-D?

5. Hand-sprayer?

6. Feed concentrate?

7. Chicken vaccination?

8. Chicken varieties?

9. Black leg vaccination for cattle?

10. Vaccination for hoof and mouth disease?

11. Soil disinfection?

12. Use of tractor?

13. A garden?

14. New wheat variety?

15. New potato variety?

16. New barley variety?

Agricultural Innovativeness Scores (the total of sten scores for each practice that applies, divided by the number of practices that apply

to the respondent.)

VII. Social Participation

A. India

Are you, or any of your household, members of these organizations?

1. Cooperative society
2. Panchayat
3. Caste panchayat
4. Youth club
5. Night school
6. Radio forum
7. Women's club
8. Defense force
9. Kirtan Mandal
10. Others

The social participation scores were computed on the basis of one point for membership on each organization and two points for being an officer.

B. Colombia

Are you associated with...?

1. The cooperative?
2. Do you buy from the cooperative?
3. Community Development Council?
4. Night Worship?
5. Christ Brotherhood?
6. Chicken Farmers' Committee?

8. Is your wife a member of the Housewives Club?

9. Are your children members of 4-S clubs?

10. Any others?

The social participation scores were computed by awarding two points for each membership in an organization, and one point was awarded for purchasing at the cooperative.

VIII. Social Status

A. India

The social status of each respondent was rated by the interviewer at the conclusion of the interview, judging from the general appearance and cleanliness of the house.

0 - Very low

1 - Low

2 - Medium

3 - High

4 - Very high

B. Colombia

Social status of each respondent was rated by interviewer at the conclusion of the interview, judging from the general appearance and cleanliness of the house.

IX. Aspiration

A. India

How many years of education do you wish your son could receive?

The educational aspiration scores were computed as the number of years of education desired.

What occupation do you desire for your son?

The occupational aspiration scores were computed as the combined level of occupational prestige desired.

B. Colombia

How many years of school would you like your oldest son to complete?

The educational aspiration scores were computed as the number of years of education desired.

What occupation would you like for your eldest son?

The occupational aspiration scores were computed as the level of occupational prestige desired.

X. Opinion Leadership

A. India

To whom do you go for advice or information about farm practices?

Opinion leadership scores were computed as the percentage of choices received by the respondent divided by the total number of choices made in the respondent's village.

B. Colombia

Opinion leadership rating of respondents by judges in Facatativa. Rating varied from 0 (very low) to 9 (very high).

XI. Mass Media Exposure

A. India

How many times a week do you listen to radio?

How many times do you read a newspaper [which in India, includes magazines also] per week?

How many times do others read newspapers [and magazines] to you per week?

How many films have you seen in the past year?

How many CD Block Films (or those shown by any other agency in the village) have you seen last year?

Mass media exposure scores are computed as the total sum of exposures to the five mass media.

B. Colombia

1. How many times per week do you listen to radio?
2. How many times per week do you read newspapers?
3. How many times per month do you read magazines?
4. How many times per year do you watch movies?
5. How many times per year do you watch T.V.?

Mass media exposure scores for radio, newspapers, magazines, movies, and T.V. were computed separately for each community so that each respondent's score is relative to others in his own community.

XII. Empathy

A. India

1. If you were president of the panchayat [village council] here in your village, what would you do in the next year?

   0 - Did not take role or no answer

   1 - Simply takes role

   2 - Takes role and suggests appropriate action

2. If you were M.L.A. District Collector, what would you do to provide roads in every village?

3. If you were the Minister of Agriculture, what would you do to encourage higher food production in India?

Empathy scores are computed by adding the actual sum of scores, which vary from 0 to 6, of each respondent.

B. Colombia

1. If you were the president of the Community Development Council, what would you do next year?

2. If you were the agricultural extension agent, what would you do to improve the price of potatoes in this community?

3. If you were Mayor of Facatativa, what would you do to obtain a better highway for the community?

4. If you were the Minister of Education, what would you do for rural schools in Colombia?

5. If you were the President of the Republic, what would you do to fight against violence?

Empathy scores were computed by adding the actual sum of scores which ranged from 0 to 9 (9 included 9 or 10).

APPENDIX B

Table 1. Intercorrelations of Variables in India.

Table 2. Intercorrelations of Variables in Colombia.

APPENDIX B

Table 1. Intercorrelations of variables in India* (N = 702).

Variables	Variables 1	2	3	4	5	6	7	8	9	10	11	12
1. Cooperative adoption	-	.336	.186	.140	.77	.357	.637	.294	.224	.285	.153	.284
2. Agricultural knowledgeability		-	.294	.216	.398	.688	.366	.422	.289	.259	.338	.410
3. Education			-	.146	.334	.279	.186	.430	.358	.164	.339	.286
4. Extension contact				-	.126	.164	.145	.177	.125	.081	.147	.162
5. Size of farm					-	.369	.276	.467	.276	.179	.206	.237
6. Agricultural innovativeness						-	.270	.465	.302	.311	.301	.370
7. Social participation							-	.359	.270	.297	.245	.299
8. Social status								-	.474	.264	.349	.392
9. Aspiration									-	.150	.321	.344
10. Opinion leadership										-	.169	.205
11. Mass media exposure											-	.339
12. Empathy												-

*Point biserial correlation (r_{pb}) was the statistic used to compute these interrelations. An r_{pb} of .074 is required for significance at the five per cent level.

APPENDIX B

Table 2. Intercorrelations of variables in Colombia* (N = 103).

Variables	Variables 1	2	3	4	5	6	7	8	9	10	11	12
1. Cooperative adoption	-	-.070	.385	-.129	-.159	.511	-.006	-.116	.051	.159	.145	.211
2. Education		-	-.024	.441	.191	-.206	-.198	.553	.275	.114	.626	.276
3. Extension contact			-	-.079	.336	.255	-.141	.021	.043	.329	.138	.269
4. Size of farm				-	.108	-.288	-.371	.334	-.022	.108	.293	.101
5. Agricultural innovativeness					-	.329	-.330	.114	.019	-.143	.364	.106
6. Social participation						-	.205	-.164	-.051	.191	-.036	.075
7. Social status							-	-.070	.025	-.143	-.184	-.016
8. Aspiration for education of son								-	.514	.019	.468	.369
9. Aspiration for occupation of son									-	.106	.349	.319
10. Opinion leadership										-	-.184	.336
11. Mass media exposure											-	.435
12. Empathy												-

*Point biserial correlation (r_{bis}) was the statistic used to compute these intercorrelations. An r_{pb} of .164 is required for significance at the five per cent level.