THE DIFFUSION OF FARM PRACTICES AS A FUNCTION OF THE ROLE OF ELEVATOR OPERATORS (FEED AND GRAIN DEALERS) AS REFERENCE OTHERS TO THEIR FARMER CLIENTELE

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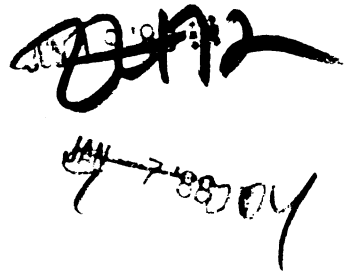

ABSTRACT

THE DIFFUSION OF FARM PRACTICES AS A FUNCTION OF THE ROLE OF ELEVATOR OPERATORS (FEED AND GRAIN DEALERS) AS REFERENCE OTHERS TO THEIR FARMER CLIENTELE

by John G. Elliott

The basic purpose of this study was: (1) to examine the interrelationship between a part of the economic system as represented by operators of grain elevators and the diffusion system as represented by county extension agents and similar persons, and (2) to relate this to the reference others of farmers.

The approach of the study was to look at the linkages between the farmers and elevator operators. Specifically, since economic systems involve the production and distribution of goods and services, elevator operators and farmers are "relevant others" to each other. "Relevant others" are reciprocal others in the performance of a role and constitute others who must be taken into account, e.g., the manager for the employees, the manager for the owner. However, there are "others" to which an actor may assign a particular importance. "Significant others" need not be relevant others and therefore there is much flexibility in what "significant others" the actor take into account. "Reference other" designates others an actor directs attention to in order to acquire some guidelines for behavior and the situation need not be reciprocal. Also "significant others" are reference others but "reference others" need not be "significant others."

This study investigated the "reference others" of elevator operators by determining the degree of relationship with a system outside of their own economic system, i.e., the diffusion system.

A total of 5 elevator operators were found with high contact with representatives of the College of Agriculture of M.S.U. and 3 operators with no such contact. A list of 25 names of regular dairy customers was obtained from each elevator operator. Then 20 of these customers of each operator were interviewed by telephone.

Completed interviews were obtained from 97 customers of operators with close contact with the diffusion system and 57 customers of operators with no or limited contact.

The first hypothesis asserted that elevator operators with close contact with the diffusion system will more frequently be named as reference others by their farmer clientele than will be the elevator operators without this contact. Supported, $p < .001$. There was the unanticipated result that 5 of the clients of operators without association with the college named another elevator operator other than the one who provided his name in listing regular customers. None of the 97 customers of operators with close associations gave an operator other than the one expected.

The second hypothesis stated that the proportion of farmers who are higher adopters and customers of operators with contact with the diffusion system will be greater than the proportion of farmers who are higher adopters and customers of operators without the contact with the diffusion system. Supported, $p < .05$.

Furthermore the mean adoption level declines as level of agent contact declines from frequent to no contact for both sets of customers. However, among the customers who have no contact with county agents, it was found that customers of operators with contact with the diffusion system had higher mean adoption scores than customers of operators without the contact with diffusion system ($p < .005$).

It was concluded that elevator operators with contact with the diffusion system do play an important role in the diffusion of farm practices. Furthermore, the Extension Service could better utilize this outlet in the development of extension programs.

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Lastly, my love and appreciation to my wife, Gale. The many evenings and weekends she had to spend alone while I was concerned more with my role as a student than those as a husband or father. By rights, she should be co-author but perhaps would appreciate more that this study is dedicated to her.

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INTRODUCTION

Traditional research on diffusion has focused primarily on variables such as (1) innovativeness, defined as adoption over time and from which the categories of innovators, early majority, late majority, and laggards were derived; (2) the stages of adoption comprising the awareness, interest, evaluation, trial and adoption categories; and (3) opinion leadership.

One area of diffusion research that has not been investigated is the involvement of various extant social systems in the diffusion process. This study directs attention to the diffusion role of a small segment of the total economic system: the operators of grain elevators as diffusers of innovations to farmers.

Economic Systems as Instruments for Diffusion

Today a number of groups besides Agricultural Extension play roles in the diffusion of new information and ideas to farmers. For example, commercial firms are becoming more involved each year in extension kinds of activities. Farm implement companies, for one, have fieldmen and publish their own farm journals. Co-operatives and marketing boards are playing similar roles. Bankers, implement dealers and operators of grain elevators all can be sources of information relevant to farmers.

If people and organizations like these are to operate as diffusion agents, they must have contact with the sources of ideas and also with the potential adopters.

Elevator Operators and Diffusion

The study of the North Central Committee[1] on how farmers adopt ideas relegates dealers and salesmen to a low rank as sources of information and influence on the adoption of practices. However, Beal and Rogers indicated that commercial sources of information may be more important at the information or trial stage for innovators, early adoptors and laggards.[2] The present study separates elevators from other commercial sources in an investigation of elevator operators and their customers.

As will be shown in Chapter I, the elevator operator is in a particularly good position to be influential in the farm community. Elevator operators sell a wide line of goods including feed grains, seeds, hardware, fertilizers, spray materials and specialty sidelines. This variety of wares suggests that a farmer can come into contact with these businessmen on a number of occasions. More significantly, a long-lasting relationship with mutual trust, respect, and information exchange about many topics can grow out of this reoccurring interaction.

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[1] Adopters of New Farm Ideas - Characteristics and Communications Behavior, North Central Regional Extension Publication No. 13, October 1961.

[2] George M. Beal and Everett M. Rogers, The Adoption of Two Farm Practices in a Central Iowa Community, Special Report No. 26, Agricultural and Home Economics Experiment Station, Iowa State University of Science and Technology (Ames, Iowa, June 1960), p. 18.

The Dependent Variable

The thesis approaches diffusion with a modification of reference group theory. Though this theory has been used previously, it has not been employed in the context developed for this thesis. Reference groups suggest a way of determining how a person relates himself to others and how he fits into the social system. However a major problem is the lack of research done on reference groups or reference others or significant others. In much of the discussion of reference groups, the concept has been used in an after-the-fact approach to explain certain behaviors. Newcomb's Bennington study is a good example.[3] It was a re-write of data after reference groups became "the thing to write about". In the agricultural diffusion studies, the concepts of "others" and "reference groups" have had limited use. This study will use the concept of "reference other" for reasons developed in the rationale.

Objectives of Study

Because of the lack of empirical research on reference groups and reference others, this study is largely exploratory. Adoptive behavior and reference others can be looked at in at least two ways: (1) who are the reference others of high or low adopters? and (2) to what extent do reference others influence farmers to adopt?

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[3]Theodore M. Newcomb, "Attitude Development as a Function of Reference Groups," Readings in Social Psychology, eds. Eleanor E. Maccoby, Theodore M. Newcomb, Eugene L. Hartley, (3rd. ed., New York: Holt, Rinehart and Winston, Inc., 1958), pp. 265-275.

The study, then, has these objectives: (1) to examine the interrelationship between a part of the economic system as represented by elevator operators and the diffusion system as represented by county extension agents and similar persons, and (2) to relate this to the reference others of farmers. Specifically, are elevator operators who are closely interdependent with the sources of information about innovations more often named as reference others by their clients (farmers) than are elevator operators who are not closely interdependent with the sources of information about innovations.

CHAPTER I

THEORETIC RATIONALE

The plan of this chapter is to sketch the evolution of the concept "reference group"; to point out the controversies which exist in connection with its use and to arrive at what seems a more workable concept of "Reference Other." First is a discussion of the social systems in which reference others are contained--in this case, the systems which comprise the agricultural community, including the linkage of relevant systems and the diffusion of ideas between them. These systems will be drawn together to outline the communication network as a series of role relationships. Finally the specific rationale is developed around the concept of reference others within a social system. Hypotheses are then derived from this review.

Reference Groups, Significant Others and Reference Others

Since Hyman coined the term "reference group," the concept has grown to have a number of meanings which are not always consistent. Hyman was working with the "frame of reference" concept and divided "frame of reference"into two categories--"reference groups" and "reference individuals."[4] Exponents of the frame of

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[4]Herbert H. Hyman, "The Psychology of Status," Archives of Psychology, 38, 1942, p. 15.

reference approach are Sherif,[5] Shibutani[6] and Newcomb.[7]

Since then, "reference group" is often used interchangeably to mean either a group, or individuals.

Kuhn questioned whether, "reference group"

> ...refers to a normative or to an evaluative function; whether it must point to groups, to categories or both; whether it may best refer to relationships...., or whether we may better use it to refer to derivative orientations....[8]

Newcomb defined frame of reference as what

> ...is commonly used to indicate the kind of ground which actually influences the way in which perception is structured.[9]

This means that anything, whether it be an object, a person or a group, can be a frame of reference for a person or group. Newcomb also claimed that social norms can function as frames of reference and that a reference group's norms can influence the behavior and attitudes of a person.[10] Sherif said:

> The concept reference group arose from the necessity of ascertaining precisely the groups which provide the main anchorages for experience and behavior. In fact

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[5]M. Sherif, C. W. Sherif, An Outline of Social Psychology (Rev. ed., New York: Harper and Brothers, 1956).

[6]T. Shibutani, Society and Personality: An Interactionist's Approach to Social Psychology (Englewood Cliffs: Prentice Hall, 1961), p. 257.

[7]Theodore M. Newcomb, Social Psychology (New York: Holt, Rinehart and Winston, 1950), p. 94.

[8]Manford Kuhn, "Major Trends in Symbolic Interaction Theory," Sociological Quarterly, Vol. 5, 401, 1964, p. 69.

[9]Op. Cit., p. 94.

[10]Ibid., pp. 224-225.

> the first use of the concept was directly linked to experimental work concerning frames of reference and anchorages.[11]

However, Hyman noted that in his original research over half the subjects gave evidence that they used particular other individuals as frames of reference. He later advocated more use of the term "reference individuals."[12] Couch and Murray[13] pointed out that while the term "reference groups" has been widely used, it constitutes a violation of the traditional sociological meaning of the term "group" and proposed the use of the term "significant others."[14] The term "significant other(s)" designates the other(s) that an individual takes into account in organizing his behavior.

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[11]Sherif, op. cit., p. 175. Reference groups can be categorized into normative, situational and comparative functions. However Herbert H. Hyman, "Reflections on Reference Groups," Public Opinion Quarterly, Vol. 24, Fall 1960, p. 384, said that "reference groups must be determined by empirical means, not imputed arbitrarily." The latter reflects most of the writings on reference groups. Ralph Turner, "Role-Taking, Role-Standpoint and Reference Group Behavior," American Journal of Sociology, Vol. 61, 1956, pointed out a way in which reference groups could be measured empirically.

Included in the bibliography are sources of information of reference groups not cited in the development of the rationale.

[12]Herbert L. Hyman, op. cit., 1960, p. 390. (Footnote 11)

[13]Carl J. Couch and John S. Murray, "Significant Others and Evaluation," Sociometry, Vol. 27, No. 4, December 1964, p. 503.

[14]Sullivan first used the term "Significant Other" in discussing the socialization process. He spoke of others becoming significant in the development of personality by providing satisfactions and security. Harry Stack Sullivan, Conceptions of Modern Psychiatry (Washington, D.C.: W. A. White Psychiatric Foundation, 1940), pp. 19-22.

Couch, Miller and Murray made a distinction between "relevant other" and "significant other." "Relevant others" refer to reciprocal others within the context of role performance, e.g., the professor for the student, the wife for the husband, the clerk for the manager. "Significant others" need not be the same as the "relevant others;" "significant others" are those others that are most important to the actor.[15]

The terminological confusion may be clarified by the following definitions:

Relevant other(s): are reciprocal others in the performance of a role and constitute others who must be taken into account in order to maintain the role, e.g., the manager for the employees, the manager for the owner.

Significant other(s): designates the other(s) that an actor takes into account and whose evaluation of the actor is of most concern to him, i.e., the actor is concerned about the evaluation elicited from the other.

Reference other(s): the other(s) an actor directs attention to in order to acquire some guidelines for behavior, e.g., the rookie baseball player adopting the mannerisms of an established star. In contrast to relevant others this relationship need not be reciprocal.

An "other" may have one, two or all three of these relationships for an actor. For example, a professor of a class may be only a relevant other to a student or the professor may also be a reference other and a significant other for the student.

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[15]Carl J. Couch, Mason E. Miller, John S. Murray, "Specialist and Agent: Men in the Middle," Journal of Cooperative Extension, Vol. 2, No. 1, 1964, p. 38.

The Social Systems and Linkages--Definitions

Loomis and Beegle defined a social system as:

> A co-operative social structure consisting of two or more individuals who interact with each other at a higher rate than with non-members when the system is in operation.[16]

In other words, within the context of "others" that has been developed, a social system is a recurring pattern of roles. The social system is important to the actor because of the manner in which the system is organized. The way the actor accepts and perceives that system (the "others") will affect his behavior.

A plausible way of looking at dealers, salesmen, farmers or anybody who is related to the agricultural community is to look at them as belonging to a common social system.

Before proceeding to the description of the social systems of farmers, elevator operators and diffusion agents, two important terms must be defined.

Interdependency: this term refers to the linkage of an economic system with a non-economic system such as the formal diffusion system. Even though the diffusion system falls within the economic system, for the purposes of this thesis, it is regarded as an information agency and not an economic agency, i.e., money making. When two such systems are interdependent, the linkage is such that they become articulated to function as a unit.

Intradependency: this term refers to the linkage of two parts of a system, i.e., farms and elevators are both economic units.

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[16]Charles P. Loomis, J. Allan Beegle, Rural Sociology: The Strategy of Change (Englewood Cliffs: Prentice Hall, Inc., 1957), p. 469.

The linkage then is inherent in that they are dependent on each other.

Communication that exists in interdependent systems would be called communication between systems, while communication in intra-dependent systems would be called within systems (see Figure 1 for graphic illustration of these concepts).

Economic Systems and Their Intradependency

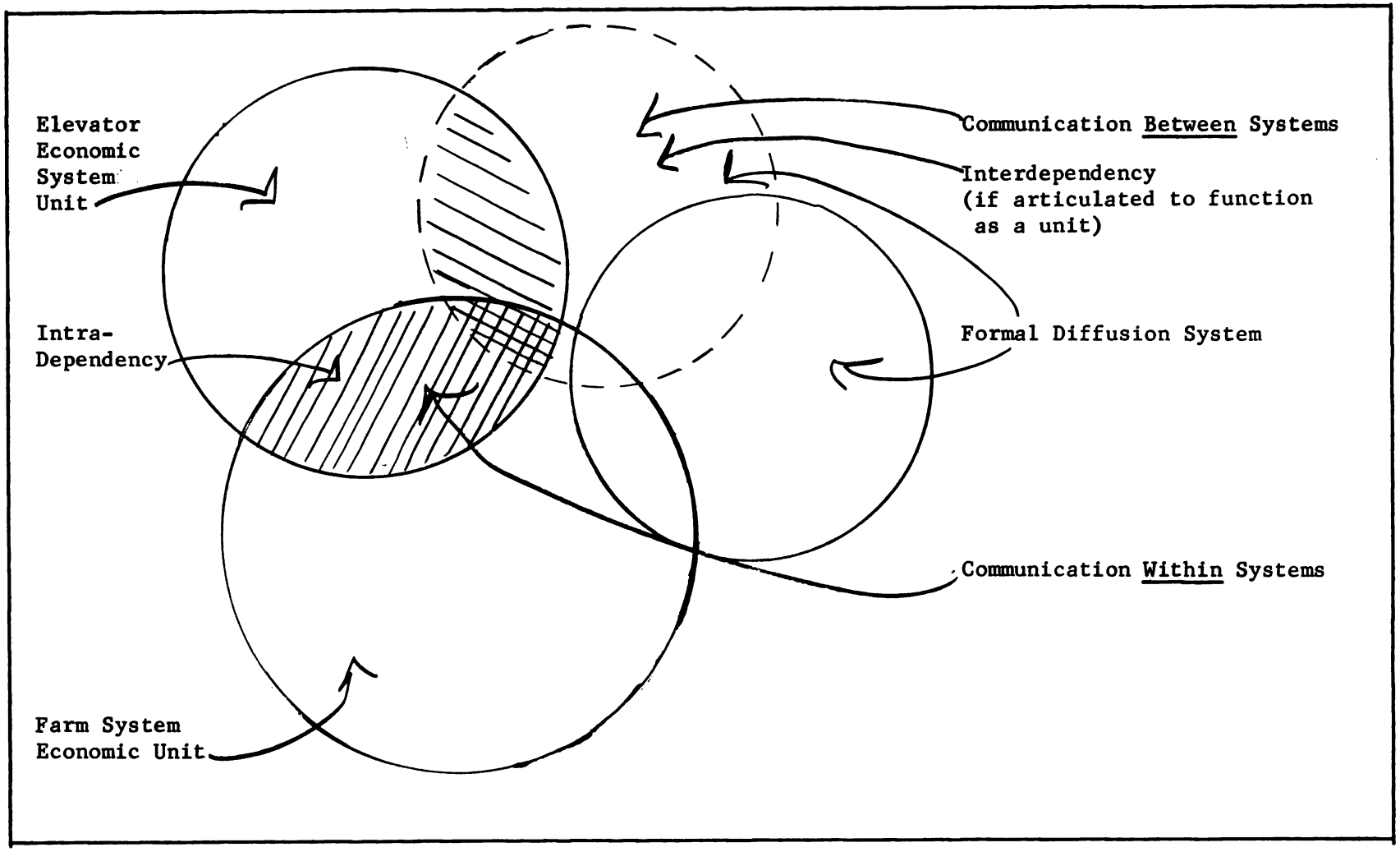
Systems have different functions to perform. The primary function of an economic system is the production and distribution of goods and services. Elevator operators can be regarded as part of an economic system. They buy and sell products. Farmers are also a part of this system; they, too, are involved in the production of goods and services. To produce their goods, they have to purchase from a number of sources such as the elevator operator, the implement dealer, banker, public utilities, etc. In addition to purchases, they sell their products. So, like elevators, the farm is a buying and selling concern.

Elevator operators and farmers have some linkage to one another economically and to the total economic system. No nation, and equally no system can be self-sufficient. For any system to function, raw materials are required from widely scattered sources. This raw material (i.e., resources) can be in the form of physical material (feed, hardware, etc.) and in the form of information pertaining to these products. The fact that all systems are linked to some degree means that an event in one has some consequences for all others.

To illustrate, elevator operators buy goods from a number of sources. Many of the goods come from farmers either directly or indirectly. For example, the operator may buy barley from a farmer

Figure 1

Diagrammatic Illustration of the Intra and Interdependency of Social Systems.



directly or from a company representative. He also buys hardware, drugs, feedstuffs, seeds and specialty lines. Therefore an elevator operator does come into contact with a number of people from within and outside his system.

Some elevator operators however, may go further than just the processes of buying and selling. An elevator operator may provide little additional service. For example, he may sell feed to farmers but may know nothing about feeding it. He may sell fertilizer to farmers but know very little about applying it. He may sell sprays and again know little about applying them. To get information of this kind they could use the services of county agents, specialists from the agricultural college, or product salesmen.

An elevator operator, then, can be part of a two-way flow of information--a receiver and an imparter of information. He also may take part in the diffusion within and between systems.

It has been argued that the economic system (elevators, farms) is intradependent and linked in differing degrees. Furthermore, the communicative network holds the systems together and through communication there develops the sharing, or exchanging, of goods and information. Thus there is not only an intradependency within the economic systems but also interdependency between the economic and other systems, e.g., the diffusion system.

The Diffusion System and Interdependency with Economic System

Diffusion is the process by which a new idea spreads. Elevator operators, farmers and the various contacts of each are all part of a diffusion system. In this sense, the system may be regarded as a

communication network with interacting members, any of whom may be a source or receiver of information at any given time. These members include elevator operators, various suppliers and factory representatives to the operators, county agents, universities, mass media and farmers.

However for this thesis it is not the purpose to look at all these potential sources, but only two:

1. The flow of information from universities or their representatives to the elevator operators.

2. The flow of information from the elevator operators to their farmer clientele.

Functionally, an elevator operator is not there primarily as a giver of information but to run a business, keep books, inventory, keep up with competition and credit policies, deal with employees, etc.

Due to the interdependency and flexibility of systems, information can and does flow between systems. Furthermore, the spread of new ideas takes place within a series of relationships among humans. Role performance is based on information that one receives in performing a role. More specifically,

> The enactment of any role involves having some communicative contact with others. Attention to what others a role performer communicates with, the ideas communicated and the nature of the relationship with others will more adequately account for how a role is performed and modified than will attention to prior socialization or "personality" factors.[17]

In looking at elevator operators and farmers and their intradependency, it does not follow that a high degree of diffusion must

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[17]Carl J. Couch, Communication and Change (I.E.P.D. Publication No. 9, Michigan State University, East Lansing, April 1964), p. 2.

occur. An operator can be affable, have good policies toward clientele, but not necessarily diffuse any information about farm practices in the process. In other words it can be a straight sales transaction without any diffusion taking place. The fact that proximity exists does not mean that a large degree of interaction exists.

The relationship between these two categories of people is demonstrated in the closeness of continued business relationships. The elevator operator markets a wide variety of goods and services, fulfilling the needs of the farmer throughout the year. Cattle feeds are purchased regularly by farmers and fertilizers and sprays are purchased yearly. In addition, many elevator operators sell additional lines from fuel to specialties.

The reason the main focus of this study is on elevator operators and not on other farm business enterprises can be readily illustrated. Research studies indicate that elevator operators are often named as people talked to most frequently about farming. Nearly every farmer has some contact with at least one elevator operator--for purchasing or selling products. Farmers are more likely to establish a stable and enduring relationship with an elevator operator than with any other farm-related businessman. A variety of businessmen may be contacted in regard to many other farm purchases. For example, when a purchase involves a capital investment such as a new tractor, there would be much more shopping around. Thus relationship with other business outlets is not likely to be the same as that with the elevator operator.[18]

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[18]Carl J. Couch, Are Elevator Operators "Influentials?," (I.E.P.D. Publication No. 6, Michigan State University, East Lansing, Michigan), p. 2.

Thus far the social systems have been described to indicate that within the agricultural economic system elevator operators are relevant others for farmers. This series of role relationships provides a setting in which elevator operators may serve as reference others for farmers.[19]

Farmers and elevator operators both have also to take into account other roles within and between the various systems they contact and are a part of. Those who play reciprocal roles that they must take into account constitute their relevant others. Some specific relevant others must be taken into account such as customers, suppliers, bankers, employees. There is flexibility in what "other" the elevator operators take into account. A particular role is part of a role-set.[20] Some

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[19]Role will be defined as "a set of behaviors which are expected of everyone in a particular position regardless who he is," Theodore M. Newcomb, Social Psychology (New York: Holt, Rinehart and Winston, 1950), p. 329. There are two kinds of role expectations: rights and obligations. "Rights are role expectations in which the actor of the role anticipates certain performances from the actor of the reciprocal role; e.g., the child's right to be protected by his mother. Obligations (or duties) are role expectations in which the actor of a role anticipates certain performances directed toward the actor of the reciprocal role; e.g., the mother's obligation to provide protection for the child. A person cannot enact a role for which he lacks the necessary role expectations. These must be acquired through experience," Theodore R. Sarbin, "Role Theory," Gardner Lindsey, ed., Handbook of Social Psychology, Vol. 1 (Reading, Mass.: Addison-Westley Publishing Company, Inc., 1954), p. 226.

[20]Role-set means "...that complement of role relationships--in which persons are involved by virtue of occupying a particular social status," Robert K. Merton, "Role-Set: Problems in Sociological Theory," The British Journal of Sociology, Vol. 8, 1957, p. 110. The role-set as used in this thesis represents the relevant others. The concept of flexibility of roles means elevator operators do not have to go beyond their role set. However linkage of elevator operators to the diffusion system means they have gone beyond their general role set and look towards these people (in the diffusion system) as significant others or reference others. It should be made clear, however, that the role-set--the relevant others--can also be significant others or reference others.

of these relevant others may or may not be "reference others." In other words elevator operators may assign a high importance to farmers, to wholesalers (economic system) and/or to the representatives of the College of Agriculture (the diffusion system). Here is where the flexibility of what others are chosen is apparent and decisive--whether or not a dependency exists between the economic and diffusion systems in having or not having reference others and/or significant others in the latter system.

Individuals who have fewer ideas and perspectives are those who participate in limited communicative behavior.[21] Thus, if the elevator operator goes beyond his role-set, he will tend to have more ideas, perspectives, act in a greater communicative capacity, and be in a position to function in the diffusion of ideas to farmers.

Specifically it follows that elevator operators, who have as reference others people who are part of a diffusion system, will have more new ideas to transmit to farmers. Consequently, it follows that elevator operators whose reference others are the sources of innovations are more likely to be used as sources of information by farmers who have an economic relationship with those operators.

Summary and Hypotheses

Systems depend on other systems to operate and in functioning, communication takes place. But communication does not necessarily lead to diffusion or adoption of an innovation. Communication need not be high within a role relationship (i.e., a straight sales

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[21]Couch, Communication and Change, op. cit., p. 4.

transaction, an extreme case of this would be a vending machine) and the diffusion of information or ideas does not necessarily occur between parties to such a role relationship.

The rationale was further developed by looking at the communication network through role relationships. For every role there will be relevant others. Each actor however has reference others which may or may not be in accord with the relevant others.

It is now possible to terminate by defining two classes of elevator operators.

1. An elevator operator who is a diffusion agent; he has high communicative contact with representatives of the diffusion system. Elevator operators who are diffusion agents are interacting with and/or selecting representatives of the diffusion system as reference others (now called diffusion elevator operators).

2. An elevator operator who is not a diffusion agent; he has low communicative contact with the diffusion system and will not be selecting representatives as reference others from that system (now called non-diffusion elevator operators).

Unlike the diffusion agents, elevator operators without reference others in the diffusion system will not be as aware of the existing innovations. Knowledge of innovations is important to commercial farmers. They are likely to go back again and again to sources of news about innovations. Consequently farmer clientele are more likely to name an elevator operator as reference other if he (the elevator operator) has contact with the diffusion system. The first hypothesis can now be derived.

Hypothesis 1

Elevator operators who are diffusion agents will more frequently be named as reference others by their farmer clientele than will be the non-diffusion elevator operators.

Due to the greater awareness on the part of the diffusion elevator operator, their customers are more apt to use them as sources of information. This does not imply that diffusion elevator operators would be the only source; but, because of their higher communicative behavior with the diffusion system, it is likely that their clientele would also have more exposure to the diffusion system. Therefore clientele of diffusion elevator operators are more plausibly to be higher adopters of farm practices and have more contact with the diffusion system (agricultural extension agent) than clientele of the non-diffusion elevator operators. Therefore, from this higher communicative behavior on the part of farmers with the diffusion elevator operators and greater exposure to the diffusion system, two more hypotheses can be derived.

Hypothesis 2

The proportion of farmers who are higher adopters and clients of diffusion elevator operators will be greater than the proportion of farmers who are higher adopters and clients of non-diffusion elevator operators.

Hypothesis 3

Contact with county extension agents will be higher proportionally for farmer clientele of diffusion elevator operators than for the farmer clientele of the non-diffusion elevator operators.

General assumption. This study is based on the assumption that differences exist in the communicative behavior of elevator operators. This assumption is based on the questionnaire completed by elevator operators and evaluations of three judges.

CHAPTER II

RESEARCH SETTING AND PROCEDURES

The data were collected in areas south of the Muskegon and Bay City in Michigan as most of the farming in the State is done in this area. The farmers and elevator operators samples were located in the following counties: Kent, Barry, Allegan, Ottawa, Muskegon, Ionia, Clinton, Eaton, Gratiot, Washtenaw.

The Sample of Elevator Operators

In March 1964, a meeting of Michigan elevator operators was held at the Kellogg Center. An instrument was designed and submitted to them to determine diffusion or non-diffusion operators.

Their instrument was designed primarily to measure the degree of contact with representatives of the College of Agriculture of Michigan State University. The complete questionnaire is given in Appendix D.

The questionnaire was filled out on a voluntary basis. Twenty-two were completed, with only one refusal. All of these elevator operators had contact with representatives of the College of Agriculture. This was the main criterion for differentiating between diffusion and non-diffusion elevator operators. Therefore other means had to be used to search out the non-diffusion elevator operators. Five diffusion elevator operators were chosen from the 22 questionnaires on the following basis:

1. elevator operators with the highest contact with representatives of Michigan State University.

2. the elevators had to be located in dairy areas.

3. the elevators had to be as close as possible geographically to reduce costs of study.

4. the elevator operators were evaluated by a panel of three judges. Two were members of the M.S.U. staff and the third judge was a salesman who called on the elevator operators regularly.

The non-diffusion elevator operators were chosen on the following basis.

1. Located in dairy areas and geographically in the same areas as the diffusion elevator operators.

2. Lack of contact with representatives of M.S.U. This latter point was determined by the same panel of judges used for selecting the diffusion elevator operators. However, because of the lack of contact that these operators had with M.S.U. it was more difficult to choose them. From a list submitted to the judges of possible non-diffusion elevator operators, several operators were eliminated.

The potential non-diffusion elevator operators were visited personally and the same instrument given to them to determine whether or not they fell in the non-diffusion category.

The non-diffusion operators were not as cooperative as the diffusion operators. Two refused outright to fill out the questionnaire and submit names of their customers, and were suspicious or hostile toward M.S.U. One other non-diffusion elevator operator was not present on two successive visits. Other elevator operators visited were either found to be in the diffusion category or the elevator had been sold recently to another concern.

A final check was made by asking the appropriate County Extension Director to indicate if the elevator operators in question had any contact with them. All elevator operators were matched by their descriptions in the Official Directory of the Michigan Feed and Grain Association, which also includes non-members. They were matched on the lines of goods sold, but primarily on fertilizer, feeds and seeds.

A total of ten elevator operators were to have been chosen--five diffusion operators and five non-diffusion operators. The final number was five diffusion operators and three non-diffusion operators. A summary of the answers to the questionnaire is given in Appendix D.

The Sample of Farmers

Each elevator operator was asked to submit twenty-five names of his regular dairy customers. It was hoped that 20 interviews (an arbitrary number) would be completed from each list. The sample of farmers had the following in common: (1) dairy farmers who were (2) regular customers of the elevator operators in question ("regular" as perceived by the elevator operator). A letter was mailed to every farmer (Appendix D). The purpose was to introduce the interviewer[20] and inform the subjects that the interview would be done by telephone.

Because country telephones are usually party lines, the letter "paved the way" for the interview. The letters were mailed so that a minimum of time (one or two days) had elapsed between receiving the letter and the telephone call.

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[20]The interviewer was also the thesis author.

Arrangements were made with county extension directors to use the office telephone for interviewing. The samples were grouped in such a way that all calls were completed from four county agents' offices. This reduced the cost, since many long distance calls were eliminated.

All farmers' names were used. But when twenty calls were completed for any one set, the remaining calls were not completed. However 20 calls were not completed in some cases due to no telephone listings, refusals or other reasons (see Appendix D for these details). The total number of completed interviews was 97 for the diffusion elevator operators and 57 for the non-diffusion elevator operators. The interview averaged approximately ten minutes.

The instrument for farmers had three parts. The first covered demographic data: age, education, number of tillable acres and number of milking cows. The second part was the reference other item, the question being "Who are the people you talk to most frequently about farming?". The farmers were not asked specifically to give names but rather to make reference to a specific person and his occupation. Whenever the elevator operator was named, however, the farmer was queried to determine which operator he was referring to.

The third part of the instrument was the adoption scale. The farm practices were chosen on the basis of potentially being used in any of the areas of the study. In other words, none of the practices was such that it would have been restricted to one area. The practices were decided upon by discussion with Specialists in the College of Agriculture in fields such as soils, entomology, dairy, veterinary

medicine, field crops. From these discussions, a list of 15 practices was compiled. The criterion by which these practices were chosen was primarily done on the ease in which the question could be worded--particularly for telephone interviews. From the original list of 15 practices, 7 were finally chosen.[21] The complete questionnaire is given in Appendix D.[22]

Farmer Contact with Extension Agents

In addition to the questionnaire, the lists of farmers interviewed were sent to the county extension directors. They were asked to rate these farmers on their professional contact with them as frequent, occasional, rare or none. The lists were not identified with the elevator operators.[23]

Analysis of Design

Most analyses were computed using a nominal level of measurement. The statistic chi-square was used at a confidence level of .05.

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[21]Four of these practices corresponded to an adoption scale used in a Ph.D. dissertation. These were the practices of minimum tillage, early planting of corn, top dressing hay stands, dairy grain feeding. The wording was changed slightly because of the interviews being conducted by telephone. Juan F. Jamias, The Effects of Belief System Styles on the Communication and Adoption of Farm Practices, Ph.D. dissertation, Michigan State University, 1964.

[22]One practice was dropped from the adoption scale after eight interviews were completed. This is question 17 of the instrument--the use of a milk quality control test. Some farmers were doing it on their own while the dairy company did it for others if they were on grade A milk.

[23]In the event that some of these farmers resided near the county border the lists were also sent to the county extension director for the adjoining county. This exhausted all the farmers' names and possible contact with the extension agent.

All computations utilized the following formula which requires expected cell values of five or greater:[24]

$$X^2 = \sum\sum \frac{f^2}{F} - N$$

In cases where expected values met the criterion, the results were regarded as the final significance test. In cases where the criterion was not met, the results from the computation were regarded as preliminary for screening purposes only. In the latter cases where screening computation produced a chi-square significant at .05, the test was recomputed using a correction for continuity.[25]

The following formula was used for calculating the chi-square when the correlation for continuity was necessary (Yates correction).[26]

$$X_c^2 = \sum \frac{(O-E-.5)^2}{E}$$

The t-test was used to compute mean adoption scores. The assumption was based on unknown variances but presumed equal.[27]

$$S^2 = \frac{\sum X_1^2 + \sum X_2^2 - \left(\frac{(\sum X_1)^2}{N_1} - \frac{(\sum X_2)^2}{N_2}\right)}{N_1 + N_2 - 2}$$

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{S^2 \frac{N_1 + N_2}{N_1 N_2}}}$$

Level of confidence was .05, 2 tailed test.

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[24]Helen M. Walker, Joseph Lev, Statistical Inference (New York: Holt, Rinehart and Winston, 1953), p. 97.

[25]Ibid., pp. 105-107.

[26]Allen L. Edwards, Statistical Methods for the Behavioral Sciences (New York: Holt, Rinehart and Winston, 1962), p. 383.

[27]Walker and Lev, op. cit., pp. 155-156.

CHAPTER III

ANALYSES OF DATA

This chapter has two parts. Part one is mainly a descriptive analysis of the demographic data, the hypotheses and relationships between reference others, county agent contact and adoption level. Part two discusses the results in further detail and attempts to draw inferences and implications, and to synthesize toward a coherent whole.

PART I STATISTICAL ANALYSES

Demographic Data

The ages, education and size of herd of clients of diffusion elevator operators are significantly different from those of the non-diffusion elevator operators ($p<.05$). There is no significant difference between the size of farms owned by farmers of the two samples.

There is no need for a detailed discussion of these variables, because when they are held constant and cross tabulated with adoption score and reference others no relevant trends appeared. (The data are shown in Tables 1 through 7, Appendix A.)

Testing Hypotheses

Hypothesis 1. Elevator operators who are diffusion agents will more frequently be named as reference others by their farmer clientele than will be the non-diffusion elevator operators.

Table 1 shows the frequencies of farmers' most salient non-farm reference other.[28] The data support the hypothesis that customers of diffusion elevator operators named the elevator operator more frequently than customers of the non-diffusion elevator operators named their elevator operators ($p < .001$).

Table 1. Most salient non-farm reference other named by clients of diffusion and non-diffusion elevator operators.

	Reference Others						
Clients of:	Neighbor, Relative or No One[1]		El. Op.		Other		Total
D. El. Op.*	12	(18.90)***	34	(24.56)	51	(53.54)	97
N. D. El. Op.**	18	(11.10)	5	(14.44)	34	(31.46)	57
Total	30		39		85		154

$X^2 = 16.9$ $p < .001$

[1]Neighbor, relative or no one means that no one else was named.

*D. El. Op. designates diffusion elevator operators.

**N. D. El. Op. designates non-diffusion elevator operators.

***Brackets designate expected values. This applies for all tables.

If Table 1 is expanded as shown in Table 2, further differences can be seen. Clients of diffusion elevator operators list neighbors

[28]Saliency: If a neighbor or relative was the farmer's first mention, the next mention was taken as the reference other. The purpose of this was simply to remove farmers from their immediate surroundings, since the question on the instrument was open ended.

as reference others less frequently than do the clients of non-diffusion elevator operators. They also name miscellaneous others[29] less frequently than the clients of non-diffusion elevator operators. Of particular significance is that clients of the diffusion elevator operators did not name any elevator operator other than the expected ones, whereas this was not the case with clients of non-diffusion elevator operators. The county agent was named in higher proportion for the clients of diffusion elevator operators than for the clients of non-diffusion elevator operators.

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[29]Miscellaneous others include bankers, implement dealers, salesmen, people outside of the agricultural industry, etc.

Table 2. Most salient non-farm reference other. (Table 1 expanded.)

	Neighbor or Nobody	El. Op. Expected[1]	El. Op. Not Expected[2]	Co. Agent	Other	Total
D. El. Op.	12 (18.90)	34 (24.56)	0 (3.15)	25 (22.68)	26 (27.71)	97
N. D. El. Op.	18 (11.10)	5 (14.44)	5 (1.85)	11 (13.32)	18 (16.29)	57
Total	30	39	5	36	44	154

X^2_y (Yates correction) = 21.2, $p < .001$, significant.

[1]Elevator operator who submitted the farmer's name.

[2]Elevator operators other than those who submitted the farmer's names.

Hypothesis 2. The proportion of farmers who are higher adopters and customers of diffusion elevator operators will be greater than the proportion of farmers who are higher adopters and customers of non-diffusion elevator operators.

The hypothesis is supported. Table 3 shows this relationship. The X^2 is significant at the $<.01$ level of confidence.

Table 3. Distribution of farmers' adoption scores for clients of diffusion and non-diffusion elevator operators.[1]

	Adoption Score				
Clients of:	Low 0-1-2-3		High 4-5-6		Total
D. El. Op.	46	(53.54)	51	(43.46)	97
N. D. El. Op.	39	(31.46)	18	(25.54)	57
Total	85		69		154

X^2_y (Yates correction) = 6.39 p. $<.01>.005$ significant.

[1]Mean adoption scores and a t-test were computed for the two samples. Mean adoption score for farmers of diffusion elevator operators was 3.57 and for those of non-diffusion elevator operators was 2.27. The computed t=5.08 and is significant at the .001 level of confidence.

Hypothesis 3. Contact with county extension agent will be higher proportionally for clientele of diffusion elevator operators than for the farmer clientele of the non-diffusion elevator operators.

The hypothesis is supported. Table 4 shows the relationship between county agent contact for the two samples of clients. The statistic chi-square is significant at the .05 level, and the distribution indicates that clients of diffusion elevator operators have more frequent contact with the county agent than farmers of non-diffusion elevator operators.

Table 4. County agent contact (as perceived by the county agent) for clients of diffusion and non-diffusion elevator operators.

Clients of:	Frequent	Occasional	Rare or None	Total
D. El. Op.	43 (35.90)	22 (23.94)	32 (37.16)	97
N. D. El. Op.	14 (21.10)	16 (14.06)	27 (21.84)	57
Total	57	38	59	154

$X^2 = 6.15$ p. $< .05$.

The proportion of farmers who have rare or no contact with the county agent and are clients of diffusion elevator operators is less than the proportion of farmers with rare or no contact with county agent and clients of non-diffusion elevator operators. For clients with occasional contact, the reverse is true--a higher proportion of clients of non-diffusion elevator operators have more occasional contact with county agent than clients of the diffusion elevator operators.

Reference Others and Adoption Level

Farmers of non-diffusion elevator operators, as shown in Table 5, select neighbors and miscellaneous others as reference others more frequently than do farmers of diffusion elevator operators. Neighbors and others account for 63 percent of the farmers' responses for the clients of non-diffusion elevator operators; whereas for clients of diffusion elevator operators, neighbors and others account for 38 percent. Farmers with low adoption scores who name neighbors or others account for 12 percent of the clients of diffusion and 35 percent of

the clients of non-diffusion elevator operators.[30] Furthermore these farmers with low adoption scores account for 22 percent of the clients of diffusion elevator operators versus 40 percent of the non-diffusion elevator operator clients.

Elevator operators and county agents were named as reference others by 60 percent of the clients of diffusion elevator operators. Some 50 percent of these clients had medium and high adoption scores. For the clients of non-diffusion elevator operators, elevator operators (expected) and county agents are named as reference others by only 28 percent of the farmers, of whom only 24 percent had medium or high adoption scores.

Diffusion elevator operators were named as reference others by 35 percent of those they named as their clients. County agents were named by 25 percent of the clients of the diffusion elevator operator. Non-diffusion elevator operators, (expected) however, were named by only 8 percent of their clients. The county agent was named by 19 percent of the clients of the non-diffusion elevator operators.

In general, clients of diffusion elevator operators who name the elevator operator as reference others have medium adoption scores. Those who name the county agent have high adoption scores. There are more clients of non-diffusion elevator operators who name neighbors and miscellaneous others as reference others and have lower adoption scores than clients of diffusion elevator operators.

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[30]Low adoption represents scores of 0-1-2. Medium adoption represents scores of 3-4 and high adoption represents scores of 5-6.

Table 5. Farmers' adoption score in relation to their reference others.[1]

	DIFFUSION ELEVATOR OPERATORS							
	Adoption Score							
Reference Others:	Low 0-1-2		Medium 3-4		High 5-6		Total	
Neighbor or Nobody	4	4.12%	6	6.18%	2	2.06%	12	12.36%
El. Op. Expected	9	9.27%	20	20.60%	5	5.15%	34	35.02%
El. Op. Not Expected	0		0		0		0	
Co Agent	1	1.03%	8	8.24%	16	16.48%	25	25.75%
Other	8	8.24%	11	11.33%	7	7.21%	26	26.08%
Totals	22	22.66%	45	46.35%	30	30.90%	97	99.91%

[1]Complete table in Appendix A, Table 8.

Table 5 continued. Farmers' adoption score in relation to their reference others.[1]

	NON-DIFFUSION ELEVATOR OPERATORS							
	Adoption Score							
Reference Others:	Low 0-1-2		Medium 3-4		High 5-6		Total	
Neighbor or Nobody	11	19.29%	6	10.52%	1	1.75%	18	31.56%
El. Op. Expected	1	1.75%	3	5.26%	1	1.75%	5	8.76%
El. Op. Not Expected	1	1.75%	3	5.26%	1	1.75%	5	8.76%
Co Agent	1	1.75%	7	12.27%	3	5.26%	12	19.28%
Other	9	15.78%	5	8.77%	4	7.01%	18	31.56%
Totals	23	40.32%	24	42.08%	10	17.52%	57	99.92%

[1]Complete table in Appendix A, Table 8.

Table 6. Relationship between county agent contact (as perceived by the county agent) and mean adoption scores for clients of diffusion and non-diffusion elevator operators.

Clients of:	Agent Contact: Frequent	Occasional	Rare	None	Total
Diffusion El. Op.	Mean = 3.95 N = 43 A	Mean = 3.68 N = 22 B	Mean = 2.69 N = 13 C	Mean = 3.21 N = 19 D	N = 97
Non-Diffusion El. Op.	Mean = 4.00 N = 14 E	Mean = 3.19 N = 16 F	Mean = 2.07 N = 15 G	Mean = 1.67 N = 12 H	N = 57

	Cell Comparisons	d. f.	Critical Value of t, p.05, 2 tailed	Computed t
Comparisons among clients of diffusion elevator operators.	A and C	54	2.02	2.84*
	A and D	60	2.00	1.89
Comparisons among clients of non-diffusion elevator operators.	E and F	28	2.05	1.65
	E and G	29	2.04	3.94*
	E and H	24	2.06	4.35*
Comparisons between clients of diffusion and non-diffusion elevator operators.	A and E	55	2.02	.113
	C and G	26	2.06	1.18
	D and H	29	2.04	2.80*

*Significant at .05 level 2 tailed test.

Agent Contact and Adoption Level

Several t-tests were computed comparing mean adoption scores with different degrees of contact with the county agent. For clients of diffusion elevator operators, comparisons were made between: frequent and rare contact, and frequent and no contact with the county agent. For clients of non-diffusion elevator operators mean adoption scores were compared between: frequent and occasional contact, frequent and rare contact, and frequent and no contact with county agent.

Comparisons also were made between mean adoption scores for clients of diffusion and non-diffusion elevator operators for three categories of agent contact: frequent, rare and none.

The data indicate: the more agent contact, the higher the adoption score. No significant differences in mean adoption scores were found for clients of either class of elevator operator, who had frequent, occasional or rare contact with the county agent.

However, for clients who have no contact with the county agent, the mean adoption score of clients of diffusion elevator operators is significantly higher ($t=2.8$ $p<.01$) than the mean score of clients of non-diffusion elevator operators.

A further investigation of the clients of elevator operators who have no contact with the county agent reveals several things when compared on reference others and adoption score. Table 7 represents the clients who have no contact with the county agent. Of the clients of diffusion elevator operators, nine out of nineteen name the elevator operator as a reference other and are in the high adoption range. On the other hand, of the twelve clients of non-diffusion elevator operators whom the county agent said he had no contact, six named neighbors

neighbors or no one as reference others and three named miscellaneous others. These nine clients also tended to be low in adoption score. Specifically, if a farmer has no contact with the county agent but is a customer of a diffusion elevator operator, he is more likely to name the elevator operator as a reference other and have a high adoption score; whereas a farmer with no contact with the county agent but a customer of a non-diffusion elevator operator is more likely to name neighbors or miscellaneous others as reference others and have a low adoption score.

Table 7. Relationship between adoption score and reference others for farmers who have no contact with county agent (as perceived by the county agent).

	Adoption Score															
	Low						Medium				High				Totals	
	0		1		2		3		4		5		6			
	D.*	N.D.**	D.	N.D.	D.	N.D.	D.	N.D.	D.	N.D.	D.	N.D.	D.	N.D.	D.	N.D.
Neighbor or Nobody		3	1	1		1		1			1				2	6
El. Op. Expected		1			3		3	1	1		1		1		9	2
El. Op. Not Expected	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Co Agent										1	2				2	1
Others			1	1	2	1	2		1	1					6	3
Totals	-	4	2	2	5	2	5	2	2	2	4	-	1	-	19	12

* D - signifies clients of diffusion elevator operators.

** ND- signifies clients of non-diffusion elevator operators.

PART II DISCUSSION AND IMPLICATIONS

The data seem to indicate two populations of elevator operators and two populations of farmers.

All the hypotheses tested were found to be statistically significant. Hypothesis One stated that diffusion elevator operators would be named more as reference others by their clients than would the non-diffusion elevator operators by their clients. Furthermore the diffusion elevator operator was named more frequently by his clients than was any other reference other. Consequently the general hypothesis has support--that elevator operators who have interdependency with the diffusion system will more frequently be diffusion agents than those without interdependency.

Clientele of non-diffusion elevator operators, on the other hand, leaned more towards neighbors and miscellaneous others as reference others.

Of particular interest, farmers of this population (non-diffusion elevator operators) named elevator operators other than those who claimed them as clients (elevator operators not expected). The elevator operators "not expected" were found upon investigation to be diffusion elevator operators, i.e., have contact with the diffusion system. The point should be emphasized that farmers were claimed as regular customers by non-diffusion elevator operators, yet these customers were naming other elevator operators as reference others. This leads to the assumption that non-diffusion elevator operators are losing money in that their so-called "regular customers" are giving some of their business to other elevators. This clientele would seem to "shop around" more for their purchases and information. This

statement is based on the number of times the elevator operator not expected was named and also the number of times he was named as a source of information for the six practices on the adoption scale (discussion of information sources for the adoption scale is not included in the text--see Appendix B and C for total responses). What may attract farmers to non-diffusion elevator operators may be the attractive prices on certain goods and thus the farmer is retained as a "regular customer". Evidence for this is given by a study done by Ecker.[31]

In Ecker's study, elevators were classified as high profit and low profit. Economic variables such as inventories, advertising, major services (e.g., services that involve a cost such as feed grinding) were not significantly different for the two groups. However margins of profit were different. High profit elevators had greater mark-ups on goods than low profit elevators. The suggestion was made that these differences in margins of profit could be attributable to minor services (e.g., services that have no cost attached such as information and good management policy toward clientele) and that high profit elevator operators gave this type of service while low profit elevators did not. If the assumption can be made that low profit elevators are like, or are non-diffusion elevator operators, it would seem that their customers when it

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[31]Harold J. Ecker, A Management Audit of Forty-Four County Elevators in Western Ohio, Ph.D. dissertation, Ohio State University, 1959.

comes to information may seek it elsewhere.[32] This may explain why some farmers name unexpected elevator operators.

Hypothesis two tested whether differences existed in adoption score for the two samples of farmers. Hypothesis three tested whether there were differences in county agent contact for the two samples of farmers. Both were supported. However, high adopters more frequently name the county agent as a reference other while the diffusion elevator operator is named as a reference other more frequently by farmers in the middle adoption range. It is worth noting the number of clients in both samples, but particularly those of non-diffusion elevator operators, who have low adoption scores and have named neighbors or miscellaneous others as reference others. This seems further evidence supporting the general hypothesis that the greater the interdependence with the diffusion system the more likely the elevator operator will be a diffusion agent.

For farmers who have contact with the county agent there is no difference between the two samples in mean adoption score. However the data do indicate that the more contact with extension the higher the adoption score.

In mean adoption score, there is a marked difference between the two samples for farmers who have no contact with extension. Specifically, clients of diffusion elevator operators have mean adoption scores significantly higher than those of clients of non-diffusion

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[32]This statement is based on the relationships of the findings of this study and that of Ecker's study (op. cit.). Also this possible relationship between low profit and non-diffusion elevator operators was discussed with Dr. H. Ecker who concurred that the relationship is a likely one.

elevator operators. Furthermore, the clients of diffusion elevator operators who had no contact with extension named the diffusion elevator operator as a reference other; whereas the clients of non-diffusion elevator operators who had no contact with extension named neighbors, miscellaneous others or no one as reference others. Generally, the data would support that diffusion elevator operators have the greatest impact on farmers who have no contact with the county agent and who are in the middle adoption range.

However there is a "core" of clients of elevator operators who have little or no contact with the county agent and name neither the county agent nor the elevator operator as reference others. These farmers could be classified as that group of farmers that extension never reaches. Some of these farmers are regular customers of the diffusion elevator operators and as such extension could reach them by better utilizing the abilities of the elevator operator. However, these diffusion elevator operators may not be completely aware of their potential role as diffusion agents. This would mean cultivating an awareness on their part either through the Feed and Grain Dealers Association, through the training of students as elevator operators in University Short Courses specifically designed for elevator operators, (or through other media.) The five diffusion elevator operators in this study have a total clientele of 2400 farmers. This number alone is sufficient evidence that their influence could be great. In regards to non-diffusion elevator operators, the fact that some of their "regular customers" were naming another diffusion elevator operator would imply that these customers can be reached also.

Another area of research that would have practical implications would be to look at the elevator operators who become marginal or

even bankrupt each year. A hypothesis would be that marginality is positively correlated to their non-interdependency with the diffusion system. In other words elevator operators who become marginal or fail would be non-diffusion elevator operators.

Summary and Conclusions

There is evidence to indicate that some elevator operators can and do play an important role in the diffusion of agricultural practices in the farming community. Also the data suggest that interdependency with the Extension diffusion system is important to the economic success of elevators. The main findings of the study are:

1. Elevator operators who are diffusion operators were more frequently named as reference others by their farmer clientele than were the non-diffusion elevator operators.

2. Clients of diffusion elevator operators tended to have higher adoption scores than farmer clientele of non-diffusion elevator operators.

3. Clients of diffusion elevator operators had higher county agent contact than farmer clientele of non-diffusion elevator operators.

4. A few clients of non-diffusion elevator operators named other elevator operators as reference others. In other words these clients who are supposedly regular customers of the non-diffusion operators did not name the non-diffusion operator as a reference other but rather other operators (referred to in text as elevator operator not expected). These elevator operators not expected were found upon investigation to be diffusion elevator operators.

5. Farmer clientele of non-diffusion elevator operators more frequently name neighbors and miscellaneous others as reference others than do the farmer clientele of diffusion elevator operators.

6. Farmers who name neighbors, nobody or miscellaneous others as reference others have low adoption scores.

7. Farmers who name the diffusion elevator operator as a reference other tend to be in the middle adoption range.

8. Farmers who name the county agent as a reference other tend to be in the higher adoption range.

9. Among the farmers who have no contact with county agents, those farmers who are clients of diffusion elevator operators have higher adoption scores than those clients of non-diffusion elevator operators.

10. Among the farmers who have no contact with the county agents, those farmers who are clients of diffusion elevator operators name the diffusion elevator operator as reference others while clients of non-diffusion elevator operators name neighbors or miscellaneous others as reference others.

11. The more contact farmers have with the county agent, the higher their adoption scores.

12. Farmers who have no contact with the county agent and are clients of diffusion elevator operators and name those elevator operators as reference others are more likely to have high adoption scores than the clients of the non-diffusion elevator operators that have no contact with the county agent.

13. For clients of diffusion and non-diffusion elevator operators who have close contact with the county agent there is no difference in adoption level.

Implications

A number of practical implications seem apparent in this study. They are practical in the sense that the role of a change agent can be made more efficient in a direct application of results of this study. Also the suggested research could eventually lead to greater understanding of the diffusion process in agricultural communities.

1. Some of the farmers with no contact with extension can be reached through the elevator operators who have developed an interdependency with extension and other sources of agricultural innovations.

2. Extension, in its over-all programming, might consider working with elevator operators to diffuse new farm practices.

3. If diffusion elevator operators were made more fully aware of their potential role as change agents, they could play a larger part than they now do.

4. If somehow non-diffusion elevator operators were made aware that clients look to elevator operators as sources of information, some might become effective instruments of diffusion.

5. Within this study there is an economic implication for non-diffusion elevator operators. Specifically, it is unlikely that the farmers who name the elevator operator not expected use these operators solely for information and never make any purchases. Therefore there is an economic loss on the part of the non-diffusion elevator operator simply because he may not, or cannot, be a source of information.

The present study did no follow up on the elevator operator not expected to determine whether this operator classified that farmer

who had named him as one of his regular customers. This approach may be another area for further investigation and could be expanded to determine what farmers and why farmers go to certain people for information or purchases.

6. A further study in depth is needed on elevator operators to test more elaborately their part in the diffusion process in relationship to economic success.

7. In light of the findings that reference others included a variety of names in different agricultural businesses, a study of the relative importance of several of these in the diffusion process would be worthwhile.

APPENDIX A

STATISTICAL DATA

Table 1A. Age composition for clients of diffusion and non-diffusion elevator operators.

Clientele of:	Under 34	35-54-	55+	Total
D. El. Op.**	9 (13.86)*	70 (64.25)	18 (18.89)	97
N. D. El. Op.***	13 (8.14)	32 (37.75)	12 (11.11)	57
Total	22	102	30	154

Value of X^2 at .05 level for 2 df. = 6.0.
Computed X^2 = 6.1, $p < .05$, significant

* Bracketed numbers refer to expected values. (Standard designation for all tables in this study.)

** D. El. Op. abbreviation for diffusion elevator operator.

*** N. D. El. Op. abbreviation for non-diffusion elevator operator.

Table 2A. Education composition for clients of diffusion and non-diffusion elevator operators.

Clientele of:	Grade 8 or Less	Some High School	High School Graduate	Some College or College Graduate	Total
D. El. Op.	38 (38.42)	20 (14.49)	28 (34.64)	11 (9.45)	97
N. D. El. Op.	23 (22.58)	3 (8.51)	27 (20.36)	4 (5.55)	57
Total	61	23	55	15	154

Value of X^2 at .05 level for 3 df. = 7.8.
Computed X^2 = 9.6, p. < .02 > .025, significant.

Table 3A. The number of milking cows for clients of diffusion and non-diffusion elevator operators.

Clientele of:	Less than 29	30-49	50-99	Total
D. El. Op.	43 (51.02)	39 (33.38)	15 (12.60)	97
N. D. El. Op.	38 (29.98)	14 (19.62)	5 (7.40)	57
Total	81	53	20	154

Value X^2 at .05 level, 2 df. = 6.0.
Computed X^2 = 7.2, $p < .05 > .025$, significant.

Table 4A. Size of holding in tillable acres for clients of diffusion and non-diffusion elevator operators.

Clientele of:	139 acres or less	140-219 acres	220 or more acres	Total
D. El. Op.	38 (41.57)	33 (31.49)	26 (23.94)	97
N. D. El. Op.	28 (24.43)	17 (18.51)	12 (14.06)	57
Total	66	50	38	154

Value of X^2 at .05 level for 2 df. -6.0.
Computed X^2 = 1.5, $p > .25$, not significant.

Table 5A. Relationship between adoption score and reference others when education is held constant.

	Grade 8 or Less						Some High School					
	Adoption Score						Adoption Score					
	0-1-2		3-4		5-6		0-1-2		3-4		5-6	
	D.	N.D.	D.	N.D.	D.	N.D.	D.	N.D.	D.	N.D.	D.	N.D.
El. Op.	4	1	9	1	2	1	3	-	3	-	1	-
Co Agent	-	1	2	1	4	-	-	-	2	1	3	-
Others	7	12	7	5	3	1	4	2	3	-	1	-
Total	11	14	18	7	9	2	7	2	8	1	5	-
%	11.32	25.56	18.55	12.28	9.27	3.50	7.21	3.50	8.24	1.75	5.15	0

Table 5A continued.

	High School Graduate						Some College or College Grad					
	Adoption Score						Adoption Score					
	0-1-2		3-4		5-6		0-1-2		3-4		5-6	
	D.	N.D.	D.	N.D.	D.	N.D.	D.	N.D.	D.	N.D.	D.	N.D.
El. Op.	1	-	7	-	2	-	1	-	1	2	-	-
Co Agent	1	-	3	4	5	3	-	-	1	1	4	-
Others	1	7	5	9	3	4	-	-	2	1	2	-
Total	3	7	15	13	10	7	1	-	4	4	6	-
%	3.09	12.28	15.46	22.80	10.30	12.28	1.03	0	4.12	7.01	6.18	0

Table 6A. Relationship between adoption score and reference others when age is held constant.

	Age Under 34						Age 35-54					
	Adoption Score						Adoption Score					
	0-1-2		3-4		5-6		0-1-2		3-4		5-6	
	D.	N.D.	D.	N.D.	D.	N.D.	D.	N.D.	D.	N.D.	D.	N.D.
El. Op.	-	-	2	1	1	-	7	-	16	2	4	1
Co Agent	-	-	-	2	3	1	1	-	4	4	10	1
Others	-	4	1	3	2	2	10	14	13	7	5	3
Total	-	4	3	6	6	3	18	14	33	13	19	5
%	0	7.01	3.09	10.52	6.18	5.26	18.55	24.56	34.02	22.80	19.58	8.77

Table 6A continued.

	Age 55+					
	Adoption Score					
	0-1-2		3-4		5-6	
	D.	N.D.	D.	N.D.	D.	N.D.
El. Op.	2	1	2	-	-	-
Co Agent	-	1	4	1	3	1
Others	2	3	3	4	2	1
Total	4	5	9	5	5	2
%	4.12	8.77	9.27	8.77	5.15	3.50

Table 7A. Relationship between adoption score and reference others when size of dairy herd is held constant.

Herd Size	Less Than 29						30-49					
	Adoption Score						Adoption Score					
	0-1-2		3-4		5-6		0-1-2		3-4		5-6	
	D.	N.D.	D.	N.D.	D.	N.D.	D.	N.D.	D.	N.D.	D.	N.D.
El. Op.	7	1	7	2	1	1	1	-	11	1	3	-
Co Agent	-	-	3	3	5	1	1	1	3	3	6	2
Others	8	15	10	11	2	4	3	3	7	3	4	1
Totals	15	16	20	16	8	6	5	4	21	7	13	3
%	15.43	28.07	20.61	28.07	8.24	10.52	5.15	7.01	21.64	12.28	13.40	5.26

Table 7A continued.

Herd Size	50-99					
	Adoption Score					
	0-1-2		3-4		5-6	
	D.	N.D.	D.	N.D.	D.	N.D.
El. Op.	1	-	2	-	1	-
Co Agent	-	-	2	1	5	-
Others	1	2	-	1	3	1
Totals	2	2	4	2	9	1
%	2.06	3.50	4.12	3.50	9.27	1.72

Table 8A. Relationship between adoption score and reference others for clients of diffusion and non-diffusion elevator operators.

	Adoption Score							
	0		1		2		3	
Reference Other:	D. El. Op.*	N.D. El. Op.**	D.	N.D.	D.	N.D.	D.	N.D.
Neighbor or Nobody	--	4 7.%	2 2.06%	3 5.26%	2 2.06%	4 7.%	3 3.09%	5 8.77%
El. Op. Expected	--	1 1.75%	5 5.15%	--	4 4.12%	--	10 10.3%	2 3.5%
El. Op. Not Expected	--	--	--	--	--	1 1.75%	0 0	3 5.26%
Co Agent	1 1.03%	--	--	1 1.75%	--	--	4 4.12%	4 7%
Other	-- --	2 3.5%	2 2.06%	2 3.5%	6 6.18%	5 8.77%	7 7.21%	2 3.5%
Total	1 1.03%	7 12.28%	9 9.27%	6 10.52%	12 12.36%	10 17.54%	24 24.72%	16 28.06%

* D. El. Op. = Clients of diffusion elevator operator.
** N. D. El. Op. = Clients of non-diffusion elevator operator.

Table 8A continued.

	Adoption Score							
	4		5		6		Totals	
	D.	N.D.	D.	N.D.	D.	N.D.	D.	N.D.
Neighbor or Nobody	3 3.09%	1 1.75%	2 2.06%	-- --	-- --	1 1.75%	12 12.37%	18 31.57%
El. Op. Expected	10 10.3%	1 1.75%	4 4.12%	1 1.7%	1 1.03%	-- --	34 35.05%	5 8.77%
El. Op. Not Expected	3 --	-- --	-- --	-- --	-- --	1 1.75%	0 0	5 8.77%
Co Agent	4 4.12%	3 5.26%	11 11.33%	3 5.26%	5 5.15%	-- --	25 25.77%	11 19.3%
Other	4 4.12%	3 5.26%	5 5.15%	3 5.26%	2 2.06%	1 1.75%	26 26.8%	18 31.57%
Total	21 21.63%	8 14.03%	22 22.66%	8 14.03%	8 8.24%	2 3.5%	97 100%	57 100%

* D. El. Op. = Clients of diffusion elevator operator.
** N. D. El. Op. = Clients of non-diffusion elevator operator.

Table 9A. County agent contact in relation to reference others for clients of diffusion and non-diffusion elevator operators.

Agent Contact / El. Op. / Ref. Others	Frequent		Occasional		Rare		None		Totals	
	D.*	N.D.*	D.	N.D.	D.	N.D.	D.	N.D.	D.	N.D.
Neighbor or Nobody	3 3.09%	2 3.5%	4 4.12%	6 10.5%	3 3.09%	4 7.0%	2 2.06%	6 10.52%	12	18
El. Op. Expected	14 14.42%	1 1.75%	3 3.09%	2 3.5%	8 8.24%	-- --	9 9.27%	2 3.5%	34	5
El. Op. Not Expected	-- --	1 1.75%	-- --	1 1.75%	-- --	3 5.2%	-- --	-- --	0	5
Co Agent	14 14.42%	7 12.27%	8 8.24%	-- --	1 1.03%	3 5.2%	2 2.06%	1 1.75%	25	11
Others	12 12.36%	3 5.26%	7 7.21%	7 12.27%	1 1.03%	5 8.77%	6 6.18%	3 5.2%	26	18
Totals	43 44.29%	14 24.36	22 22.66%	16 27.84	13 13.39%	15 26.10	19 19.57%	12 20.88	97 100%	57 100%

* D. = Clients of diffusion elevator operator.
** N.D. = Clients of non-diffusion elevator operator.

Table 10A. County agent contact in relation to adoption score for clients of diffusion and non-diffusion elevator operators.

Agent Contact / El. Op. / Adoption Score	Frequent		Occasional		Rare		None		Totals	
	D.*	N.D.**	D.	N.D.	D.	N.D.	D.	N.D.	D.	N.D.
0	--	--	1	1	--	2	--	4	1	7
	--	--	1.03%	1.75%	--	3.%	--	7.0%	--	--
1	3	--	--	--	4	4	2	2	9	6
	3.09%	--	--	--	4.12%	7.0%	2.06%	3.5%	--	--
2	2	--	4	5	1	3	5	2	12	10
	2.06%	--	4.12%	8.77%	1.03%	5.26%	5.15%	3.5%	--	--
3	13	7	3	3	3	4	5	2	24	16
	13.39%	12.28%	3.09%	5.26%	3.09%	7.0%	5.15%	3.5%	--	--
4	8	2	6	3	5	1	2	2	21	8
	8.24%	3.5%	6.18%	5.26%	5.15%	1.75%	2.06%	3.5%	--	--
5	10	3	8	4	--	1	4	--	22	8
	10.3%	5.26%	8.24%	7.0%	--	1.75%	4.12%	--	--	--

Table 10A continued.

Agent Contact / El. Op. / Adoption Score	Frequent		Occasional		Rare		None		Totals	
	D.*	N.D.**	D.	N.D.	D.	N.D.	D.	N.D.	D.	N.D.
6	7 7.21%	2 3.5%	-- --	-- --	-- --	-- --	1 1.03%	-- --	8 --	2 --
Totals	43	14	22	16	13	15	19	12	97	57

*D.= Clients of diffusion elevator operators.
**N.D.= Clients of non-diffusion elevator operators.

Table 11A. Relationship between county agent contact (as perceived by county agent) and adoption score for clients of diffusion elevator operators.

	ADOPTION SCORE			
	0-1-2	3-4	5-6	Totals
Frequent Contact	5 (9.75)	21 (19.95)	17 (13.30)	43
Occasional Contact	5 (4.99)	9 (10.21)	8 (6.80)	22
Rare or No Contact	12 (7.26)	15 (14.84)	5 (9.90)	32
Totals	22	45	30	97

Value X^2 at .05 level for 4 df. 9.5.
Computed X^2 = 7.25 p .10, not significant.

Table 12A. Relationship between county agent contact (as perceived by county agent) and adoption score for clients of non-diffusion elevator operators.[1]

	ADOPTION SCORE			
	0-1-2	3-4	5-6	Total
Frequent Contact	0 (5.65)	9 (5.89)	5 (2.46)	14
Occasional Contact	6 (6.45)	6 (6.74)	4 (2.81)	16
Rare or No Contact	17 (10.90)	9 (11.37)	1 (4.73)	27
Totals	23	24	10	57

Value X^2 at .05 level for 4 df. 9.5.
Computed X^2 with Yates correction 13.13 p <.02> .01, significant.

[1]Because three cells have expected frequencies of less than five the table was collapsed into six cells. The resulting X^2 with Yates correction was 12.7, 2 df., p. .005 .001. For illustration however the nine celled is presented instead.

Table 13A. Relationship between county agent contact (as perceived by county agent) and adoption score for clients of diffusion and non-diffusion elevator operators.

	ADOPTION SCORE						
	0-1-2		3-4		5-6		Totals
Frequent Contact	5	(16.66)	30	(25.54)	22	(14.80)	57
Occasional Contact	11	(11.10)	15	(17.02)	12	(9.88)	38
Rare or No Contact	29	(17.24)	24	(26.44)	6	(15.32)	59
Totals	45		69		40		154

Value X^2 at .05 level for 4 df. 9.5.
Computed X^2 = 27.0 p .001, significant.

Table 14A. Relationship between county agent contact and farmers that have rare or no contact with county agent (as perceived by the county agent) for customers of diffusion and non-diffusion elevator operators.[1]

	0-1-2	3-4	5-6	Totals
D. El. Op.	12 (15.73)	15 (13.02)	5 (3.25)	32
N. D. El. Op.	17 (13.27)	9 (10.98)	1 (2.75)	27
Totals	29	24	6	59

Value X^2 at .05 level for 2 df. 6.0.
Computed X^2 = 4.6 p..1, not significant.

[1]Collapsing the table to eliminate the small expected frequencies does not alter the computed chi square, in each case there is no significance.

Table 15A. Relationship between adoption score and reference others for clients of diffusion and non-diffusion elevator operators and who (clients) have rare or no contact with county agent (as perceived by the county agent).

	ADOPTION SCORE							
	0-1-2		3-4		5-6		Totals	
Reference Others:	Clients of: D.	N.D.	D.	N.D.	D.	N.D.	D.	N.D.
Neighbors or No One	3	8	1	2	1	--	5	10
El. Op. Expected	6	1	9	1	2	--	17	2
El. Op. Not Expected	--	1	--	2	--	--	0	3
Co Agent	--	1	1	2	2	1	3	4
Other	3	6	4	2	--	--	7	8
Totals	12	17	15	9	5	1	32	27
							59	

Table 16A. Relationship between adoption score and reference others for clients of diffusion and non-diffusion elevator operators and who (clients) have frequent or occasional contact with the county agent (as perceived by the county agent).

	ADOPTION SCORE							
	0-1-2		3-4		5-6		Totals	
Reference Others:	Clients of: D.	N.D.	D.	N.D.	D.	N.D.	D.	N.D.
Neighbors or No One	1	3	5	4	1	1	7	8
El. Op. Expected	3	--	11	2	3	1	17	3
El. Op. Not Expected	--	--	--	1	--	1	--	2
Co Agent	1	--	7	5	14	2	22	7
Other	5	3	7	3	7	4	19	10
Totals	10	6	30	15	25	9	65	30
							95	

APPENDIX B

ADOPTION SCALE

Adoption Scale and Sources of Information

In this section discussion will attend briefly to differences in adoption for two practices on the adoption scale for clients of diffusion and non-diffusion elevator operators. The reason for choosing these two is that the elevator operators rank very high as sources of information.

The scores on varieties of alfalfa and supplemental nitrogen fertilizer (question 18 and 19 of the adoption scale, data in Tables 5, 6) show that more clients of diffusion elevator operators adopted the practices than the clients of non-diffusion elevator operators (X^2, $p < .05$).

The diffusion elevator operators ranked high as sources of information for practices adopted and as potential source of information for practices not adopted (Tables 7, 8).[1] Sources, or potential sources, of information for clients of non-diffusion elevator operators tend to be evenly distributed over all sources. However, the elevator operator not expected is consistently named more frequently as a source of information for clients of non-diffusion elevator operators than as a source of information for clients of diffusion elevator operators.

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[1]Chi squares were not computed for the sources of information because it would have meant computing with too many expected cell values less than five, rendering X^2 values doubtful. Also, collapsing the data more than is presented in the table would have meant a loss of information. The questionnaire asked where farmers got their information for the adopted practices. If the farmer had not adopted the practice, he was asked where he would go if he ever wanted more information on it--this is referred to as the potential source of information.

A further observation is the frequency with which adopters gave mass media as their only source of information for adopted practices. However, farmers who had not adopted these practices did not name mass media as their sole source of potential information. The fact that mass media is not named as a potential source of information (this applies to all the practices on the adoption scale) lends credence to the theory (e.g., dissonance theory) that people read more about a practice (or a purchase) after it has been adopted. Also it would indicate that mass media do not stand alone as practice-influencing sources of information but go together with someone or something else.

As a source of information, the elevator operator varied from being named frequently to not at all. The county agent, on the other hand, was consistently named as a source of information for all practices. However, as a source of information, the county agent was generally evenly distributed for all practices and in no case is the county agent particularly high in relation to other sources.

Upon investigation of the individual practices, four out of the six involve the sale of a product: grain feeding, varieties of alfalfa, supplemental nitrogen and commercial fertilizer for top dressing. The practice on early planting of corn involves the sale of a product indirectly. Early planting may depend on the corn hybrid used--whether it is early or late maturing. This would influence the time of planting. The practice of minimum tillage involves no sale of a product.

Of the four practices that involve the sale of a product, the diffusion elevator operators ranked high on two and very low on the other two. It would seem that this area would be fruitful for further

investigation. Rogers, for instance, suggests that there are five mutually exclusive characteristics of innovations: relative advantage, compatibility, complexity, divisibility and communicability.[2]

Relative advantage is the degree to which an innovation is better than the one it replaces or supersedes. Compatibility is the degree to which an innovation lines up with the existing cultural norms of a social system. Complexity is the degree to which an innovation is easy to understand and easy to use. Divisibility is the degree to which an innovation can be tried on a limited basis. Communicability is the degree to which an innovation is diffused to others.

Rogers asserts that each of these characteristics, as it is perceived by members of a social system, affects rate of adoption. Furthermore the selectivity of perception is a function of group interaction, and it is through this interaction with others that individuals in a system internalize these characteristics.[3]

In relation to this study, there appears to be a selective process occurring in regard to sources of information. Diffusion elevator operators seem to be selected as sources of information for certain innovations but not for others.

A research possibility would be to test further Rogers' categories of characteristics of innovations and correlate with farmers' interaction patterns. Such a study would have to embrace a wide range of different types of innovations. Perhaps from such research,

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[2]Everett M. Rogers, Diffusion of Innovations (New York: The Free Press of Glencoe, 1962), p. 124-133.

[3]Ibid., p. 142.

different classes of innovations can be determined with each class having a common set of characteristics.

It seems implicit that if a model of extension agricultural educational programs is to be developed it would be useful to know more about the innovations and the farmers' perceptions of them. This in turn would help determine the treatment of messages to be used in the diffusion process. Specifically, some innovations may be diffused just as well through mass media while others may require field demonstrations or a combination of methods. At this time little is known about these different treatments. If more were known, there would not only be an economic saving but also time saving on the part of the change agent.

Table 1A. Frequencies of adoption for the practice on dairy grain feeding (Question 13 of questionnaire).

Clients of:	Adopters		Non-Adopters		Total
D. El. Op.	33	(30.23)	64	(66.77)	97
N.D. El. Op.	15	(17.77)	42	(39.23)	57
Total	48		106		154

Value X^2 at .05 level for 1 df. 3.8.
Computed X^2 = .1 p.75, not significant.

Table 2A. Frequencies of adoption for the practice of minimum tillage (Question 14 of questionnaire).

Clients of:	Adopters		Non-Adopters		Total
D. El. Op.	55	(52.91)	42	(44.09)	97
N.D. El. Op.	29	(31.09)	28	(25.91)	57
Total	84		70		154

Value X^2 at .05 level for 1 df. 3.8.
Computed X^2 = .48 p.5, not significant.

Table 3A. Frequencies of adoption for the practice on the use of commercial fertilizer as a top dressing to hay stands (Question 15 of the questionnaire).

Clients of:	Adopters		Non-Adopters		Total
D. El. Op.	58	(54.17)	39	(42.83)	97
N.D. El. Op.	28	(31.83)	29	(25.17)	57
Total	86		68		154

Value X^2 at .05 level for 1 df. 3.8.
Computed X^2 = 1.66 $p < .25 > .1$, not significant.

Table 4A. Frequencies of adoption for the practice of early planting of corn (Question 16 of questionnaire).

Clients of:	Adopters		Non-Adopters		Total
D. El. Op.	60	(55.43)	33	(41.57)	97
N.D. El. Op.	28	(32.57)	29	(24.42)	57
Total	88		66		154

Value X^2 at .05 level for 1 df. 3.8.
Computed X^2 = 2.4 $p < .25 > .1$, not significant.

Table 5A. Frequencies of adoption for the practice on the variety of alfalfa (Question 18 of the questionnaire).

Clients of:	Adopters		Non-Adopters		Total
D. El. Op.	73	(67.40)	24	(29.60)	97
N.D. El. Op.	34	(39.60)	23	(17.40)	57
Total	107		47		154

Value X^2 at .05 level for 1 df. 3.8.
Computed X^2 = 4.12 $p < .05 > .025$, significant.

Table 6A. Frequencies of adoption for the practice on the use of supplemental nitrogen fertilizer (Question 19 of the questionnaire).

Clients of:	Adopters		Non-Adopters		Total
D. El. Op.	68	(58.58)	29	(38.42)	97
N.D. El. Op.	25	(34.42)	32	(22.58)	57
Total	93		61		154

Value X^2 at .05 level for 1 df. 3.8.
Computed X^2 = 10.3 $p < .005 > .001$, significant.

Table 7A. Questions on adoption scale--sources of information for adopted practices.

Sources:	Ques. 13 Feeding Milking Cows		Ques. 14 Minimum Tillage		Ques. 15 Top Dressing Hay Stand	
	D.* El. Op.	N. D.* El. Op.	D. El. Op.	N. D. El. Op.	D. El. Op.	N. D. El. Op.
El. Op. Expected	3	1	--	--	8	--
El. Op. Not Expected	--	1	--	--	--	3
El. Op. & El. Op. Not Expected	--	--	--	--	--	--
El. Op. & Other	1	--	--	--	2	1
Co Agent & Other	3	4	11	6	6	6
Co Agent	4	4	7	3	12	2
Co Agent & El. Op.	1	--	--	--	5	--
Mass Media	5	1	9	10	6	7
No Place or Don't Know	6	1	3	3	6	3
Other	10	3	16	5	12	4
Neighbor	--	--	9	2	1	2
TOTAL ADOPTED	33	15	55	29	58	28
TOTAL NOT ADOPTED	64	42	42	28	39	29
TOTAL	97	57	97	57	97	59

*D. El. Op. = Clients of diffusion elevator operators.
**N. D. El. Op. = Clients of non-diffusion elevator operators.

Table 7A continued.

	Ques. 16 Early Planting of Corn		Ques. 18 Alfalfa Varieties		Ques. 19 Use of Nigrogen Fertilizer	
	D. El. Op.	N. D. El. Op.	D. El. Op.	N. D. El. Op.	D. El. Op.	N.D. El. Op.
El. Op. Expected	--	--	35	7	35	--
El. Op. Not Expected	--	1	1	5	1	6
El. Op. & El. Op. Not Expected	--	--	--	1	--	--
El. Op. & Other	--	--	5	--	2	1
Co Agent & Other	8	6	3	3	2	4
Co Agent	4	1	4	2	4	2
Co Agent & El. Op.	--	--	4	--	3	1
Mass Media	5	4	11	4	4	1
No Place or Don't Know	22	7	1	7	4	1
Other	18	7	7	5	10	6
Neighbor	3	2	2	--	3	3
TOTAL ADOPTED	60	28	73	34	68	25
TOTAL NOT ADOPTED	37	29	24	23	29	32
TOTAL	97	57	97	57	97	57

Table 8A. Questions on adoption scale. Potential source of information for non-adopted practices.

Sources:	Ques. 13 Feeding Milking Cows				Ques. 14 Minimum Tillage				Ques. 15 Top Dressing Hay Stand			
	D. El.	D. Op.	N. D. El.	N. D. Op.	D. El.	D. Op.	N. D. El.	N. D. Op.	D. El.	D. Op.	N. D. El.	N. D. Op.
El. Op. Expected	18		4		1		--		8		1	
El. Op. Not Expected	3		5		--		1		1		6	
El. Op. & El. Op. Not Expected	--		1		--		--		--		--	
El. Op. & Other	--		1		1		--		2		--	
Co Agent & Other	7		7		7		3		2		5	
Co Agent	18		12		14		10		15		6	
Co Agent & El. Op.	3		2		--		--		3		1	
Mass Media	1		2		2		2		--		--	
No Place or Don't Know	3		2		3		6		3		2	
Other	11		5		7		4		4		8	
Neighbor	--		1		7		2		1		--	
TOTAL NOT ADOPTED	64		42		42		28		39		29	
TOTAL ADOPTED	33		15		55		29		58		28	
TOTAL	97		57		97		57		97		57	

Table 8A continued.

	Ques. 16 Early Planting of Corn		Ques. 18 Alfalfa Varieties		Ques. 19 Use of Nitrogen Fertilizer	
	D. El. Op.	N. D. El. Op.	D. El. Op.	N. D. El. Op.	D. El. Op.	N. D. El. Op.
El. Op. Expected	3	1	12	6	10	2
El. Op. Not Expected	--	2	2	7	--	12
El. Op. & El. Op. Not Expected	--	--	--	--	--	1
El. Op. & Other	1	--	3	1	2	--
Co Agent & Other	2	6	--	--	2	2
Co Agent	12	7	1	6	5	4
Co Agent & El. Op.	1	--	4	--	1	1
Mass Media	1	1	--	--	--	--
No Place or Don't Know	4	5	1	2	1	2
Other	11	6	1	1	5	7
Neighbor	2	1	--	--	3	1
TOTAL NOT ADOPTED	37	29	24	23	29	32
TOTAL ADOPTED	60	28	73	34	68	25
TOTAL	97	57	97	57	97	57

APPENDIX C

TOTAL NUMBER OF RESPONSES GIVEN BY FARMERS TO QUESTIONNAIRE

Table 1C. Total number of responses given by farmers as to the people talked to most frequently about farming. (Reference others.)

Clients of:	D. El. Op.	N. D. El. Op.
Reference Others:		
El. Op. Expected	52	12
El. Op. Not Expected	2	9
Co Agent	42	12
Other Farmers	65	38
Business Not Related to Agriculture	14	4
Banker	10	7
Relatives	16	14
Nobody	3	5
Implement Dealer	10	9
Business Related to Agriculture	16	13
Miscellaneous	20	9
Totals	250	132

Table 2C. People talked to most frequently about farming (total responses) in relation to adoption score for clients of diffusion and non-diffusion elevator operators.

Adoption Score	0		1		2		3	
Clients of Elevator Operator	D. El. Op.	N. D. El. Op.	D. El. Op.	N. D. El. Op.	D. El. Op.	N. D. El. Op.	D. El. Op.	N. D. El. Op.
Reference Others:								
El. Op.	1	1	5	--	5	1	15	6
El. Op. Not Exp.	--	--	--	--	--	1	1	5
Co Agent	1	--	1	1	--	--	11	4
Other Farmers	1	4	6	5	10	6	15	12
Business Not Related to Agri.	--	1	3	--	5	1	3	--
Banker	--	--	1	--	3	3	3	3
Relatives	--	2	--	--	4	4	5	4
No One	--	2	1	2	--	1	--	--
Implement Dealer	--	--	--	--	2	3	2	2
Business Re. to Agri.	--	--	--	2	2	3	4	3
Misc.	--	--	2	3	1	--	6	2
Totals	3	9	19	13	32	23	65	41

Table 2C continued.

Adoption Score	4		5		6		Totals	
Clients of Elevator Operator	D. El. Op.	N. D. El. Op.	D. El. Op.	N. D. El. Op.	D. El. Op.	N. D. El. Op.	D. El. Op.	N. D. El. Op.
Reference Others:								
El. Op.	11	2	11	2	4	--	52	12
El. Op. Not Exp.	--	1	1	1	0	1	2	9
Co Agent	8	4	15	3	6	--	42	12
Other Farmers	16	5	11	5	6	1	65	38
Business Not Related to Agri.	--	--	2	2	1	--	14	4
Banker	1	--	2	--	--	1	10	7
Relatives	6	3	1	2	--	--	16	14
No One	1	--	1	--	--	--	3	5
Implement Dealer	5	1	1	3	--	--	10	9
Business Re. to Agri.	4	4	4	1	2	--	16	13
Misc.	2	2	7	1	2	1	20	9
Totals	54	22	56	20	21	4	250	132

Table 3C. Total number of responses of sources or potential sources of information according to adoption score, for clients of diffusion elevator operators (for practices on adoption scale). N = 97

Adoption Score	0		1		2		3	
Practice	Adopted*	Not Adopted**	Adopted	Not Adopted	Adopted	Not Adopted	Adopted	Not Adopted
Co Agent	--	2	1	17	--	17	13	34
M.S.U.	--	--	--	3	--	3	6	9
M.S.U. Specialist	--	--	--	--	--	--	1	--
El. Op.	--	1	3	17	8	18	29	26
El. Op. Not Exp.	--	1	--	2	--	3	--	--
Other Farmers	--	2	1	2	6	3	9	8
Mass Media	--	1	1	2	5	5	18	9
Seed Co.	--	2	1	2	--	3	--	4
Fert. Co.	--	--	--	--	1	3	3	7
No Place	--	--	1	7	3	5	2	1
Relatives	--	--	1	--	1	--	2	--
Don't Know	--	1	1	--	2	3	1	2
Misc.	--	--	--	6	--	1	1	2
Totals	--	10	10	58	26	64	85	102

Table 3C continued.

Adoption Score	4		5		6		Totals	
Practice	Adopted	Not Adopted	Adopted	Not Adopted	Adopted	Not Adopted	Adopted	Not Adopted
Co Agent	12	20	38	22	15	--	79	112
M.S.U.	7	9	15	6	2	--	30	30
M.S.U. Specialist	--	1	6	1	--	--	7	2
El. Op.	31	11	23	2	10	--	104	75
El. Op. Not Exp.	2	--	--	--	--	--	2	6
Other Farmers	7	5	12	--	8	--	43	20
Mass Media	28	4	31	4	12	--	95	25
Seed Co.	2	2	8	1	1	--	12	14
Fert. Co.	1	1	2	--	2	--	9	11
No Place	12	5	5	--	5	--	28	18
Relatives	--	--	1	--	3	--	8	0
Don't Know	6	1	6	--	2	--	18	7
Misc.	3	2	--	--	2	--	6	11
Totals	111	61	147	36	62	--	441	331

* The actual source of information for the adopted practice.

** The potential source of information for the practice not adopted. (See Appendix D, farmer questionnaire for questions on sources of information.)

Table 4C. Total number of responses of sources or potential sources of information according to adoption score for clients of non-diffusion elevator operators (for practices on adoption scale). N = 57.

Adoption Score	0		1		2		3	
Practice	Adopted	Not Adopted	Adopted	Not Adopted	Adopted	Not Adopted	Adopted	Not Adopted
Co Agent	--	6	3	16	1	13	6	31
M.S.U.	--	--	--	5	--	6	2	4
M.S.U. Specialist	--	--	--	--	--	--	2	--
El. Op.	--	6	--	6	1	2	3	7
El. Op. Not Exp.	--	5	1	16	1	8	7	14
Other Farmers	--	2	--	1	5	4	7	4
Mass Media	--	2	2	4	9	5	13	2
Seed Co.	--	2	--	1	1	5	2	3
Fert. Co.	--	3	--	5	1	4	4	7
No Place	--	9	--	2	--	2	1	--
Relatives	--	--	1	--	1	--	1	--
Don't Know	--	2	1	5	1	1	9	--
Misc.	--	2	1	1	1	3	1	3
Totals	0	39	9	62	22	53	58	75

Table 4C continued.

Adoption Score	4		5		6		Totals	
Practice	Adopted	Not Adopted	Adopted	Not Adopted	Adopted	Not Adopted	Adopted	Not Adopted
Co Agent	10	8	19	10	6	--	45	84
M.S.U.	3	2	--	--	--	--	5	17
M.S.U. Specialist	--	--	--	--	--	--	2	0
El. Op.	2	4	5	1	--	--	11	26
El. Op. Not Exp.	5	2	2	1	--	--	16	46
Other Farmers	3	--	4	1	--	--	19	12
Mass Media	20	2	11	1	5	--	60	16
Seed Co.	1	1	--	--	--	--	4	12
Fert. Co.	2	4	3	1	--	--	10	24
No Place	1	--	1	--	1	--	4	13
Relatives	--	--	3	--	2	--	8	0
Don't Know	1	--	2	--	5	--	19	8
Misc.	1	1	3	--	1	--	8	10
Totals	49	24	53	15	20	--	211	268

Table 5C. Total responses of sources or potential sources of information (for questions on adoption scale) by clients of diffusion elevator operators. N = 97.

	Ques. 13 Feeding Milking Cows		Ques. 14 Minimum Tillage		Ques. 15 Top Dressing Hay Stand		Ques. 16 Early Planting of Corn		Ques. 18 Alfalfa Varieties		Ques. 19 Use of Nitrogen Fertilizer	
	Adop.	Not Adop.	Adop.	Not Adop.	Adop.	Not Adop.	Adop.	Not Adop.	Adop.	Not Adop.	Adop.	Not Adop.
Co Agent	8	31	17	23	23	22	12	22	10	7	9	10
M.S.U.	3	10	9	8	8	3	4	7	6	1	--	1
M.S.U. Spe.	4	2	2	--	--	--	--	--	1	--	--	--
El. Op.	5	22	--	2	15	13	--	5	44	19	40	14
El. Op. Not Exp.	--	3	--	--	--	1	--	--	1	2	1	--
Other Farmers	1	1	17	10	6	2	11	4	2	--	5	3
Mass Media	10	6	25	10	19	1	18	3	16	2	7	3
Seed Co.	--	--	--	1	--	--	10	10	1	3	1	--
Fert. Co.	--	--	--	1	2	3	1	--	--	--	6	7
No Place	6	3	4	4	3	3	14	6	--	1	2	1
Relatives	2	--	2	--	1	--	2	--	--	--	1	--
Don't Know	--	5	1	--	3	1	9	1	3	--	2	--
Misc.	2	5	1	3	1	1	--	--	1	--	1	2

Table 6C. Total responses of sources or potential sources of information (for questions on adoption scale) by clients of non-diffusion elevator operators. N = 57.

	Ques. 13 Feeding Milking Cows		Ques. 14 Minimum Tillage		Ques. 15 Top Dressing Hay Stand		Ques. 16 Early Planting of Corn		Ques. 18 Alfalfa Varieties		Ques. 19 Use of Nitrogen Fertilizer	
	Adop.	Not Adop.	Adop.	Not Adop.	Adop.	Not Adop.	Adop.	Not Adop.	Adop.	Not Adop.	Adop.	Not Adop.
Co Agent	8	21	9	15	8	16	7	15	5	10	8	10
M.S.U.	--	4	1	2	2	4	--	3	2	3	--	1
M.S.U. Spe.	2	--	--	--	--	--	--	--	--	--	--	--
El. Op.	1	8	--	--	1	2	--	1	7	10	2	6
El. Op. Not Exp.	1	8	--	1	3	10	1	3	5	10	6	15
Other Farmers	--	3	8	3	3	1	4	3	--	--	4	2
Mass Media	6	6	18	5	11	2	11	2	10	1	4	--
Seed Co.	--	--	--	1	--	--	2	10	2	1	--	--
Fert. Co.	--	--	--	1	2	11	--	2	--	--	8	10
No Place	1	3	--	4	--	2	3	5	--	--	--	--
Relatives	1	--	--	--	3	--	3	--	--	--	1	--
Don't Know	--	2	4	1	3	--	4	1	7	2	1	2
Misc.	2	5	1	2	2	--	1	1	1	1	1	

APPENDIX D

QUESTIONNAIRES AND OTHER DEVICES

WAIT!

Please read this page before looking at the questionnaire

We wish to thank you for giving a few minutes of your time in helping us gather data that we feel is important.

The information you give will be kept in strict confidence. Any information published from this questionnaire will be in statistical form only and no individual will be identified.

We would like to ask you:

1. To please answer all questions.
2. To please not read ahead - answer the questions in the order given.

A summary report of the findings will be available to you upon request.

CONFIDENTIAL

Name_____

Address_____

1. Age_____

2. Education_____

3. Number of years as an elevator operator_____

4. Number of years at present location_____

5. What are the five most important aspects of your job?

   1._____

   2._____

   3._____

   4._____

   5._____

6a. Whose opinion of you as an elevator operator is of greatest concern to you? (Do not give names of people but list them by position (occupation) or relationship to you. You may name groups).

   1._____

   2._____

   3._____

   4._____

   5._____

6b. For each of the above answers (keeping the same order) indicate one thing you do that makes them have a good opinion of you.

   1._____

   2._____

   3._____

   4._____

   5._____

CONFIDENTIAL

6c. For each of the questions in 6a, (keeping the same order), indicate one thing that you do that makes them think poorly of you.

1._____

2._____

3._____

4._____

5._____

7. Describe yourself as an elevator operator by completing the following 5 statements beginning with "I am."

1. I am_____

2. I am_____

3. I am_____

4. I am_____

5. I am_____

8. What type of farming are your customers engaged in - rank them according to size - percentages of total clientele.

Dairy_____, Cash Crops_____, Mixed Farming_____, Hogs_____,

Poultry_____, Beef_____, Other_____

9. An elevator operator_____encourage his customers to try out new ideas and products (must, should, may, should not, must not). (CIRCLE ONE)

10. I_____encourage my customers to try out new ideas and products. (frequently, sometimes, seldom, never) (CIRCLE ONE)

11. How often do you read material published by the M.S.U. College of Agriculture? very frequently, frequently, sometimes, never (CIRCLE ONE)

12. Approximately how many times during a year do you talk to a representative of M.S.U. such as a county agent, professor, specialist, etc._____

13. What is the name of the agricultural agent in your county?

_____

14. Approximately how long ago did you last talk to him?_____

CONFIDENTIAL

15. When was the last time you suggested to a customer that he consult with the agricultural agent?_____

16. Where do you get information about: (rank in order of importance; #1 most important)

a. How to run your elevator operation?

____bulletins, newsletters, etc., from your suppliers.

____personal contacts (specify)_____

____mass media (radio, t.v., newspapers, etc.)

____other (specify)_____

b. Farm practices? (rank in order of importance; #1 most important)

____bulletins from agricultural college

____farm magazines or programs (radio, t.v., etc.)

____personal contacts (specify)_____

____other (specify)_____

17. Please rank the following on their importance to you for a successful operation. (#1 is the most important)

____modern physical facilities (plant, trucks, etc.)

____friendly pleasant manners

____sound but competitive credit policy

____learning useful up-to-date information for farmers

____bookkeeping and inventory system

____a wide line of products and services

____conscientious and honest employees

____other (specify)_____

18. How would you rank yourself on the amount of information about farming you give to farmers in comparison to <u>farm implement dealers</u>? (CHECK ONE)

much more____ more____ same____ less____ much less____

CONFIDENTIAL

19. How would you rank yourself in the amount of farm information you give to farmers in comparison to country bankers? (CHECK ONE)

    much more____ more____ same____ less____ much less____

20. How would you rank yourself in the amount of farm information you give to farmers in comparison to county agents? (CHECK ONE)

    much more____ more____ same____ less____ much less____

21. How would you rank yourself in the amount of farm information you give to farmers in comparison to other elevator operators in Michigan? (CHECK ONE)

    much more____ more____ same____ less____ much less____

Answers to elevator operator questionnaire.[1]

Ques. 1-Age	Ques. 2-Education	Ques. 3-No. of yrs. as an Elevator Operator	Ques. 4-No. of yrs. at Present Location
#1. 39	High School	8	8
#2. 43	College	17	12
#3. 45	High School	16	16
#4. 24*	College Short Course	1.5	1.5
#5. 39	College Short Course	9	9
#6. 35	High School	10	10
#7. 60	Grade School	18	18
#8. --	--	--	--

[1]Elevator operators are numbered from 1 to 8. The diffusion elevator operators are from 1 to 5 and the non-diffusion elevator operators from 6 to 8. Elevator operator number 7 partially answered the questionnaire. Number 8 refused, however from questioning him it was possible to acquire some data.

*This questionnaire was answered by the assistant manager. The owner ranks high as a diffusion agent and has high contact with the University and Extension Service.

Ques. 5-What are the five most important aspects of your job?

#1. a. Personnel
b. Credit
c. Purchasing
d. Analysis of business
e. Selling ideas

#2. a. Personnel
b. Informing directors and stockholders
c. Planning new products and services
d. Provide product information to farmers in area
e. Record keeping

#3. a. Sales
b. Buying
c. Personnel

#4. a. Direction
b. Communications
c. Assignment of work
d. Selling
e. Clerking

#5. a. Management
b. Arrange financing
c. Future planning
d. Employees
e. Selling

#6. a. Service
b. Quality of products
c. Satisfaction
d. Personnel

#7 No answer

#8. Staying in business

Ques. 6a. Whose opinion of you as an elevator operator is of greatest concern to you? (Do not give names of people but list them by position (occupation) or relationship to you. You may name groups.)

6b. For each of the above answers (keeping the same order) indicate one thing you do that makes them have a good opinion of you.

6c. For each of the questions in 6a., (keeping the same order), indicate one thing that you do that makes them think poorly of you.

	(a)	(b)	(c)
#1	- customers - board of directors - bankers in area	- fair and honest - looking at problems their way - good credit practices	- not being polite - believe in only what I think is right - give everyone credit
#2	- farmers in trade area - state trade organizations - local business - employees of organization	- provide needed products & services - active in trade functions - maintain clean plant facilities - keep employees informed and good working conditions	- fail to make personal contact - not act in trade area - object to various community merchandizing programs - fail to give enough consideration to personal problems
#3	- board members - employees - customers - other businessmen in town - suppliers	- operate a good business - fair treatment - supply needs - work with them - fair treatment	- lose money for the company - give them a rough time - poor pricing

#4	- customers	- honest	- poor service
	- townspeople	- understanding	- lack of understanding
	- suppliers	- trustworthy	
	- other elevators	- fair	
#5	- trade people	- selective in buying	- too much direction
	- employer	- operation of plant	
	- community	- explanation of business operation	
	- stockholders	- progress	
	- associates and family		
#6	- owner	- making money	- not being around
	- customers	- honest	- selling something not up to standard
	- employees	- getting along with them	
#7	- farmers	- treating them fairly	- ----

#8 - no answers

Ques. 7-Describe yourself as an elevator operator by completing the following 5 statements beginning with "I am."

#1.
1 - I am a director of employees
2 - " a credit advisor
3 - " looking for new ideas
4 - " purchasing agent for company
5 - " a salesman

#2.
1 - sincere in doing my job
2 - interested in agriculture
3 - enjoy working with rural people
4 - proud of the community in which I live
5 - proud of the elevator trade

#3.
1 - fair with employees
2 - always on time
3 - working for the owner
4 - honest with customers and employees
5 - willing to learn

#4.
1 - knowledgeable
2 - trustworthy
3 - honest
4 - fair
5 - a poor salesman

#5. 1 - coordinator of farmer investments and services
2 - one of the representatives of farmer activities
3 - source of farmer information
4 - buyer and seller of farm products
5 - source of farmer counselling

#6. 1 - manager
2 - a worker
3 - pleasant
4 - on the job most of the time

#7 no answer

#8 no answer

Ques. 9-An elevator operator_____encourage his customers to try out new ideas and products (must, should, may, should not, must not). (CIRCLE ONE)

	#1	#2	#3	#4	#5	#6	#7	#8
Must		X	X	X				
Should	X				X	X	X	
May								
May Not								
Must Not								

Ques. 10-I_____encourage my customers to try out new ideas and products. (frequent, sometimes, seldom, never) (CIRCLE ONE)

	#1	#2	#3	#4	#5	#6	#7	#8
Frequently	X	X	X		X			
Sometimes				X		X		
Seldom							X	
Never								

Ques. 11-How often do you read material published by the M.S.U. College of Agriculture?

	#1	#2	#3	#4	#5	#6	#7	#8
Very frequently	X		X		X			
Frequently		X						
Sometimes				X		X	X	
Never								

Ques. 12-Approximately how many times during a year do you talk to a representative of M.S.U. such as a county agent, professor, specialist, etc._____

#1	#2	#3	#4	#5	#6	#7	#8
20	10	50	50	50	none	seldom	none

Ques. 13-What is the name of the agricultural agent in your county?

All gave the names of the county extension agent. However number 6 was not sure and had to ask a customer.

Ques. 14-Approximately how long ago did you last talk with him?_____

#1	#2	#3	#4	#5	#6	#7	#8
2 weeks	1 week	1 week	3 weeks	1 week	never	only through Service Club	--

Ques. 15-When was the last time you suggested to a customer that he consult with the agricultural agent?__

#1	#2	#3	#4	#5	#6	#7	#8
3 months	1 week	2 weeks	1 week	1 week	months ago	--	--

Ques. 16-Where do you get information about:
(rank in order of importance; #1 most important).

	#1	#2	#3	#4	#5	#6	#7	#8
a. How to run your elevator operation?								
___bulletins, newsletters, etc., from your suppliers.	2	2	2	1	2	2	1	-
___personal contacts (specify)**____	1	1	3	2	1	1	24	-
___mass media (radio, t.v., newspapers, etc.	3	3	4	3	3	3	3	-
___other (specify)**____	-	-	1	-	-	-	2	-

b. Farm practices? (rank in order of importance; #1 most important)	#1	#2	#3	#4	#5	#6	#7	#8
___bulletins from agricultural college	3	2	1	1	1	2	1	-
___farm magazines or programs (radio, t.v., etc.)	1	3	2	2	3	3	2	-
___personal contacts (specify)**____	2*	1	3	3	2	1	3	-
___other (specify)**____	-	-	4	-	-	-	-	-

*Not specified
**When asked to specify, standard answers were: customers, other elevator operators, product salesmen and experience.

Ques. 17-Please rank the following on their importance to you for a successful operation. (#1 is the most important)

	#1	#2	#3	#4	#5	#6	#7	#8
___modern physical facilities (plant, trucks, etc.)	7	2	1	6	2	2	-	-
___friendly pleasant manners	4	7	7	3	3	1	-	-
___sound but competitive credit policy	5	5	6	4	5	5	-	-
___learning useful up-to-date information for farmers	1	3	5	7	4	4	-	-
___bookkeeping and inventory system	3	4	4	5	7	7	-	-
___a wide line of products and services	6	6	2	8	6	6	-	-
___conscientious and honest employees	2	1	3	2	1	3	-	-
___other (specify)____	-	-	-	1	-	-	-	-

Ques. 18-How would you rank yourself on the amount of information about farming you give to farmers in comparison to farm implement dealers?

	#1	#2	#3	#4	#5	#6	#7	#8
Much more	X		X		X			
More		X		X				
Same						X	X	
Less								
Much less								

Ques. 19-How would you rank yourself in the amount of farm information you give to farmers in comparison to country bankers?

	#1	#2	#3	#4	#5	#6	#7	#8
Much more		X			X			
More				X				
Same	X						X	
Less						X		
Much less								

Ques. 20-How would you rank yourself in the amount of farm information you give to farmers in comparison to county agents?

	#1	#2	#3	#4	#5	#6	#7	#8
Much more								
More	X							
Same		X	X				X	
Less				X	X	X		
Much less								

Ques. 21-How would you rank yourself in the amount of farm information you give to farmers in comparison to other elevator operators in Michigan?

	#1	#2	#3	#4	#5	#6	#7	#8
Much more								
More		X						
Same	X		X	X	X		X	
Less						X		
Much less								

COOPERATIVE EXTENSION SERVICE
Michigan State University - East Lansing
Institute for Extension Personnel Development
And U.S. Department of Agriculture Cooperating

July 10, 1964

Dear

I am a student at Michigan State University. As part of my course work I have been assigned the project of interviewing several Michigan farmers.

Within a day or two of receiving this letter I will telephone you. The types of questions you will be asked are primarily how farmers handle their decisions and their sources of information.

I will not be asking you for any personal information. There will be a total of 200 interviews with Michigan farmers and the information from these will be in statistical form only - your name will not appear anywhere.

Thanking you for your consideration.

Yours sincerely,

/s/John G. Elliott
Graduate Student
Michigan State University

Phone Number_____

Phone Calls:

1.	2.	3.	4.
In _____	In _____	In _____	In ___
Out _____	Out _____	Out _____	Out ___
Call back at_____	Call back at_____	Call back at_____	Call back at___
Busy _____	Busy _____	Busy _____	Busy ___

Time interview began_____ Time interview ended_____

Name_____

Address_____

8. First, could you tell me the size of your farm in total acres?

0 - under 50
1 - 50-69
2 - 70-99
3 - 100-139
4 - 140-179
5 - 180-219
6 - 220-259
7 - 260-499
8 - 500-999
9 - 1000+

9. ....in tillable acres?

0 - under 50
1 - 50-69
2 - 70-99
3 - 100-139
4 - 140-179
5 - 180-219
6 - 220-259
7 - 260-499
8 - 500-999
9 - 1000+

10. How many cows on the average are you milking during the year?

0 - less than 20
1 - 20-29
2 - 30-39
3 - 40-49
4 - 50-99
5 - 100-199
6 - 200+

11. Who are the people you talk to most frequently about farming?

	NAME	OCCUPATION
1.	_____	_____
2.	_____	_____
3.	_____	_____

(IF ALL NAMES ABOVE ARE NON-FARMERS - NO NEED TO ASK NEXT QUESTION (12))

12. You have mentioned __n__ farmers, we would like the two non-farmers that you talk to most about farming.

	NAME	OCCUPATION
1.	_____	_____
2.	_____	_____

13. Do you feed grain to your milking cows according to the amount of milk they give per day?

___ No___ Yes___ (IF YES, ASK:) (IF NO, ASK d)

(a) What would that be: 1 pound of grain to how many pounds of milk?_____ (should be around 1:3.1 or less)

(if ratio grater = a no answer)

(b) How long ago did you start using this practice? (years)____

(c) ...and where did you get the information about it?_____

_____

(d) If you wanted information on grain feeding, where would you go (first)_____

14. When you get ready to plant corn, how do you work your land?_____

_____

(IF NOT MINIMUM TILLAGE - ASK (C))
(IF MINIMUM TILLAGE OR EQUAL, ASK:)

(a) How long ago did you start doing it that way?_____

(b) ...and where did you get the information about it?_____

_____

(IF NOT MINIMUM TILLAGE OR EQUAL, ASK:)

(c) If you wanted information about new methods of working land for planting corn where would you go?_____

_____

15. Do you normally spread commercial fertilizer as a top dressing to your hay stand?

No____ Yes____

(IF YES, ASK:)

(a) How long ago did you start doing this?_____

(b) Where did you get the information about top dressing?_____

(IF NO, ASK:)

If you wanted information about top dressing hay stands, where would you go?_____

16. By what date do you like or try to have your corn planted?

___ by May 15

___ by May 15 to June 1

___ after June 1

(IF BY MAY 15 ASK:)

(a) How long ago did you start doing this?_____

(b) Where did you get the information about early planting of corn?_____

(IF AFTER MAY 15, ASK:)

(c) If you wanted information on early planting of corn, where would you go?_____

17. For a milk quality control do you use any of the following tests on your milking cows: California Mastitis test; Milk Quality test; Michigan Milk test, or other similar tests?

No___ Yes___

(IF YES, ASK:)

(a) How long ago did you start using this practice?_____

(b) Where did you get the information about it?_____

(IF NO, ASK:)

(c) If you wanted information on milk quality control tests for your milking cows where would you go?_____

18. What variety of alfalfa do you grow?

Vernal_____

DuPuis_____

Other _____

IF ALFALFA NOT GROWN ASK OATS FIRST, WHEAT SECOND (USE ONE)

OATS		WHEAT	
Clintland 60	_____	Avon	_____
Garry	_____	Genesee	_____
Rodney	_____	Other	_____
Other	_____		

(Ausuable) certified
(Coachman) seed growers

(IF ONE OF ABOVE IS MENTIONED ASK:)

(a) How long ago did you start using this variety of_____?

(b) Where did you get the information about this variety?

_____

(IF ONE OF ABOVE IS NOT MENTIONED ASK:)

(c) If you wanted information on recommended varieties, where would you go?_____

19. Do you use a straight nitrogen fertilizer as a supplement on corn or other crops except pastures?

No___ Yes___

(IF YES, ASK:)

(a) How long ago did you start doing this?_____

(b) Where did you get the information about nitrogen fertilizer?

_____

(IF NO, ASK:)

(c) If you wanted information on nitrogen fertilizer (ammonium nitrate, urea, etc.) where would you go?_____

_____

20. How old are you?

    1 - under 25

    2 - 25-34 years

    3 - 35-44 years

    4 - 45-54 years

    5 - 55-64 years

    6 - 65 or more years

    7 - estimated by asking how long he has been farming

21. What was the last grade of school you completed.

    1 - less than 8 years

    2 - completed 8th grade

    3 - attended high school but didn't graduate

    4 - graduated from high school

    5 - attended college

    6 - graduated from college

Total number of potential telephone calls and final total of completed calls.

Diffusion Elevator Operators Number[1]	Refusals	No Telephone Listing	Other[2]	Total Number of Names	Total Completed Calls
Elevator Operator					
1	0	1	0	24	20
2	0	1	0	26	20
3	0	0	0	24	20
4	0	0	0	25	17[3]
5	1	0	0	26	20
6	0	0	0	25	20
7	2	0	1	21	18
8	1	4	2	26	19
Total	4	6	3	197	154

[1]The elevator operators are numbered for the sake of anonymity. 1 thru 5 diffusion elevator operator, 6 thru 8 non-diffusion elevator operator.

[2]Other = one farmer was deaf, one farmer moved and one no answer after several calls.

[3]To have completed this set would have required returning to the county agent's office for another day.

COOPERATIVE EXTENSION SERVICE
Michigan State University - East Lansing
Institute for Extension Personnel Development
And U.S. Department of Agriculture Cooperating

August 26, 1964

I am a graduate student at Michigan State University in the Institute for Extension Personnel Development. Presently I am working on my thesis under the direction of Carl J. Couch.

Over the past month I have been interviewing some farmers that are located in your county. Enclosed therefore is the list which I would like you to check accordingly. Some of these farmers are not located in your county; therefore please check the "don't know" column in such cases. I would appreciate return of these lists at your earliest convenience to:

Dr. Carl J. Couch, Leader
Extension Communication Research
Institute for Extension Personnel Development
117 Agriculture Hall
Michigan State University
East Lansing, Michigan

The lists are being sent to adjoining County Extension Directors so that the names will be exhausted.

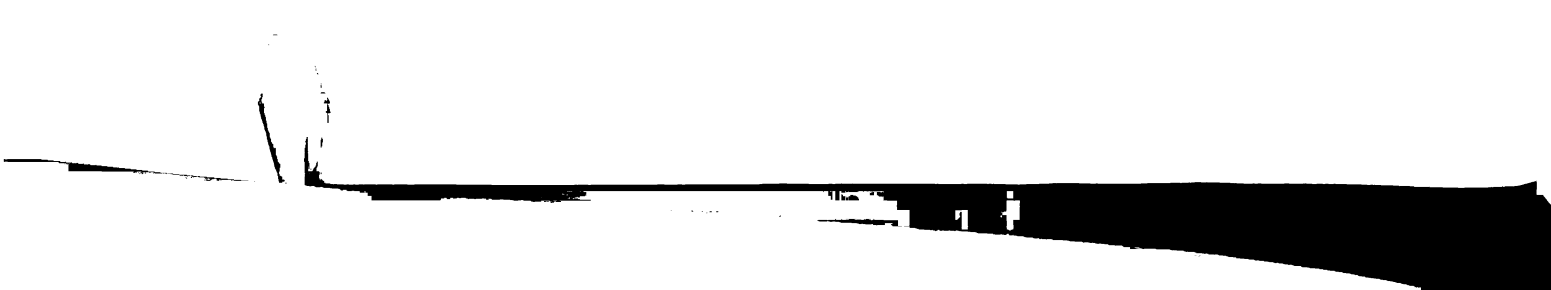
Thank you for your cooperation in this matter.

Yours sincerely,

John Elliott

Carl J. Couch, Leader
Extension Communication Research

Enclosure



COOPERATIVE EXTENSION SERVICE
Michigan State University - East Lansing
Institute for Extension Personnel Development
And U.S. Department of Agriculture Cooperating

August 26, 1964

You may recall that recently I made use of your office to interview farmers by telephone. To complete my study, which I am writing under the direction of Carl J. Couch, I would like to ask you to check off the enclosed list of farmers' names according to the way in which you would rate them.

Some of these farmers are not located in your county; therefore, please check the "don't know" column in such cases. The lists are being sent to adjoining County Extension Directors so that the names will be exhausted. I would appreciate the return of these lists at your earliest convenience to:

Dr. Carl J. Couch, Leader
Extension Communication Research
Institute for Extension Personnel Development
117 Agriculture Hall
Michigan State University
East Lansing, Michigan

I wish to take this opportunity to thank you for the inconvenience which I may have caused you in the use of your office and telephone. Also my thanks for your cooperation in this matter.

Yours sincerely,

John Elliott

Carl J. Couch, Leader
Extension Communication Research

Enclosure

Name and Mailing Address	Please Rate According to Your Professional Contact					Are These Farmers Members of	
	Frequently	Occasionally	Rarely	None	Don't Know	DHIA	Owner Sampler
(The names of farmers were not identified with the elevator operator).							

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