1977

Perceived Attributes Related to Adoption of Food Storage

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PERCEIVED ATTRIBUTES RELATED TO ADOPTION OF FOOD STORAGE

A Thesis

Presented to the

Department of Home Economics Education

Brigham Young University

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

by

Connie Jean Roberts

December 1977

This Thesis, by Connie Jean Roberts, is accepted in its present form by the Department of Home Economics Education of Brigham Young University as satisfying the thesis requirement for the degree of Master of Science.

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ACKNOWLEDGEMENTS

I express appreciation to Dr. Margaret Rae Jensen for her valuable direction and encouragement during the completion of this study. I also express appreciation to Dr. Ruth Brasher and Lora Beth Larson for their suggestions and support.

I am also indebted to Tricia Ormsby for her companionship and encouragement during the completion of this study and throughout the Master's program.

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INTRODUCTION

The purpose of this study is to determine the relationship between an individual's perceptions of the attributes of food storage and his adoption of food storage practices. Food storage is defined as the practice of preserving and storing basic food commodities as a reserve supply. This practice is encouraged as a preparatory measure to provide security for families in the midst of emergencies, whether physical, economic, or social in nature. It becomes especially appropriate in developing areas where physical disasters (such as earthquakes and floods) coupled with social and economic instability, individually and on a national scale, pose constant threats to family security. This study was conducted in one such country, Guatemala.

The practice of food storage is also recommended as a good management practice, enabling the consumer to take advantage of seasonal prices and to avoid expensive off-season purchases. By following this practice, families can maximize their use of limited resources. Food preservation and home storage can be a beneficial practice nutritionally, also, because in some areas fruits and vegetables may be difficult to obtain during some parts of the year.

Although the practice of storing a reserve supply of food has been used for centuries among agricultural societies, it is a new idea to many people who have become accustomed to buying food only as needed from local markets. Although many individuals are not aware that this innovation is a wise practice, change agents have begun to encourage the practice. The Church of Jesus Christ of Latter-day Saints (referred to as the LDS Church) stresses to its members the importance of storing a reserve food supply. Therefore the innovation is particularly relevant to members of the LDS Church, and thus the study was conducted among active members of the LDS Church.

The study attempted to identify distinct perceived attributes of food storage which influence the adoption of food storage practices. The information thus derived will be used in the formation and implementation of educational programs regarding food storage. By indicating which perceptions of food storage tend to be related to the adoption of food storage practices, the change agent will be able to focus teachings on changing those perceptions, thereby increasing the likelihood of adoption of food storage practices. It is assumed that the information derived from this research in Guatemala could be applied to culturally similar populations in other parts of Latin America.

REVIEW OF ADOPTION LITERATURE

Sociologists and anthropologists have long been concerned with the nature and process of social change. Much of this social change takes place as societies assimilate behaviors or ideas from other societies (Foster, 1962:25). Social change is defined as

" . . . the process by which alteration occurs in the structure and function of a social system" (Rogers, 1969:3). The process of social change can be broken down into three steps: invention, or the creation of new ideas; diffusion, or the spread of new ideas; and consequences, or the changes occurring after the acceptance or rejection of a new idea (Rogers, 1969). Much attention has been given to the second step of this process, diffusion, which encompasses the spread and adoption of new ideas. This is of interest to Home Economics educators, as new ideas and practices in Home Economics-related areas designed to improve the quality of home life must be diffused among the people before adoption can occur. Because educational programs which aim to change behavior deal directly with the diffusion and adoption of new ideas and practices, this study will deal with the diffusion step in the process of social change.

The Adoption Process

The adoption process is defined as " . . . a mental process through which an individual passes from first hearing about a new idea to final adoption" (Rogers, 1960:401). The new idea to be adopted is referred to as an innovation.

An innovation has been defined as " . . . any thought, behavior, or thing that is new because it is qualitatively different from existing forms" (Barnett, 1953). An innovation is defined as a process by Knight (1967:478): "An innovation is the adoption of a change which is new to an organization and to the relevant environment." Presser (1969:510) said that an innovation " . . . is something new and novel in human knowledge and experience." He

explained that as the innovation diffuses within an area, it ceases to be an innovation and becomes common. The newness aspect of an innovation was also emphasized by Wasson (1960), who discussed various ways in which an innovation can be "new". The perception of an innovation as new was also stressed by Rogers (1971:19), who defined an innovation as " . . . an idea, practice, or object perceived as new by an individual." Zaltman (1973:98) stated, " . . . we shall consider as an innovation any idea, practice, or material artifact perceived to be new by the relevant unit of adoption." This differs from Rogers' definition in that it allows for adopter units larger than a single individual, such as a society or group of adopters. Both Rogers and Zaltman emphasized that it is the perception of the innovation that decides its newness.

The stages of the adoption process were first studied by Ryan and Gross (1943). Based on the work of Ryan and Gross, a committee of rural sociologists postulated a five-stage process of adoption in 1955 (Rogers, 1971). The committee outlined the following stages: (1) the awareness stage, where the individual learns about the existence of the new idea, (2) the interest stage, where the individual develops an interest in the new idea, (3) the evaluation stage, where the individual decides whether or not to try the new idea, (4) the trial stage, where the individual tries the new idea on a small scale, and (5) the adoption stage, where the individual uses the new idea on a full scale (Rogers, 1971:100-101).

Several other models of the stages in the adoption process are discussed by Robertson (1971). The "Hierarchy of Effects" scheme consists of the awareness, knowledge, liking, preference, conviction,

and purchase stages. Another model, which Robertson calls the "AIDA" model, includes attention, interest, desire, and action as the stages through which a person passes in the adoption process (Robertson, 1971:58-60). Based on his review of the research, Robertson critiqued these models, stating that there is no single form that explains the adoption process completely, there is no specified number of stages through which an individual must pass in adopting a new idea, and there is no specified sequence of stages which must occur (Robertson, 1971:67). Robertson then proposed a model to eliminate these criticisms, describing possible stages through which a person may pass and incorporating pathways for skipping or repeating stages. The stages he described are problem perception, awareness, comprehension, attitude, legitimation, trial, adoption, and dissonance. That the adoption process does not always begin with the awareness stage was supported by Holden (1972) and Reynolds (1971). It may begin with a "Problem Oriented" beginning as suggested by Campbell (1966).

After summarizing research on the stages in the adoption process, Rogers (1971) analyzed and revised his original five stage process of adoption, correcting three weaknesses in his original model and in other proposed models. The first of these weaknesses coincides with Robertson's critique, saying that the stages do not always occur in the specified order. Rogers described a second weakness in the models, that the process does not always end in adoption. He proposed the term "Innovation-Decision Process" to replace the narrower term "adoption process" so as to include the possibility of rejection as well. Roger's third criticism of the weaknesses in the models is that, even if adoption does take place,

the process seldom ends with adoption. Instead, the individual continues to seek information to validate his decision.

As a result of Roger's study of the research on the stages in the adoption process, and based on the weaknesses of the models of the adoption process outlined above, Rogers proposed a four stage model designed to allow for variations in the process of adoption. The four stages he described are: (1) the knowledge stage, including awareness and understanding; (2) the persuasion stage, where the individual forms some attitude toward the new idea; (3) the decision stage, where the person makes a choice to adopt or reject the new idea; and (4) the confirmation stage, where the individual seeks reinforcement for the decision he has made. This model eliminates or combines the stages that are often skipped or taken in other orders; it allows for rejection as well as adoption; and it provides for further action after the decision has been made. Thus the weaknesses in previous models are corrected by this theoretical model. The variables in this study have the most influence during the persuasion stage of this model.

Variables Affecting Rate of Adoption

Researchers from the various scientific and sociological fields have studied many variables which affect movement through the stages of the adoption process. Some of the traditions in this research were summarized by Rogers (1971:50-51). The main focus in these studies has been the effect of different variables on the rate of adoption of the new idea or innovation. Some of these variables have been characteristics of the adopters themselves, describing

characteristics such as age, education, occupation, economic status, etc., of people who fall in different categories of adopters (early adopters, laggards, etc.). Other variables have been methods of diffusion of the new idea and the channels of communication the information follows. These variables include differences in the change agent as well as different media used to spread the information. A summary of research related to these variables is found in Rogers (1971).

Another focus in research has been on characteristics of the innovation or new idea itself, and how these relate to adoption. Until 1960, few studies on the adoption of innovations touched on the nature of the innovation as a variable affecting the rate of adoption (Lionberger, 1960:104-105). Among the first researchers to focus on the attributes of the innovation were Fliegel and Kivlin (1962a,b). They emphasized that the failure to study the attributes of innovations has, in effect, treated all innovations as if they were alike. They therefore set out to appraise a variety of attributes of farm practice innovations and to determine if these were associated with the rate of adoption. They theorized that if the known factors influencing adoption were kept constant in the adoption of different innovations, any variation in the adoption behavior can be partly explained by the characteristics of the innovation itself (Fliegel and Kivlin, 1968). The results of their study supported the theory.

The problem of ignoring the attributes of innovations was also discussed by Katz, Levin, and Hamilton (1963). When attributes of innovations are not studied, it is difficult to generalize the results of the study of one innovation to another innovation, i.e.

deciding whether a new innovation will act like hybrid corn in diffusion, or if it will act more like 2-4-D weed spray. Without a scheme of classification that tells us which innovation pattern it will likely follow, each study becomes an individual, discrete study with no generalizability. By referring to the attributes and characteristics of innovations, differences and similarities of innovations can be explained, allowing for the comparison of different innovations and allowing generalizations about how they will affect the rate of adoption.

Many characteristics of innovations have been discussed in the adoption literature. Cost, complexity, visibility, divisibility, compatibility, utility, and group action were studied by Rogers as innovation characteristics affecting the rate of adoption (1960). Medical innovations were classified according to their communicability, risk, and pervasiveness by Menzel (1960). After further research, Rogers revised his theory of innovation attributes influencing the rate of adoption, replacing cost, visibility, utility, and group action with relative advantage and communicability (1962). Congruence was discussed as a factor influencing rate of adoption by Brandner and Keal (1964), and Griliches (1960a) argued that profitability was a large factor, both researchers citing empirical studies to support their conclusions. Many factors of innovations were classified into six general categories by Fliegel and Kivlin (1966a,b). These categories were cost attributes, returns, efficiency, risk and uncertainty, communicability of the innovation and its effects, and congruence. Cost, returns to the investment, efficiency, risk and uncertainty, compatibility, terminality, reversibility, divisibility,

commitment required, impact upon interpersonal relationships, publicness or privateness, and ego-involvement were examined by Zaltman as attributes of innovations influencing rate of adoption (Zaltman, 1973).

One characteristic of innovations that has received a great deal of attention is whether the innovation is material or non-material. Ogburn (1922:211) hypothesized that changes in the material culture come easier than changes in the non-material culture. Material items are more readily accepted because they are more easily communicated, their utility is more easily shown, and they seem to have less effect in other areas of life, according to Barnett (1953). Becker and Boskoff (1957) disagreed, quoting research showing that material innovations are not more readily accepted than non-material innovations. They also stated that innovations have both a material and a non-material aspect.

Several theories of the stages of the adoption process discussed earlier recognize both a material and a non-material component in innovations. In the second stage of Rogers' model, the perception stage, the individual makes an evaluation and accepts or rejects the innovation mentally. According to Coughenour (1963:10), there is a distinction between the belief about an innovation and the actual use of that new idea. The acceptance of the practice as a good idea was included by Wilkening as one of his four stages in the adoption process. The importance of focusing on the acceptance of the idea was suggested by Bohlen (1964:284):

> More knowledge is needed about the factors related to the time lag between mental acceptance of a practice or idea

and its actual adoption and incorporation into the existing patterns of technology being employed.

The symbolic adoption or the acceptance of the idea as appropriate for adoption was discussed as the first stage in a two-stage model of the adoption process (Klonglan and Coward, 1970). This stage is followed by the trial and acceptance or rejection of the innovation. Two advantages of this two-phase model are discussed. The two phases may help explain the lags in the adoption process and incomplete adoption. Secondly, studying the symbolic adoption as part of the adoption process may help identify important variables to explain and predict differences in adoption. The study of the persuasion stage, where an attitude is formed towards the innovation, as a prerequisite to the adoption of the innovation, can therefore provide important insight in understanding and predicting adoption.

Research on Perceptions of Innovations

A trend in research that has focused on the symbolic adoption, or formation of an attitude towards the innovation, is the study of perceptions of the attributes of innovations by the potential adopter. Until 1964, the studies focusing on attributes of innovations used objective assessments of the attributes of innovations, even though sociologists had long before discussed the importance of the perception of the innovation in determining the effects of innovation variables. An innovation is not accepted on the basis of its usefulness in the donor culture, but rather on the potential for use which the members of the new culture perceive the innovation to have on their own cultures (Linton, 1936:341). The characteristics

of a novelty were discussed by Barnett " . . . as they are envisaged by the potential acceptor" (Barnett, 1953:329).

In 1964, Fliegel and Kivlin (1966a,b) studied farmer's perceptions of innovations to identify the attributes of innovations affecting adoption. They had previously used a panel of judges to determine objective attributes of innovations (Fliegel and Kivlin, 1962a,b). In the 1966 study, however, they felt that the farmers' perceptions of the innovations would likely differ from the objective descriptions of the innovations by the panel. To determine the farmers' perceptions, interviewers used a four-point attitude scale to obtain rankings by farmers on various attributes. The individual perceptions of attributes were averaged to obtain an estimate of the shared perceptions of a segment of the population (Fliegel and Kivlin, 1966b:240). The results showed significant differences in the perceptions of the farmers and the panel, and changed some of the conclusions as to which factors had influenced the adoption of farm practices (Fliegel and Kivlin, 1966a). The perceived attributes taken together accounted for sixty-nine percent of the variance in adoption with the small-scale farmers and fifty-one percent of the variance in adoption with the middle-scale farmers (Kivlin and Fliegel, 1967). After reviewing related research, Rogers (1971), Zaltman (1973) and Robertson (1971) all concluded that the perception of the potential adopters is important as a factor influencing adoption.

These findings have been confirmed in several recent studies by Ostlund. He stated that "ignoring the perceived characteristics of an innovation . . . amounts to treating all innovations as

equivalent units" (Ostlund, 1969:259). In comparing the perceptions of six different innovations with other personal variables of the adopters, Ostlund found that the product perception variables had a much greater predictive power in relation to innovativeness than did the other personal variables. Similar results were obtained in a subsequent study (Ostlund, 1973). In another study, Ostlund used perception variables to predict innovativeness, which was measured in terms of classifications of innovators in adopter categories. He found the perception variables to be better predictors of innovativeness than the personal characteristics of adopters, correctly predicting classifications of innovativeness for eighty-three percent of the sample (Ostlund, 1974).

Besides predictive power, examining the characteristics of innovations from the perception of the potential adopter has another advantage. It allows researchers to take into account variation in the perceived characteristics of an innovation when the innovation is introduced into different societal or cultural settings. It is widely held that "perception is largely determined by culture" (Foster, 1962:120). The variation of perceived attributes in different cultural settings was shown by Kivlin and Fliegel in two studies. In the first study, they found that changes in the rate of adoption could stem from differences betwen the small- and large-scale farmers in their perceptions of farm practices (Kivlin and Fliegel, 1967). In studying further how perceptions differ, they used a cross-national comparison between Pennsylvanian farmers and American Indian farmers. They felt that differences in the potential adopters could color their perceptions. They found that the samples of Indians and the

small-scale Pennsylvanian farmers were alike in their perceptions and contrasted with the large-scale farmers on many attributes of the same innovations (Fliegel, Kivlin, and Sekhon, 1968). They attributed this difference to the different cultural backgrounds among the different groups. A similar study involving Mexican Americans showed how their perceptions differed from those of others outside their culture and influenced their adoption of a new corn hybrid (Apodaca, 1952). Because the perceptions of innovations by the adopters can be expected to differ in different cultural settings and are important variables in predicting adoption, this study will focus on the individual's perceptions of attributes of innovations.

Perceived-Attributes-of-Innovations Variables

Recent studies have applied a factor analysis of the many perceived attributes of innovations to form general attributes that can be used as a basis of comparison of innovations. Kivlin and Fliegel (1968) used this method and reduced the attributes to five major themes for farm practice innovations: long run investment implications, clear results, conservation of time and effort, farm reorganization, and dairying for profit. These attributes are specific for farm practices, yet the concepts behind each attribute are similar in nature to attributes for other innovations.

After a thorough review of research done on perceived attributes of innovations, Rogers (1971:137) has categorized the many innovation attributes into five general perceived attributes that are theoretically useable with any type of innovation. He postulated theories regarding each attribute and its influence on behavior, and

cited many studies dealing with each postulated theory, both in support of his theory and not in support. The attributes he studied are: relative advantage, compatibility, complexity, trialability, and observability. Ostlund (1973) did a factor analysis of these five attributes' ratings on six different product innovations, plus one additional attribute rating, risk. After examining the factor loadings of these variables for the six different products, he concluded that it would be unwise to combine or eliminate any of these attribute variables because each variable was required to explain variation in at least two of the six product innovations.

Several researchers have done extensive study of these five attributes of innovations. Fliegel and Kivlin did a series of studies among farmers in Pennsylvania of their perceptions of several farm practice innovations, using a four-point attitude scale to measure the perceptions of the five attributes and how these perceived attributes related to rate of adoption (Fliegel and Kivlin, 1962a,b, 1966a,b; Kivlin and Fliegel, 1967, 1968). Ostlund studied perceptions of different product innovations in marketing among housewives in Boston (Ostlund, 1969, 1973, 1974). Rogers (1971), Zaltman (1973), Robertson (1971) and Thio (1971) all developed theories on these five attributes of innovations, based on the research of many others.

These five attributes will be used as variables in this study. An explanation of each one and related research follows:

Relative advantage. Rogers defined the relative advantage of an innovation as " . . . the degree to which an innovation is perceived as being better than the idea it supercedes" (Rogers, 1971:138).

This is usually considered in economic terms but also can be measured in other ways, such as social cost, which was considered as a form of expense by Zaltman (1973:100). Rogers (1971) said that one dimension of relative advantage may have greater effect than another in different cultures. Fliegel, Kivlin, and Sekhon (1968) found that perceived social cost was positively correlated with rate of adoption in developing countries. Rogers agreed, saying that " . . . economic profitability may be even less important [than other aspects of relative advantage] for peasant farmers in less developed countries. . . ." Other dimensions of relative advantage, such as social prestige and social approval, are expected to explain the rate of adoption in less developed countries (Rogers, 1971:142). In their study of cross-national differences in the perceptions of innovations, Fliegel, Kivlin, and Sekhon (1968) found that among the Indian sample, social factors such as the approval of others were a more important incentive toward adoption than were other aspects of relative advantage such as cost factors.

It may be that Relative Advantage explains why preventive innovations have a low rate of adoption. It is difficult to demonstrate the relative advantage of a preventive innovation to the potential adopters (Rogers, 1971:141).

Rogers (1971) makes the generalization that "the relative advantage of a new idea, as perceived by members of a social system, is positively related to its rate of adoption." He cites 29 studies supporting this theory and 14 that did not support the theory. Many of the studies not supporting this theory (Brandner, 1960, Brandner and Straus, 1951, Brandner and Kearl, 1964, and Fliegel and Kivlin,

1962, 1966) focused on the economic aspect of relative advantage and found it to be of lesser significance than other perceptual variables, such as compatibility.

Rogers' theory has been supported more recently by Ostlund's study (1974), where perceived relative advantage ranked number one and two, alternating with compatibility, in ranked order of importance among perceived innovation attributes explaining innovativeness of adopters.

Complexity. The second variable is complexity. Rogers defined complexity as " . . . the degree to which an innovation is perceived as relatively difficult to understand and use." Bohlen and others (1968) described complexity as how simple it is to understand and use the innovation.

"Complexity of an innovation, as perceived by members of a social system, is negatively related to its rate of adoption" (Rogers, 1971:154). Fliegel and Kivlin (1962a,b and 1966a) found complexity, or how easily the innovation is understood by its potential adopters, to be negatively related to rate of adoption. The results of their cross-national comparison (Fliegel, Kivlin, and Sekhon, 1968) showed complexity to be negatively related to rate of adoption in all three different samples. Similar results were obtained by Singh (1966) in Canada and Petrini (1966) in Sweden. Ostlund's findings (Ostlund, 1973 and 1974) also support this hypothesis.

Compatibility. The third variable, compatibility, was defined as " . . . the degree of similarity, or congruity, between an innovation and an existing thing or idea which has traditionally served that

purpose which the innovation is intended to serve." (Fliegel and Kivlin, 1966:246). Linton (1932:41) stressed the cultural aspect of the compatibility of innovations, saying that compatibility of innovations is " . . . how easily they can be fitted into the existing culture configuration." If a trait is such that its acceptance conflicts with important values present in the culture, it will be rejected. This cultural emphasis on compatibility was supported by Katz, Levin, and Hamilton (1963:249-250), who said: "The central idea is that of 'compatibility' or 'fit' between the culture of a group or the personality of the individual and the elements of a proposed innovation." Rogers' definition of compatibility coincides: "Compatibility is the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of the receivers."

Rogers generalized from his survey of adoption research that compatibility is positively related to rate of adoption. Eighteen of the 27 studies he cited dealing with compatibility support this theory. Research done by Brandner (1960), Brandner and Straus (1959), and Brandner and Kearl (1964) supports this theory, finding compatibility to have greater influence on adoption than profitability. Fliegel and Kivlin (1966), however, received no support for their hypothesis that compatibility would be positively related to rate of adoption. In analyzing the results, Fliegel and Kivlin explained that similarity with the old could encourage or discourage adoption, depending on the values of the potential adopter. The relationship between compatibility and rate of adoption may be curvilinear, such that if an innovation is seen as too similar to

existing practices, adoption may be discouraged. This may hold true in some cultures more than in others. They concluded that " . . . compatibility cannot be assessed as an attribute of innovations unless the value system of the potential acceptor can be explicitly taken into account."

Ostlund found support for Rogers' proposition concerning compatibility in his study of six perceived attributes of innovations. Following Rogers' definition of the term, he found compatibility to be ranked first or second in importance among perceived attributes in predicting innovativeness.

Both the innovation attributes and the adopter attributes are important in determining compatibility, according to Thio (1971). After studying research on innovation attributes, he hypothesized:

> The more closely the characteristics of the innovation are compatible with the potential adopter's cultural, social and socio-psychological attributes prior to its introduction, the greater are the chances of its acceptance.

He suggested two ways of assessing the adopter-innovation compatibility, " . . . one being the subjective perception of the acceptor-to-be, and the other being the objective standpoint of the investigator." He emphasized that the actor's symbolic perception and the observer's interpretation are of equal importance in determining compatibility.

Trialability. Trialability is defined by Rogers as " . . . the degree to which an innovation may be experimented with on a limited basis." Based on his review of empirical studies, generalized that the " . . . trialability of an innovation, as perceived by members of a social system, is positively related to

its rate of adoption." Thus if the potential adopter can try the innovation on a small scale, he is more likely to adopt the innovation. Zaltman (1973) referred to this concept as "Divisibility," meaning that the innovation can be divided and tested in parts, and said that it " . . . concerns the ability to try or implement the innovation on a limited basis." Fliegel and Kivlin (1966a) found a positive relationship between divisibility and the rate of adoption, but this result was only partially confirmed by their cross-national study (Fliegel, Kivlin, and Sekhon, 1968). The perceived divisibility was positively related to rate of adoption only for the Indian samples but not for the Pennsylvanian farmers. Ostlund (1973) found divisibility to be an important factor in predicting innovativeness for some product innovations. Thus trialability may have more influence on adoption for some innovations than for others.

Observability. The last of the variables being considered here, observability, is defined as " . . . the degree to which the results of an innovation are visible to others" (Rogers, 1971:155). This attribute is also called visibility, meaning that " . . . obvious innovations are more likely to be adopted than are obscure innovations." Also, the more easily an innovation can be demonstrated, " . . . the more visible its advantages will be and thus the more likely it is to be adopted" (Zaltman, 1973:104). Rogers stated that Ogburn's (1922) cultural lag theory, which said that a material innovation will be accepted faster than a non-material innovation, fits into this attribute. Rogers cited nine studies dealing with observability, seven of which supported the hypothesis that "the

observability of an innovation, as perceived by members of a social system, is positively related to its rate of adoption" (Rogers, 1971). Ostlund's studies (1973 and 1974) support this hypothesis also.

In summary, the research on perceived attributes of innovations and their relation to rate of adoption generally supports the hypotheses that perceived relative advantage, compatibility, trialability, and observability of the innovation are positively related to the rate of adoption, and that perceived complexity of the innovation is negatively related to the rate of adoption. Some components of relative advantage, such as social or economic advantage, may be more strongly related to adoption in some cultures than in others.

Personal Characteristic Variables

In addition to studying the five perceived attributes of innovations, two personal characteristic variables were studied because of their possible influence on the adoption of food storage practices. Because those who have been members of the LDS Church for a long period of time have presumably received greater encouragement to store food than those who have been members a short time, the influence of years of membership in the LDS Church on perceptions of food storage and on adoption of food storage practices will be studied. Because roles of husbands and wives tend to be very distinct in some cultures, it was also of interest to the researcher to determine differences in perceptions or adoption of food storage by sex. Therefore the personal characteristic variables of years of

membership in the LDS Church and sex will be studied as variables influencing perception and adoption of food storage.

Research on Rate and Degree of Adoption

As has been mentioned, the previous studies of perceived attributes of innovations have been limited to comparisons with the rate of adoption of an innovation, measured by how many people have adopted the innovation at certain points in time. Because the researcher was interested not only in whether or not respondents had ever stored any food but also in how much food they had stored, the degree of adoption of food storage will be studied rather than the rate of adoption. The idea of degree of adoption is especially applicable to the adoption of food storage, which is usually adopted in a continual process rather than all at once as are many other innovations. Several researchers have suggested the study of measurements of adoption other than rate of adoption. Some of these, Katz, Levin, and Hamilton (1963:252), suggested the study of "levels" of adoption. Zaltman (1973:78) discussed the concept of "adoption progress," or how far the individual has progressed through the adoption stages, suggesting partial or incomplete adoption at some stages. Thus the "degree" of adoption of food storage will be measured to test for corrrelations between the perceived attributes of innovations and adoption.

Research on the Innovation of Home Storage

Little research on the five perceived attributes of innovations has been done outside the rural sociology and marketing fields,

although what has been done suggests that the innovation of home storage would be similar in characteristics and effect on adoption to other innovations studied. Rogers (1971:118-119) used an example of a home-canning innovation to illustrate the adoption process, suggesting that he considered new home practices to be innovations following the adoption patterns of farm practice innovations. Belcher (1958) tested the hypothesis that the acceptance of an innovation in medical care practice follows the same patterns as farm practices. Although he found different variables affecting the adoption of medical practices than those affecting the adoption of farm practices, he concluded that it would follow the same patterns " . . . providing there is no question regarding the utility of the practice. . . ." Lindstrom (1958) and Wilkening (1953) both found that the adoption of farm practices and homemaking practices followed the same patterns, and were influenced by the same variables.

An adapted form of the five perceived attributes of innovations was used in a study of the adoption of nutrition practices by women in Brazil (Dickson, 1966). The concept of Relative Advantage used in the present study was separated into economic advantage (i.e. the degree to which the practice saved money) and relative advantage (i.e. "the degree to which the practice possessed advantages other than economic"). This study used the term communicability as the ease of understanding the practice. The other attributes of innovations (compatibility, complexity, and divisibility) were used with the same conceptual definition as Rogers' definitions. The results of the study supported Rogers' hypotheses concerning each variable: economic advantage, relative advantage, and compatibility

yielded positive correlations with the adoption of the practices; and complexity was negatively correlated to adoption of the practices. The attributes of divisibility and communicability were not considered suitable for analysis because of lack of variance in the scores. Thus the results found in studying the innovation of nutritional practices were in the directions hypothesized by Rogers.

These studies on homemaking and medical innovations suggest that the innovation of home storage would follow patterns of adoption similar to those of other innovations.

HYPOTHESES

Based on the preceding review of research, the hypotheses to be tested in this study include:

1. Perceived relative advantage of food storage practices will be positively related to the degree of adoption of food storage practices.

2. Perceived complexity of food storage practices will be negatively related to the degree of adoption of food storage practices.

3. Perceived compatibility of food storage practices will be positively related to the degree of adoption of food storage practices.

4. Perceived trialability of food storage practices will be positively related to the degree of adoption of food storage practices.

5. Perceived observability of food storage practices will be positively related to the degree of adoption of food storage practices.

6. Perceptions of the attributes of food storage and the degree of adoption of food storage practices will be influenced by sex and years of membership in the LDS Church.

Chapter 2

METHODS AND PROCEDURES

THE SAMPLE

A random sample was selected from a population of all single adults who were active members of the LDS Church over 25 not living with their immediate families and all LDS married couples in which at least one spouse was an active Church member in Quetzaltenango, Guatemala. Members were judged to be active or not active by their local ecclesiastical leaders, using as the criteria a minimum attendance of at least one meeting per month. Couples and individuals who met the criteria were identified by local Priesthood leaders using church records. Fifty-five units (single adults or married couples) were chosen randomly by drawing numbers assigned to each unit. When the unit selected was a married couple in which both spouses were active members of the LDS Church, one of the couple was randomly selected for the sample. The original sample drawn consisted of 25 men and 30 women. Because some of these were not interviewed for various reasons, the final sample consisted of 19 men and 27 women.

THE QUESTIONNAIRE

A questionnaire was constructed to measure (1) the five perceived attributes-of-innovations variables and (2) the level of adoption of food storage practices. The questionnaire (see Appendix A)

consisted of 15 attitude questions, four personal description questions, and one behavior question. In the first two attitude questions, the respondent indicated how high the practice of food storage ranked as a method of resource use to achieve maximum advantage and security, respectively. The next 12 questions were in the form of unidimensional attitude scales. These attitude scales were an adaptation of the semantic differential, which was developed by Osgood (1965) to be used cross-culturally. Rather than using opposites at the ends of the continuum, as does the semantic differential, however, the scales were unidimensional as suggested by Guttentag (1975) as preferable to two dimensional scales. Fliegel and Kivlin (1962a,b; 1966a,b) used four-point scales similar to those in this study in determining perception of attributes of farm practices. It was felt by the researcher that a unidimensional scale would be easier to understand for the population of Guatemala with less formal education. The unidimensional scale also insured that only one variable was being measured with each question. The questions therefore measure the degree to which respondents perceived food storage to have each attribute, each scale ranging from perceiving that food storage does not have the attribute to perceiving that food storage strongly has the attribute.

Each of the fourteen attitude questions was designed to describe one element of one of the five perceived attributes of food storage used in the hypotheses. Responses to questions describing each perceived attribute were combined into a composite score for each perceived attribute. Three elements of relative advantage (general advantage of food storage, advantage in security and safety, and

advantage economically) were represented by attitude questions 1, 2, and 7 respectively. Complexity was measured by the difficulty in storing food, the possibility of storing food, and knowledge possessed by the respondent of how to store food, in questions 3, 4, and 6 respectively. Compatibility included help in meeting daily needs, approval of others, and similarity of food storage to customary practices of the respondent and of the people in general in Guatemala. These were measured by questions 5, 8, 9, and 10 respectively. Trialability was measured by questions 11 and 12 as the cost of effort and money to begin storing food and the ease in trying food storage before adopting it fully. Observability was measured by questions 13 and 14 as the number of people who would know what food was stored by the family and the ease of others in finding out the amount of food stored by the family. In the data analysis, responses to the several questions measuring each perceived attribute variable were averaged to compute a score for each of the five perceived attributes of food storage.

The fifteenth attitude question was designed to determine what respondents viewed as the major hindrance to them in storing food. It asked respondents which of five problems hindered their food storage most.

The level of adoption of food storage practices by each respondent were measured by observing and recording the quantity of food stored (number of pounds of dry foods and grains, or number of gallons for oil, honey, etc.). The sex and ages of family members were also recorded. Four behavior measurements were calculated from this data: (1) total pounds of food stored, (2) total calories in

foods stored, (3) number of days for which caloric needs of the family would be met by food stored (days of adequate calories), and (4) the number of days for which protein needs of the family would be met by foods stored (days of adequate protein).

Nutrients found in foods stored (calories, protein) were calculated from Guatemalan tables of the nutritional content of foods (Leung, 1961). The calculations for days of adequate calories and days of adequate protein were made by calculating the total daily caloric or protein requirements of each member of the family according to age and sex, using daily recommendations based on Guatemalan standards (Béhar, 1972). The total number of calories (or grams of protein) found in the foods stored by the family was divided by the sum of the individual daily requirements of calories or protein of family members, to calculate the days caloric or protein needs would be met for the family by the foods stored.

Logs of the four behavior scores were also calculated in analyzing the data where curvilinear relationships may occur, yielding four additional behavior measurements.

Sex of the respondent and years of membership in the LDS Church were also recorded as background data.

Efforts to maximize the reliability of the questionnaire included pretesting versions of the questionnaire on members of the population who had not been selected in the sample. In these pretests, questions were worded in various ways to determine clarity and ease in understanding of each question. Questions that were ambiguous or interpreted differently by different people were excluded from the questionnaire. Reliability was increased by including more than one

question on each of the five attributes to be studied, although the number of questions was limited to those that could be asked within the attention span of the respondents. Efforts were made to standardize the interviews, conducting them in the individual's home whenever possible and giving clear, standard instructions for each part of the questionnaire.

Validity of the measures can be supported in terms of content validation. Four researchers evaluated the conceptual basis for each of the five perceived attributes, and questions were designed to measure different elements of each attribute as outlined by the definitions. Other questionnaires that had been used in the United States were also consulted for ways to measure attitudes and food storage behavior. Because no external variables measuring attitudes towards food storage are known with which to compare scores, the validity cannot be evaluated by criterion-related measures.

PROCEDURES

The interviews were all conducted by the researcher in May and June of 1977. The interviewer introduced herself as a student of Brigham Young University collecting information to help educators improve educational programs. Each of the individuals selected in the sample were interviewed individually by asking them the questions on the questionnaire. The questionnaire was administered orally because of the high rate of illiteracy in the population. Each attitude question and its five-point scale of possible responses was printed on a large card which was shown to the respondent. As the question and scale of possible answers were read, the interviewer

pointed to each point on the scale. The individuals then chose the point on the scale which most nearly represented their perception. Behavior was measured by observing and recording the actual types and amounts of food stored by the family units.

Data was collected from 46 of the 55 individuals in the sample. Three individuals had to be dropped from the sample because they had moved from the city. Three individuals were ineligible because they did not meet the criterion of the population, having been mistakenly identified in the original population. One individual refused to speak with the interviewer. Two individuals who were interviewed had to be dropped from the study because they were unable to understand and answer one or more of the questions. Thus 19 men and 27 women were interviewed, making a total of 46.

STATISTICAL ANALYSIS

The data collected in the study was analyzed in two ways. First, correlations were run with each attitude question, each composite perceived attribute score, sex and years of LDS Church membership as independent variables, and each of the four behavior scores and the four logs of each behavior score as dependent variables.

Regression analyses were then run with (1) the fourteen attitude questions, (2) the five composite perceived attribute scores, and (3) the fourteen attitude questions plus sex and years of LDS Church membership as independent variables, with each of the eight behavior measurements as dependent variables.

Chapter 3

RESULTS AND DISCUSSION

RESULTS

Descriptive Findings

Perceived attributes of food storage. Data was collected from 46 respondents. A frequency distribution of their responses to the fourteen attitude questions is contained in Table 1. Responses to each question were rated from 1 to 5. A "1" indicated that the respondent did not perceive food storage to have the attribute, and a "5" indicated that the respondent strongly perceived food storage to have the attribute measured by that question. Responses ranged from 1 to 5 on all the questions. Responses to questions 5, 9, and 10 tended to cluster toward one end, thus showing strong perception that food storage helps in meeting daily needs and low perception that food storage is similar to habits and culture. Mean scores for each question are also included in Table 1.

Responses to the several attitude questions designed to measure each perceived attribute of food storage were averaged to obtain a composite score for each attribute mentioned in the hypotheses. A frequency distribution of the composite scores of each perceived attribute and the mean scores and standard deviation of each perceived attribute are shown in Table 2. The composite score

Table 1

Frequency Distribution of Responses to Attitude Questions

	% Strongest Perception of Attribute	% Strong Perception	% Medium Perception	% Slight Perception	% No Perception	Mean	SD
1. General Advantage	51.0	19.1	6.3	8.5	17.0	2.76	1.57
2. Advantage in Security	31.9	14.8	4.2	6.3	44.6	1.87	1.82
3. Difficulty*	4.2	10.6	6.3	34.0	44.6	1.98	1.16
4. Degree of Possibility*	12.7	25.5	6.3	29.7	25.5	2.74	1.42
5. Help in Meeting Daily Needs	21.2	65.9	6.3	4.2	2.1	2.98	.80
6. Degree of Knowledge*	25.5	38.2	19.1	6.3	10.6	3.61	1.26
7. Economic Advantage	4.2	61.7	6.3	21.2	6.3	2.33	1.06
8. Approval from Others	25.5	27.6	17.0	10.6	19.1	2.30	1.47

Table 1 (continued)

	% Strongest Perception of Attribute	% Strong Perception	% Medium Perception	% Slight Perception	% No Perception	Mean	SD
9. Similarity to Habits	4.2	6,3	0,0	48,9	40,4	.87	1.02
10. Similarity to Culture	2.1	17,0	2,1	34.0	44.6	.98	1,18
11. Initial Cost	17.0	29,7	29.7	14.8	8,5	2.35	1.18
12. Ease of Trial	10.6	27.6	12,7	46.8	0,0	1.98	1.11
13. Degree of Publicity	14.8	4.2	6,3	19,1	55.3	1.00	1,51
14. Ease of Others' Knowing	2.1	34.0	8,5	25.5	29,7	1.54	1.31

*It should be noted that a low perception of these attributes indicates a favorable attitude toward food storage.

Table 2

Frequency Distribution of Composite Perceived Attribute Scores

	1.0-1.9 Percent	2.0-2.9 Percent	3.0-3.9 Percent	4.1-5.0 Percent	Mean	SD
Relative Advantage	15	28	24	33	2.319	.929
Complexity	15	30	28	26	2.775	.961
Compatibility	13	48	37	2	1.783	.576
Trialability	7	52	28	13	2.163	.876
Observability	52	26	7	15	1.272	1.191

for relative advantage had the highest mean, and the composite score for observability had the lowest mean score of the five attributes.

The fifteenth question on the questionnaire asked respondents what hindered them most in storing foods. Their responses are summarized in Tables 3 and 4, showing frequency distributions of responses by sex and years of membership in the LDS Church respectively. Lack of money was most frequently selected as the major hindrance in storing food with 47.8% of the respondents naming this hindrance first, followed by 17.4% who selected lack of knowledge first and 13.0% who selected lack of experience first.

Food storage behavior. Scores were obtained for four food storage behaviors: (1) total pounds of food stored, (2) total calories in foods stored, (3) number of days for which caloric needs of the family would be met by foods stored (days of adequate calories), and (4) number of days for which protein needs of the family would be met by foods stored (days of adequate protein). Scores ranged from 0 to 2350 total pounds of foods stored; from 0 to 3,771,900 total calories stored; from 0 to 1591.52 days of adequate calories; and from 0 to 181.92 days of adequate protein. Tables 5 through 8 show frequency distributions for each of the four behavior measures, and means and standard deviations of each.

Logs of each behavior raw score were also calculated to more adequately reflect curvilinear relationships. Scatter plots of attitude questions plotted against behavior scores showed a few extremely high values in behavior which did not fit a linear correlation pattern for some attitude questions. Using the logs of the

Table 3

Hindrances to Food Storage (Question 15) by Sex

Hindrances to Storage	% of Men (N=19)	% of Women (N=27)	% of Total (N=46)
Lack of Experience	5.3	18.5	13.0
Lack of Knowledge	21.0	14.8	17.4
Lack of Money	36.8	55.6	47.8
Lack of Place	21.1	3.7	10.9
Lack of Motive	15.8	3.7	8.7
No Answer	0.0	3.7	2.2
Total	100.0	100.0	100.0

Table 4

Hindrances to Food Storage

By Years of LDS Church Membership

Hindrances to Storage	1-4 years	5-9 years	10-14 years	Over 15 years	Total
	(N=8)	(N=14)	(N=13)	(N=11)	(N=46)
	Percent	Percent	Percent	Percent	Percent
Lack of Experience	25.0	00.0	15.4	18.2	13.0
Lack of Knowledge	0.0	35.7	7.7	18.2	17.4
Lack of Money	62.5	50.0	61.5	18.2	47.8
Lack of Place	12.5	0.0	7.7	27.2	10.9
Lack of Motive	0.0	17.15	7.7	18.2	8.7
No Answer	0.0	17.15	0.0	0.0	2.2
Total	100	100	100	100	100

Table 5

Frequency Distribution of Total Pounds

Pounds Stored (Mean=195.8; SD=429.6)	Number	Percent
Nothing Stored	21	46
1 to 50 pounds	7	15
50 to 100	0	0
100 to 300	7	15
300 to 500	7	15
Over 500	4	9
Total	46	100

Table 6

Frequency Distribution of Total Calories Stored

Calories Stored (Mean=317182.6; SD=670479.6)	Number	Percent
Nothing Stored	21	46
1 to 10,000 cal.	2	4
10,000-100,000	5	11
100,000-500,000	7	15
500,000-1,000,000	7	15
Over 1,000,000	4	9
Total	46	100

Table 7

Frequency Distribution of
Days of Adequate Calories

DAC (Mean=231.4; SD=406.8)

	Number	Percent
Nothing Stored	21	46
1 to 50 days	5	11
50 to 100	5	11
100 to 500	6	13
500 to 1000	6	13
Over 1000	3	6
Total	46	100

Table 8

Frequency Distribution of
Days of Adequate Protein

DAP (Mean=24.5; SD=43.8)

	Number	Percent
Nothing Stored	21	46
1 to 10 days	9	19
10 to 30	4	9
30 to 60	5	11
60 to 100	4	9
Over 100	3	6
Total	46	100

behavior scores tends to lower these extreme values and better fits the linear correlation. Thus in some cases, for individuals with strong perceptions of the attribute, the level of food storage behavior was more extreme than a linear relationship would suggest (see example in Figure 1). Thus a change from low to moderate perception of the attribute may have little effect on food storage behavior, yet a change from moderate to strong perception of the attribute may be associated with a great increase in behavior. Thus four additional behavior scores were used to measure degree of adoption. All four behavior raw scores were found to be highly significantly inter-correlated, as were the logs of the behavior scores (Table 9).

Tests of Hypotheses

An overview of the results by different types of analysis will be given here, and then results relating to each hypothesis will be discussed.

In order to test the hypotheses, simple correlations were calculated between each attitude question and each of the eight behavior scores. The results are found in Table 10. Initial cost (question 11) was positively correlated to the raw behavior scores at the .05 level of significance. Difficulty in storing food (question 3) was negatively correlated to two of the behavior raw scores (days of adequate calories and days of adequate protein) at the .05 level. It was also negatively correlated to all four logs of the behavior scores at the .01 level of significance. Initial cost and degree of knowledge (questions 11 and 6) were each correlated with three of the logs of the behavior scores at the .01 level (total pounds, total

PLOT 1

Perceived Trialability Plotted Against

Total Calories Stored

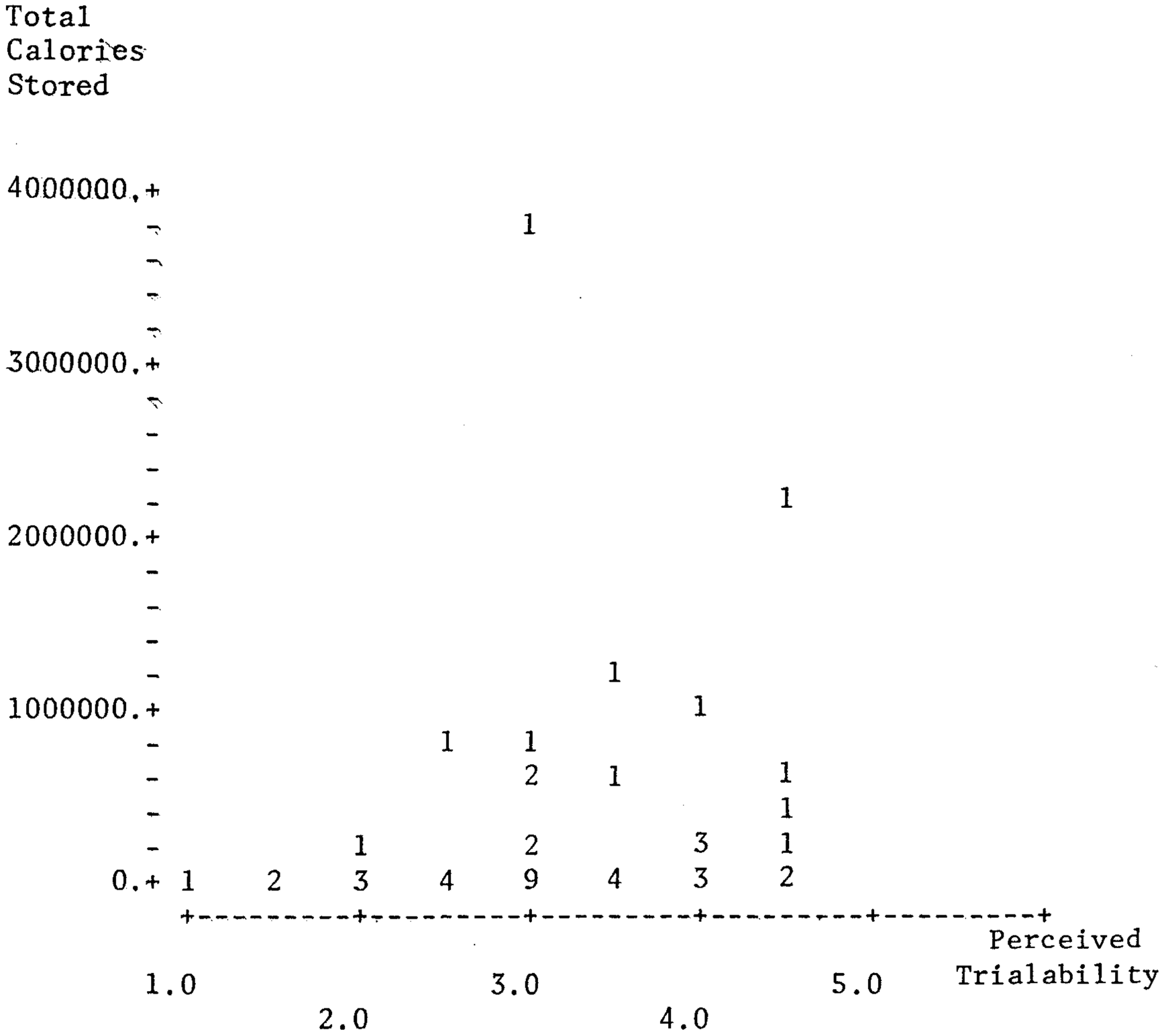

Figure 1

Table 9

Intercorrelations Among Food Storage Behavior Scores

Behaviors	Total Calories	Days of Adequate Calories	Days of Adequate Protein	Mean	SD
Total pounds	.9955	.9016	.9225	195.8	429.6
	(.9669)	(.9911)	(.9704)	(2.66)	(2.74)
Total Calories		.9036	.9205	317182.6	670479.6
		(.9741)	(.9160)	(6.69)	(6.32)
Days of Adequate Calories			.9904	231.4	406.8
			(.9701)	(2.85)	(2.88)
Days of Adequate Protein				24.5	43.8
				(1.68)	(1.86)

( ) indicates correlations between logs of the two variables and means and SD of logs of behavior scores.

Table 10

Correlations Between Attitude Questions
And Behavior Scores

Attitude Questions	Total Pounds Stored		Total Calories Stored		Days of Adequate Calories		Days of Adequate Protein	
	raw	log	raw	log	raw	log	raw	log
1. General Advantage	.132	.125	.147	.108	.111	.099	.087	.073
2. Advantage in Security	.071	.105	.080	.105	.102	.090	.108	.075
3. Difficulty	-.215	-.352**	-.232	-.365**	-.246*	-.348**	-.257*	-.359**
4. Possibility	-.087	-.218	-.099	-.235	-.109	-.210	-.124	-.225
5. Help in Meeting Daily Needs	-.015	-.048	-.002	-.031	.011	-.020	-.002	-.027
6. Degree of Knowledge	-.062	-.380**	-.086	-.386**	-.186	-.396**	-.139	-.329*
7. Economic Advantage	-.188	-.131	-.185	-.084	-.116	-.097	-.113	-.079
8. Approval	-.077	.008	-.063	.100	-.154	.022	-.145	-.060

Table 10
(continued)

Attitude Questions	Total Pounds Stored		Total Calories Stored		Days of Adequate Calories		Days of Adequate Protein	
	raw	log	raw	log	raw	log	raw	log
9. Similarity to Habits	-.094	-.236	-.098	-.250*	-.136	-.233	-.123	-.216
10. Similarity to Culture	.105	.262*	.108	.237	.130	.269*	.140	.259*
11. Initial Cost	.248*	.355**	.255*	.343**	.260*	.356**	.253*	.329*
12. Ease of Trial	.067	.219	.070	.228	.179	.219	.165	.192
13. Publicness	-.035	.185	-.027	.238	.074	.206	.037	.145
14. Ease of Others Observing	.013	.205	.024	.259*	.103	.237	.067	.180

* = $p < .05$

** = $p < .01$

calories, and days of adequate calories), and with the fourth log of the behavior score (days of adequate protein) at the .05 level. Initial cost was positively correlated, while degree of knowledge was negatively correlated with the behavior scores. Compatibility with habits, compatibility with culture, and ease of others observing (questions 9, 10, and 14) were correlated at the .05 level with one or more of the logs of the behavior scores.

Correlations were also calculated between the five composite perceived attribute scores and each behavior score. These results are found in Table 11. The composite score for trialability was positively correlated with the "days of adequate calories" and "days of adequate protein" behavior raw scores at the .05 level of significance. The composite scores for complexity and trialability were correlated with all of the logs of the behavior scores at the .01 level. Complexity was negatively correlated and trialability was positively correlated with the behavior scores. The composite score for observability was positively correlated with the log of total calories stored and the log of days of adequate calories scores at the .05 level.

In order to test the sixth hypothesis that perception and adoption of food storage practices would be influenced by sex and years of membership in the LDS Church, correlations were calculated between years of membership in the LDS Church and each of the fourteen attitude questions. Results of these correlations are shown on Table 12. Years of membership was negatively correlated with perception of help in meeting daily needs (question 5). Initial

Table 11

Correlations Between Composite Perceived Attribute Scores
And Behavior Scores

	Total Pounds Stored		Total Calories Stored		Days of Adequate Calories		Days of Adequate Protein	
	raw	log	raw	log	raw	log	raw	log
Relative Advantage	.049	.089	.065	.097	.085	.078	.060	.077
Complexity	-.157	-.415**	-.180	-.431**	-.234	-.416**	-.400**	-.225
Compatibility	-.042	.018	-.029	.063	-.088	.042	-.011	-.076
Trialability	.209	.377**	.216	.375**	.288*	.377**	.342**	.274*
Observability	-.015	.230	-.004	.293*	.103	.261*	.191	.060

* = $p < .05$

** = $p < .01$

Table 12

Correlations Between Attitude Questions and
Years of Membership in the LDS Church

Attitude Questions	Correlation with Years of LDS Church Membership
1. General Advantage	.035
2. Advantage in Security	.070
3. Difficulty	.031
4. Degree of Possibility	.015
5. Help in Meeting Daily Needs	-.324*
6. Degree of Knowledge	.094
7. Economic Advantage	-.025
8. Approval from Others	-.121
9. Similarity to Habits	.029
10. Similarity to Culture	-.101
11. Initial Cost	.259*
12. Ease of Trial	.193
13. Publicness	.192
14. Ease of Others Observing	.043

* = $p < .05$

cost (question 11) was positively correlated with years of membership. Both correlations were significant at the .05 level.

The five perceived attribute scores were also correlated with years of LDS Church membership. Only the composite score for trialability was significantly correlated with years of membership at the .05 level, and it was positively correlated (Table 13).

Correlations were also calculated between years of LDS Church membership and each of the eight behavior scores. These results are found on Table 14. Positive correlations with the raw "days of adequate calories" and "days of adequate protein" scores were signfiicant at the .05 level. Correlations with the logs of the scores for total pounds, days of adequate calories, and days of adequate protein were also positive and significant at the .05 level.

In order to test the second part of the sixth hypothesis, an analysis of variance was run for sex and each of the fourteen attitude questions, the five perceived attribute scores, and each of the eight behavior scores. Means for men and women and the F scores for each attitude question and sex are shown in Table 15. Differences between men and women on difficulty, possibility, initial cost, and degree of publicity (questions 3, 4, 11 and 13) were significant at the .05 level. In each of these four questions, the mean scores for women were less favorable than those for men.

Means for men and women and F scores for each composite perceived attribute and sex are found in Table 16. Differences between men and women were significant for the composite perceived attributes of complexity and trialability at the .05 level. Again, the mean scores for women were lower than those for men.

Table 13

Correlations Between Composite Perceived Attribute Scores and Years of Membership in the LDS Church

Perceived Attributes	t
Relative Advantage	.056
Complexity	.060
Compatibility	-.229
Trialability	.296*
Observability	.145

* = $p < .05$

Table 14

Correlations Between Food Storage Behavior Scores
and Years of Membership in the LDS Church

Behavior Scores	t
Total pounds stored	.109
log	.250*
Total Calories Stored	.089
log	.239
Days of Adequate Calories	.270*
log	.270*
Days of Adequate Protein	.271*
log	.321*

* = $p < .05$

Table 15

Analysis of Variance: Attitude Questions by Sex

Attitude Questions	Means: Men	Women	F
1. General Advantage	2.63	2.85	.22
2. Advantage in Security	2.42	1.48	3.11
3. Difficulty	1.58	2.26	4.07*
4. Degree of Possibility	2.21	3.11	4.86*
5. Help in Meeting Daily Needs	2.95	3.00	.05
6. Degree of Knowledge	3.53	3.67	.14
7. Economic Advantage	2.21	2.41	.38
8. Approval from Others	2.16	2.41	.31
9. Similarity to Habits	.63	1.04	1.78
10. Similarity to Culture	1.00	.96	.01
11. Initial Cost	2.74	2.07	3.75*
12. Ease of Trial	2.12	1.81	1.44
13. Publicness	1.53	.63	4.24*
14. Ease of Others Observing	1.63	1.48	.14

* = $p < .05$

Table 16

Analysis of Variance: Composite Perceived Attribute Scores by Sex

Attitude Questions	Means		F
	Men	Women	
Relative Advantage	2.42	2.24	.39
Complexity	2.44	3.01	4.26*
Compatibility	1.68	1.85	.94
Trialability	2.47	1.94	4.38*
Observability	1.58	1.06	2.21

* = $p < .05$

Table 17 shows the means for men and women and F scores for each behavior score and sex. Mean behavior scores for men and women were not found to be significantly different on any of the eight behavior scores.

Regression Analysis

Regressions were run with all attitude questions, sex, and years of membership in the LDS Church together as a set of independent variables and each behavior score as dependent variables. The independent variables together accounted for between 18.1 and 25.1 percent of the variance in the different behavior raw scores, and between 38.7 and 42.2 percent of the variation in logs of the different behavior scores, but the F values of these regressions were not statistically significant for any of the behavior scores. A summary of the variance accounted for and F values for each behavior score is given in Table 18.

The five composite perceived attribute scores were then regressed with each of the behavior scores. They accounted for between 6.0 and 11.6 percent of the variance of the different behavior raw scores, and between 21.6 and 26.4 percent of the variance using the logs of the different behavior scores. These regression statistics were significant at the .05 level for the logs of total pounds, total calories stored, and days of adequate calories (Table 19).

The composite attribute scores were reordered in the regression according to the amount of variance they each accounted for beyond the contribution of more powerful variables. Trialability was found to have the most influence in variation of the different

Table 17

Analysis of Variance: Behavior Scores by Sex

Behavior Scores	Mean Men	Mean Women	F
Total pounds	241	164	.36
Total Calories	372844	278013	.22
Days of Adequate Calories	326	165	1.78
Days of Adequate Protein	35	17	1.85

Table 18

Summary of Multiple Regression Coefficients with Attitudes, Sex, and Years in LDS Church as Independent Variables and Behavior Scores as Dependent Variables

Behavior Scores	R^2	F^*
Total Pounds	.181	.364
log	.406	1.127
Total Calories	.185	.374
log	.415	1.171
Days of Adequate Calories	.251	.552
log	.422	1.202
Days of Adequate Protein	.238	.515
log	.387	1.040

* It should be noted that none of these statistics are significant at the .05 level.

Table 19

Summary of Multiple Regression Coefficients with All Composite Perceived Attribute Scores as Independent Variables and Behavior Scores as Dependent Variables

Behavior Scores	R^2	F
Total Pounds	.060	.51
log	.241	2.54*
Total Calories	.065	.56
log	.264	2.87*
Days of Adequate Calories	.116	1.05
log	.250	2.67*
Days of Adequate Protein	.104	.93
log	.216	2.21

* = $p < .05$

behavior scores, accounting for between 11.6 and 14.2 percent of the variation. Complexity contributed the second largest influence on the different behavior scores, accounting for between 7.7 and 9.1 percent of the variation. Relative advantage, compatibility, and observability had little influence in the variation in behaviors.

When trialability and complexity were regressed without the addition of these other three variables, together they accounted for between 4.9 and 9.9 percent of the variance in different behavior raw scores and between 19.7 and 23.2 percent of the variation in the logs of the different behavior scores. The regressions on the logs were significant at the .01 level. This data is summarized in Table 20.

Summary of Results

Two individual attitude questions, initial cost and difficulty, were found to be significantly correlated with two or more of the raw behavior scores. These and degree of knowledge, similarity to habits, similarity to culture, and ease of others observing (questions 6, 9, 10, and 14) were significantly correlated with at least one of the logs of the behavior scores.

Composite scores for trialability, complexity, and observability were significantly correlated with six, four, and two of the behavior scores respectively. Trialability and observability were positively correlated, while complexity was negatively correlated with the behavior scores.

Years of LDS Church membership was significantly correlated with two attitude questions, help in meeting daily needs and initial

Table 20

Summary of Multiple Regression Coefficients with Trialability and Complexity as Independent Variables and Behavior Scores as Dependent Variables

Behavior Scores	R^2 Trialability	Complexity	Total	F
Total Pounds	.043	.006	.049	1.12
log	.142	.079	.223	6.16**
Total Calories	.046	.010	.056	1.28
log	.140	.091	.232	6.49**
Days of Adequate Calories	.083	.016	.099	2.36
log	.142	.080	.223	6.19**
Days of Adequate Protein	.075	.015	.090	2.12
log	.115	.077	.197	5.26**

** = $p < .01$

cost, and one composite perceived attribute score, trialability. It was also correlated with five of the behavior scores.

Responses to four questions, difficulty, possibility, initial cost, and degree of publicity, were found to vary significantly by sex. Two composite perceived attribute scores, complexity and trialability, varied significantly by sex. Behavior scores were not found to vary significantly by sex.

DISCUSSION OF FINDINGS

Hypothesis 1

The data provided no support for the hypothesis that perceived relative advantage would be positively related to the degree of adoption for the innovation of food storage. Neither the composite score nor any of the individual attitude questions making up the composite score were statistically correlated with the behavior scores at the .05 level. The regression analysis showed the composite score for relative advantage to have very little influence on the variation in the behavior scores. The lack of support for this hypothesis could be due to the educational level of the population studied. As mentioned in the review of literature, it has been found the economic advantage has less effect in underdeveloped countries than do other elements of relative advantage. Even though respondents viewed food storage as somewhat high in relative advantage, the data suggest that other factors are more important in influencing adoption of food storage practices than is perceived relative advantage.

Hypothesis 2

The hypothesis that perceived complexity would be negatively related to the degree of adoption of food storage practices was supported by the data. Two of the attitude questions composing the score for perceived complexity were significantly correlated with some of the behavior scores. Difficulty (question 3) was negatively correlated with two behavior raw scores at the .05 level and with all of the logs of the behavior scores at the .01 level of significance. Degree of knowledge (question 6) was negatively correlated with three logs of the behavior scores at the .01 level.

Although the composite score for complexity was not significantly correlated with any of the behavior raw scores, it was negatively correlated with all of the logs of the behavior scores at the .01 level. This suggests that a curvilinear relationship exists, where the lower the perception of complexity by the respondent, the greater the increase in adoption of food storage practices. Thus there may be little difference in food storage behavior between those who view food storage as slightly to moderately difficult to understand and use; yet there may be a large difference between those who perceived food storage as moderately difficult to understand and use and those who did not perceive that it was at all difficult to understand and use.

Regression analysis of the five composite perceived attribute scores showed that the composite score for complexity was second after trialability in influence on variance of the behavior scores. When trialability and complexity were regressed together with each

behavior score, complexity accounted for between 7 and 9 percent of the variation in the different behavior scores beyond what was accounted for by trialability (Table 20). Although this contribution is small, it could become important if other factors influencing variation, such as income or years of LDS Church membership, are not manipulatable.

The results suggest, therefore, that perceived complexity may be a factor influencing the adoption of food storage practices.

Hypothesis 3

There was little support from the data for the hypothesis that perceived compatibility would be positively correlated with the degree of adoption of food storage practices. Although the composite score for compatibility was not significantly correlated with any behavior scores, two of the individual questions comprising the score for compatibility were significantly correlated with some behavior scores. Compatibility with daily needs and with approval of others (questions 5 and 8) had little effect on adoption; yet compatibility with habits was negatively correlated with the logs of total calories at the .05 level, and compatibility with the culture of Guatemala was positively correlated with the logs of three behavior scores at the .05 level. Correlations with the latter two questions and other behavior scores approached significance. Both of these questions (9 and 10) showed that respondents saw little compatibility with habits and culture and the practice of food storage, both questions have low mean scores of perceived compatibility.

Compatibility with the culture of Guatemala was positively correlated with behavior, suggesting that those who felt it was a regular practice among the people stored more. These people could be those who are still involved, either personally or through friends or relatives, in agriculture and the practice of storing yearly harvests. Logically those involved in these practices would have more food on hand than those who buy all their supplies from others.

Contrary to the expected result, compatibility with individual habits was negatively correlated with food storage behavior. Although the correlations were statistically significant for only one behavior score, correlations with all the behavior scores showed a strong trend in this direction and approached significance for three other scores. This finding tends to contradict the previous finding, yet it can be explained by examining a different segment of the population. It suggests that there are some individuals for whom food storage is a new and different practice, but who are storing food in spite of that incompatibility with past habits.

Regression analysis of the five composite perceived attributes showed that compatibility had minimal influence on variance in the different behavior scores.

The data therefore suggests that other factors seem to influence food storage behavior more than compatibility, and perceived compatibility is not expected to be a factor influencing the adoption of food storage.

Hypothesis 4

The hypothesis that perceived trialability is positively related to the degree of adoption of food storage practices received strong support from the data. One of the two questions making up the composite score for trialability, initial cost, was positively correlated with all behavior raw scores at the .05 level and with all logs of the behavior scores at the .01 level of significance. The composite score for trialability was significantly correlated with two of the raw behavior scores at the .05 level and approached significance on the other raw scores. The correlations of the composite trialability score and each of the logs of the behavior scores were all significant at the .01 level. This again suggests that the relationship tends to be curvilinear. Because the relationship is positive, those who perceive it very easy to try food storage on a small scale tend to store more food. This is a significant factor with the innovation of food storage, because food storage is usually obtained little by little. The results suggest that those who feel that it is a large expense to start storing food are less likely to store; while those who perceive food storage as accumulating through small steps tend to store more.

When all five composite perceived attribute score were regressed with each of the behavior scores, trialability contributed the greatest influence on variance in the different behavior scores. When only trialability and complexity together were regressed with each of the behavior scores, the regression analysis showed perceived trialability alone to account for between 11 and 14 percent of the

variance in the different behavior scores, significant at the .01 level. Complexity accounted for between 7 and 9 percent of the variance beyond the contribution of trialability. As mentioned earlier, this contribution could be important if other factors influencing variation in behavior are less manipulatable.

These results suggest that perceived trialability is a significant variable influencing the degree of adoption of food storage practices, having more influence than any of the other perceived attributes of innovations for the innovation of food storage.

Hypothesis 5

The hypothesis that perceived observability of food storage practices would be positively related to the degree of adoption of food storage practices received slight support from the data. One of the individual attitude questions, ease of others observing, making up the composite score for observability was positively correlated with the log of total calories at the .05 level. Positive correlations with the composite observability score and the behavior scores were significant at the .05 level for two of the logs of the behavior measurements, total calories stored and days adequate calories. Again this suggests that a curvilinear relationship exists where those who perceive food storage as more observable tended to store more food. This could be partially explained by the social desirability of food storage among members of the LDS Church who are encouraged by their leaders to store food.

The regression analysis showed the composite score for observability as third of the five perceived attributes in influence on variation in behavior, but the contribution made by observability was very minimal.

These results suggest that perceived observability may have a small influence on the degree of adoption for the innovation of food storage.

Hypothesis 6

The hypothesis that sex and years of membership in the LDS Church would be correlated with the perception of attributes of food storage and the degree of adoption of food storage practices received partial support from the data. Years of membership was positively correlated with perceived trialability. This may be explained by the fact that those who had been in the church longer had more time and opportunity to try the innovation, and therefore perceived it as more trialable. Years in the church was positively correlated with behavior, as expected, but little variation in behavior (3 to 4%) was accounted for by years of LDS Church membership. This suggests that those who had been members of the LDS Church longer tended to have more food stored, presumably because they had received encouragement to store food for a longer period of time; yet years of church membership does not seem to be a major factor influencing the adoption of food storage practices.

Sex had some relation to perceived attributes of innovations. The males who responded tended to perceive the innovation of food storage as having more of the favorable attributes than did women,

having a statistically significantly more favorable mean score on four attitude questions and two of the five perceived attribute scores. Women's responses may have been less favorable because they were more realistic, as the women have more direct experience in buying and storing food.

There was no significant correlation found between sex and the behavior scores. According to this data, then, sex did not influence the degree of adoption of food storage practices.

Chapter 4

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

THE PROBLEM

A review of related research indicated that perceived attributes of innnovations influence the adoption of innovations. Five perceived attributes of innovations important in previous research and theorizing were identified: relative advantage, complexity, compatibility, trialability, and observability. This study was designed to determine the relationship between these five perceived attributes of innovations and the adoption of food storage practices. Data on perceived attributes of innovations and food storage behavior was collected from 46 adult members of the LDS Church in Quetzaltenango, Guatemala. Attributes of innovations were measured by attitude questions on a five-point scale. Degree of adoption of food storage practices was measured by observing and recording actual food stored by each family, from which four behavior scores and their logs were calculated. Data was analyzed by simple correlation and regression analysis.

TESTS OF HYPOTHESES

Correlations were made between the fourteen individual attitude questions and the eight behavior scores, between the five composite perceived attribute scores and the eight behavior scores; and between

years of LDS Church membership and all attitude and behavior scores. An analysis of variance on attitude and behavior scores by sex was also made. Regressions were run between the attitude scores and each behavior score.

Five hypotheses were tested:

1. Perceived relative advantage of food storage practices will be positively related to the degree of adoption of food storage practices. No significant correlation between perceived relative advantage and the behavior scores was found. The hypothesis was therefore not supported by the data.

2. Perceived complexity of food storage practices will be negatively related to the degree of adoption of food storage practices. Negative correlations at significant levels were found for four of the behavior measurements. This hypothesis was therefore supported by the data.

3. Perceived compatibility of food storage practices will be positively related to the degree of adoption of food storage practices. No significant correlation was found between perceived compatibility and the behavior scores. The hypothesis was therefore not supported.

4. Perceived trialability of food storage practices will be positively related to the degree of adoption of food storage practices. Significant positive correlations were found for six of the behavior measurements and perceived trialability. The hypothesis was therefore supported by the data.

5. Perceived observability of food storage practices will be positively related to the degree of adoption of food storage practices. Significant positive correlations were found for two of

the eight behavior measurements. The hypothesis was therefore partially supported by the data.

6. Perceptions of the attributes of food storage and the degree of adoption of food storage practices will be influenced by sex and years of membership in the LDS Church. Significant positive correlations were found between one composite perceived attribute score and years of membership and between five behavior scores and years of membership. Thus this hypothesis received support as far as the influence of years of membership in the LDS Church was concerned.

Composite perceived attribute scores were found to be significantly different by sex for two composite attribute scores, complexity and trialability. This part of the sixth hypothesis was supported. No significant difference was found for behaviors by sex. The hypothesis was therefore not supported as far as the influence of sex on adoption was concerned.

CONCLUSIONS

1. The data presented here support the idea that perceived trialability, complexity, and observability are factors influencing the adoption of food storage practices. The relationship between these perceived attributes and the adoption of food storage practices is probably curvilinear. This suggests that moving from low to moderate perception of these attributes of food storage by potential adopters may have little influence on adoption behavior; yet strong perception of these attributes may tend to increase the degree of adoption of food storage practices.

2. Perceived relative advantage and compatibility were not found to be factors which significantly influenced the adoption of food storage practices. Although some elements of these factors may influence adoption behavior, the composite attributes have little influence.

3. Years of LDS Church membership influences some perceptions of food storage and the adoption of food storage practices, such that the longer the respondent had been a member of the LDS Church, the greater his perception of the attributes and the greater the amount of food he had stored.

4. Sex influences some perceptions of food storage (males tending to perceive more strongly that food storage has the favorable attributes studied), but it has no influence on the adoption of food storage behavior.

IMPLICATIONS

Educational Programs

The results and conclusions of this study have implications for educators attempting to increase adoption of the innovation of food storage. Educators concerned about the adoption of food storage are interested in manipulating variables found to influence food storage behavior. Although the influence in variation of food storage behavior by the five perceived attributes of innovations was small, the perceived attributes still may have significance in educational programs. Much of the variance in food storage behavior appears to be related to variables that cannot be manipulated by the educator, such as income or years of LDS Church membership. If this is true,

those variables that can be manipulated take on greater significance than the statistics may suggest.

That the perceptions of attributes of food storage can be manipulated by educational programs was shown by Ormsby (1977) in a study conducted in Guatemala during the same time period as this study. After a six week educational program, those who received lessons on food storage were significantly higher in perception of attributes of food storage on four of the attitude questions, degree of knowledge, similarity to habits, initial cost, and ease of others observing, than those who received another educational program unrelated to food storage. Three of these questions were elements of the perceived attributes of complexity, trialability, or observability, which were found to be important factors in this study.

The results of this study suggest that those developing educational programs involving food storage should attempt to increase the participants' perception of trialability of food storage practices and decrease the participants' perceptions of complexity of food storage. This could be done by emphasizing the acquisition of food storage a little at a time and by encouraging and facilitating the testing of storage principles taught. When educators provide actual experiences whereby the participant can test specific practices, such as drying food, the perceived trialability may increase and the likelihood of food storage behavior may also increase. As educators teach clear, valid principles of food storage, the participant may perceive the innovation as less difficult to understand and use, which again may increase the likelihood of adoption of food storage practices.

The differences in perception of attributes of food storage by sex suggest that educators may adjust their teachings depending on the audience they are reaching. For example, when teaching women, the educator may try to increase perceptions of trialability to increase the likelihood of food storage behavior. When teaching men, they may strive to decrease the perceived complexity of food storage.

Based on the conclusions of this research and the researcher's personal insight and experience in educational programs in Guatemala, the following guidelines are suggested for developing food storage educational programs in developing countries:

1. Help participants set their own goals for food storage according to their needs and abilities. Rather than set a common goal for all participants, such as a food storage supply adequate for six months' nutritional needs, help the participants see that there are many acceptable and worthwile goals they could choose. Teach them to realistically evaluate their own abilities and set realistic goals in accordance with those abilities. Participants must be made to feel that even small goals are legitimate and honorable if ability to store food is limited. Goals set beyond the individual's or family's abilities tend to decrease motivation to try to achieve the goal. On the other hand, when a small but realistic goal is reached, the participant experiences success and may thus be encouraged to set a new goal.

2. Develop each lesson around one main idea with one behavior objective. When participants are presented with one clear idea and can master that idea in class, complexity will be reduced. Each behavior objective should take the participant a small step towards

his goal. Helping participants view food storage as a step-by-step process, rather than an end goal, will increase perceived trialability and encourage action leading to larger goals.

3. Teach lessons using simple, everyday language, using terms the participants would use to convey an idea, explain a process, or discuss reasons behind certain practices taught. Avoid discussing nutrients or chemical changes occurring in the food, etc.

4. Teach participants to store foods that are readily available locally and commonly known and used by the people, such as local grains (corn, rice) instead of wheat, local fruits and vegetables, and local protein products (dried fish, Incaparina, soybeans, etc.).

5. Teach one easy, correct method using equipment and materials that are locally available, inexpensive, and familiar to the particpants. Although other methods may be correct, teaching the easiest, least expensive method will enable all participants to apply the teachings without requiring them to understand, remember, and keep separate techniques of other methods they will not use. Teaching methods that require materials and equipment that are easily and inexpensively obtained locally will increase the likelihood that participants can and will apply the teachings. People often perceive that food storage must include canning, a well known method of preservation, which is appropriate in the U.S., and must be taught that other methods (i.e., drying foods) may be more effective and prudent in their situation and climate. The tendency to teach U.S. methods of food storage not only makes it difficult for local people

to apply the teachings, but often encourages practices that are actually unwise or ineffective.

6. Teachings should emphasize the practical concrete aspects of food storage. Ideas taught should be reinforced by visuals and actual examples so that understanding is clear. Lessons should include actual practice of the methods taught and/or followup at home to see that ideas are correctly applied. When a participant has experiences in drying food or finding places in their home to store food, they are taking steps towards reaching their goals and will feel they are making progress.

7. Gear programs and specific teachings to reach those who make the decisions regarding each aspect of food storage. Roles may vary in different cultures. It is useless to teach wives, for example, the importance of food storage, if husbands decide how money is spent. In a like manner, teaching husbands how to dry food may be ineffective in cultures where only women do food preparation tasks. Programs should be structured so that both husband and wife receive instruction pertaining to their specific roles and responsibilities in regards to food storage.

LIMITATIONS

This study dealt only with active members of the LDS Church in Quetzeltenango, Guatemala, and their adoption of food storage practices. It is therefore generalizable only to groups with similar characteristics of religion, activity and culture. Those not having similar religious activity and beliefs may not have received the encouragement and motivation to store food, and those of other

cultures may perceive the attributes of food storage differently. As other innovations or subjects taught as innovations, such as nutrition or health practices not related to food storage, were not studied, it is not assured that the results of this study will apply to the adoption of innovations other than food storage. Only the adopter's perceptions of food storage were studied. Because of this, no objective assessment is made as to what attributes food storage actually possesses in this culture. No attempt was made to validate the theory that the five perceived attributes of innovations are independent dimensions, nor to determine whether each one is a unified concept. Rather the study simply attempted to identify how those five attributes as defined apply to the innovation of food storage. Other aspects of the adoption research, such as adopter characteristics, diffusion and channel of communication, change agent characteristics, etc., were outside the scope of this study. The results, therefore, are generalizable only to the perceived attributes of innovations as they influence adoption behavior. The study is cross-sectional, rather than longitudinal, and therefore does not deal with changes in attitudes over time. Thus it cannot be determined how perceptions of food storage may change as a result of food storage adoption, and causality of food storage adoption by perceived attribute variables cannot be assumed. Personal variables other than sex and years of LDS Church membership (i.e., age, income, educational level) were not studied as factors influencing adoption of food storage practices.

SUGGESTIONS FOR FUTURE RESEARCH

1. It is suggested that studies be conducted to determine other factors besides the perceived attributes of innovations that influence the adoption of food storage practices (i.e., income, educational level, etc.). This could aid educators in identifying other manipulatable variables that may influence the adoption of food storage practices and may show that variance not accounted for by perceived attributes of innovations is explained by unmanipulatable variables such as income or education.

2. It is suggested that studies be conducted using different methods to determine why people do or do not store foods and the hindrances they find in food storage.

3. It is suggested that the different elements composing each perceived attribute of innovations be examined to determine more precisely the perceptions of food storage that may influence adoption of food storage practices.

4. It is suggested that a more thorough study be made of the differences in perceptions of attributes of innovations by men and women and their influences on the adoption of food storage behavior. This study could also reveal which spouse in a family tends to have greater influence in the adoption of food storage practices, suggesting where to direct educational programs regarding food storage.

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APPENDIX

QUESTIONNAIRE

(SPANISH VERSION)

¿Cuál de estas maneras de usar los recursos (como tiempo y dinero) le dará más provecho a su familia?

--Comprar alimentos adicionales para que la familia coma mejor ahora
--Comprar alimentos para almacenar
--Mejorar la casa
--Ahorrar dinero para construir una casa propia (o para otra cosa)
--Empezar o mejorar un negocio propio
--Comprar ropa
--Comprar aparatos eléctricos
--Obtener más educación

¿Cuál de estas maneras de usar los recursos (tiempo, dinero) le hará más segura a su familia?

(Same as above)

¿Qué difícil es para su familia almacenar alimentos básicos?

1--no es difícil
2--un pocodifícil
3--mediano difícil
4--muy difícil
5--extremadamente difícil

¿Qué posible es para su familia almacenar alimentos básicos?

5--no es posible
4--un poco posible
3--mediano posible
2--muy posible
1--completamente posible

¿Cuánto le ayuda el almacenar alimentos en llenar las necesidades diarias de su familia?

5--no me ayuda nada
4--me ayuda poco

3--me ayuda mediano
2--me ayuda mucho
1--me ayuda extremadamente

¿Cuánto conocimiento tiene Ud. acerca de cómo almacenar alimentos con seguridad por largo tiempo?

1--Casi todo el conocimiento
2--Mucho conocimiento
3--mediano conocimiento
4--poco conocimiento
5--casi ningún conocimiento

¿Cuánto más barato es el almacenar alimentos básicos que el comprar los alimentos al usarlos?

1--Extremadamente más barato
2--mucho más barato
3--mediano más barato
4--un poco más barato
5--no es más barato

¿Cuánto aprobación de sus amigos, parientes, y otros recibe Ud. al almacenar alimentos básicos?

1--Toda la aprobación
2--mucha aprobación
3--mediana aprobación
4--poca aprobación
5--ninguna aprobación

¿Qué diferente de lo que hacia regularmente es el almacenar alimentos por largo tiempo?

5--completamente diferente
4--muy diferente
3--mediano diferente
2--un poco diferente
1--no es diferente

¿Qué parecido a las costumbres y a la cultura de aqui en Guatemala es el almacenar alimentos?

1--son iguales
2--muy parecido
3--mediano parecido
4--un poco parecido
5--no se parecen nada

¿Le parece grande o pequeno el costo de esfuerzo y dinero <u>para empezar</u> almacenando alimentos basicos?

5--un costo muy grande
4--un costo grande
3--un costo mediano
2--un cost pequeno
1--un costo muy pequeno

¿Qué facil es probar cómo almacenar alimentos y ver si tiene éxito antes de almacenar muchos alimentos?

1--Extramadamente fácil
2--muy fácil
3--mediano fácil
4--un poco fácil
5--no es fácil

¿Quiénes de estas personas sabrían lo que Ud. tenga almacenado?

1--todos mis conocidos
2--muchos de mis conocidos
3--unos de mis conocidos
4--solamente mis parientes y amigos mas amados
5--solamente mi propia familia

¿Qué fácil sería para otras personas fuera de su familia de saber lo que Ud. tenga almacenado?

5--no es nada fácil
4--un poco fácil
3--mediano fácil
2--muy fácil
1--extremadamente fácil

¿Cuál de estos problemas le impide más en almacenar alimentos básicos?

--falta de experiencia
--falta de conocimiento
--falta de dinero
--falta de lugar para guardarlo
--falta de motivo
--otra problema

QUESTIONNAIRE

(ENGLISH VERSION)

Which of these ways to use resources (such as time and money) is more advantageous to your family?

--To buy additional food so that the family can eat better now
--To buy food to store
--To improve the house
--To save money to build your own house (or for another reason)
--To start or improve your own business
--To buy clothing
--To buy electrical appliances
--To obtain more education

Which of these ways to use resources (time and money) would make your family more safe and secure?

(Same as above)

How difficult is it for your family to store basic foods?

--it is not difficult
--slightly difficult
--moderately difficult
--very difficult
--extremely difficult

How possible is it for your family to store basic foods?

--it is not possible
--slightly possible
--moderately possible
--very possible
--completely possible

How much does storing food help you in filling the daily needs of your family?

--it does not help me at all
--it helps me a little

--it helps me moderately
--it helps me a lot
--it helps me extremely

How much knowledge do you have about how to store foods safely for a long time?

--nearly all knowledge
--much knowledge
--medium knowledge
--little knowledge
--almost no knowledge

How much less expensive is the storing of basic foods than buying foods as you use them?

--extremely less expensive
--much less expensive
--moderately less expensive
--slightly less expensive
--it is not less expensive

How much approval from your friends, relatives, and others do you receive in storing basic foods?

--total approval
--much approval
--medium approval
--little approval
--no approval

How different from what you have regularly done is storing foods for a long time?

--completely different
--very different
--moderately different
--slightly different
--it is not different

How much like the customs and culture of here in Guatemala is the practices of storing foods?

--they are the same
--they are much alike
--they are moderately alike
--they are a little alike
--they are not alike at all

Does it seem to you a large or small cost of effort and money to start storing basic foods?

--a very large cost
--a large cost
--a medium cost
--a small cost
--a very small cost

How easy is it to test how to store foods and see if you have success before storing many foods?

--extremely easy
--very easy
--moderately easy
--slightly easy
--it is not easy

Which of these persons would know what you have stored?

--all of my acquaintances
--many of my acquaintances
--some of my acquaintances
--only my relatives and dearest friends
--only my own family

How easy would it be for others outside of your family to find out what you have stored?

--it is not easy at all
--slightly easy
--moderately easy
--very easy
--extremely easy

Which of these problems hinders you most in storing basic foods?

--lack of experience
--lack of knowledge
--lack of money
--lack of a place to store it
--lack of reason or motive
--other problem

PERCEIVED ATTRIBUTES RELATED TO ADOPTION OF FOOD STORAGE

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ABSTRACT

This study examined the relationship of perceived attributes of food storage to the degree of adoption of food storage practices. Subjects were 46 active adult members of the LDS Church in Guatemala. Responses of respondents to attitude questions using five-point scales were combined into 5 composite perceived attribute scores to measure perception of attributes of food storage. Actual food stored by the respondent and family size were analyzed to calculate eight behavior scores measuring adoption of food storage practices.

Results indicated that two perceived attributes, trialability and complexity, were significantly correlated with a majority of the behavior scores. Trialability was positively correlated and complexity was negatively correlated. Observability was positively correlated with 2 behavior scores at the .05 level. No relationship was found between relative advantage and compatibility and the behavior scores. Years of membership in the LDS Church was positively correlated with some perceptions of food storage and some behavior scores. Sex was found to influence some perceptions of food storage but to have no influence on behavior scores.

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