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Reaching Extension's Clientele: Exploring Patterns of Preferred Information Channels Among Small Farm Operators

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ABSTRACT Effective delivery methods are important to the impact of Extension programs. The effectiveness of delivering Extension programs can be increased by matching the information channels used by Extension to those preferred by segments of the clientele. This study explores the preference patterns of clientele for obtaining information. The influence of selected individual and structural characteristics on those patterns also is examined. Data from a mail survey (using the Total Design Method, or TDM) of small farm operators from six counties in Florida indicate that preference patterns vary. The analysis, using confirmatory factor analysis, verified the presence of a lower cost preference pattern and two higher cost patterns, one focused on individual consultation and the other on group educational activities. Regression analysis also was used to determine the influence of selected individual level and structural level characteristics on the emergence of different preference patterns. These results can be used as a guide to maximize contact in delivering information to various segments of Extension audiences.

Introduction

Although much interest is focused on new technologies involving computers to provide information to Extension clientele, traditional methods of information delivery will continue to be the dominant mode in the near future. Effective delivery methods are important to the impact of Extension programs. The effectiveness of delivering Extension programs can be increased by matching the information channels employed by Extension to those preferred by segments of the clientele. Too often, little attention is given to planning the sequence of activities which are likely to lead to the outcomes intended for Extension programs. Contacting audiences is an important element in the implementation of these educational programs. Using appropriate information channels for different groups can facilitate developing

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widespread coverage of the target audience, which is then likely to increase the impacts of Extension activities (Rogers, 1983).

Researchers recognize that some people use multiple information channels during the adoption process (Rogers, 1983), but few descriptions of these patterns are found in recent years (see for example Nolan and Lasley, 1979). Multiple channels are used by Extension to deliver information for several reasons, including the different contribution each channel can make to the phases of the adoption process and differential access or use by specific clientele groups (Lionberger and Gwin, 1982; Rogers, 1983).

Exploration of the combinations of information channels which comprise different preference patterns can be guided by social exchange theory concepts (Blau, 1964; Homans, 1961). The central premise of social exchange, as it relates to the receptivity to Extension's educational materials, is that clientele seek or accept information when the potential benefits outweigh the costs, and if a trust that the rewards will be delivered is established (cf. Dillman, 1978:12). Moreover, the influence of individual and structural variables on preference patterns can be deduced from these concepts and, in turn, used to select the combination of communication channels best suited to specific Extension audiences.

This study examines the preference patterns of one of Extension's clientele groups for obtaining information. A sample of small farm operators is used to explore the utility of classifying preferences into higher and lower cost patterns. Given that this clientele group is likely to have combinations of information channels that they prefer, what do the concepts of benefits, costs, and trust suggest about the structure of these patterns? The influence of selected individual and structural characteristics on those patterns also is examined to determine the consistency of preferences among segments of Extension audiences. This study is conducted as part of a survey to obtain detailed information on the attributes of small farm operations and off-farm labor, farmers' attitudes toward their farm operation, and preferences concerning delivery methods of educational materials from Extension.
Patterns of information channel preferences: benefits, costs, and trust

The potential benefits or rewards associated with different information channels vary in the depth, relevance, and specificity of the information that is provided to individuals. Extension clientele are likely to realize a greater benefit when information is relevant to their needs and when channels provide detailed information or allow for the presentation of individualized information. Extension clientele who become well informed also might gain social prestige from being recognized as well-informed and by adopting Extension's "best management practices."

Social costs also are expected to vary from one information channel to another. Extension clientele can incur costs in a number of ways, including travel costs to and from the Extension office to obtain information or to participate in workshops, demonstrations, or meetings, time spent reading information, watching video tapes or TV programs, acting in a socially inferior role (when asking a more knowledgeable Extension agent for help), and by creating an obligation that the client will act to support Extension in the future (cf. Coleman, 1988).

Information channels which appear to have higher costs also appear to have high potential benefits. For example, workshops and demonstrations may be relatively costly to many clientele because they must schedule time away from other activities for travel to and participation in the educational activity, but at the same time they can benefit from the detailed information presented and have opportunities to ask questions specific to their situation or to the clarify information. In contrast, newspaper articles are a lower cost channel for most clientele because papers are usually home or office delivered, and the time spent reading the information is convenient and short. However, this channel is likely to be of less benefit than others because of a lack of relevance, depth, or specificity for individual clients.

Trust plays a key role by reducing the risk that clientele will incur costs in obtaining information and not find it to be useful. When the costs of information are perceived to be less than the potential benefits, Extension clientele can be expected to seek information. But the risks are greater when clientele use channels which carry higher costs. Thus, clientele who lack a trust relationship with Extension can be expected to minimize their risk by preferring a pattern of lower-
cost/lower-benefit information channels (or by not using Extension's information at all).

Two general patterns of preferences for information channels can be predicted on the basis of benefits, costs, and trust. One of these, a lower-cost/lower-benefit pattern of information channel preference is expected to include the use of mass media (radio, television, newspapers) and printed material (newsletters, Extension bulletins that clientele obtain by mail or pick up at the Extension office, and trade magazines). Since most people have TVs and radios and read newspapers, mass media channels are widely accessible to most of Extensions' clientele. Costs for information received by radio and TV include time expended and inflexible listening or viewing schedules. Newspapers carry the cost of subscribing in addition to the time spent reading information. Although the length of bulletins can raise their relative cost, most printed matter is relatively low cost. Bulletins which clientele pick up are likely to be more costly to them (primarily because of travel costs) than newsletters or bulletins that are mailed to clientele. Thus, bulletins that must be picked up are expected to be less frequently included in the preference listing by individuals with a lower cost pattern of preferences for information channels than are newsletters and bulletins that are mailed. It would also appear that these channels have little cost in terms of lowered social prestige or incurred obligation because there is limited contact with Extension professionals. The benefits from these channels are expected to be limited in terms of their specificity to individual needs, and in many cases, in their relevance or depth of information.

Clientele with the higher cost pattern of preferences are expected to be more likely to identify meetings, workshops, demonstrations, field days, individual consultation, and video tapes as their preferred channels. Clientele who prefer information channels included in the higher cost/higher benefit pattern are expected to be differentiated into two groups: those preferring group educational channels and those preferring individual consultation. Some clientele are expected to prefer to use educational activities that are group-oriented (meetings, workshops, field days, and demonstrations). Use of these channels incurs the cost of traveling to those activities, the loss of flexibility in scheduling time to obtain information, and a somewhat higher level of obligation because of increased contact with Extension agents. However, social costs, in terms of obligation, can be minimized for
these channels by limiting behavior that is highly visible (e. g., asking questions which entail special assistance). One of the potential benefits of group educational activities, in addition to obtaining needed information, is the social contact and fellowship that many Extension clientele say they enjoy. Given that both the costs and potential benefits are thought to be higher for clientele who prefer group-focused information channels, the risk that the benefits will be unrealized is greater than for clientele with a lower cost/lower benefit preference pattern. As clientele develop a trust in Extension's ability to deliver useful information, the perception of the degree of risk can be assumed to decrease.

As noted earlier, other clientele are expected to prefer information channels using one-on-one consultation. Individual consultation may occur through telephone conversations or by visits at the Extension office or at the client's farm. The latter two are likely to incur the greatest level of social obligation because of the time and attention that an agent directs to the client. Although office visits have the added cost of travel for clientele, the social costs of farm visits may out weigh that for office visits because of having asked for on-site personal help from the county agent (Blau, 1964). The potential benefits from office and farm visits, and to a lesser extent, telephone consultation are relatively high because clientele can obtain information tailored to their specific needs, especially in situations when the Extension educator needs to visually inspect the problem before he or she can make a recommendation. A preference pattern using individual consultation is viewed to carry a higher risk that potential benefits will be unfilled than with lower cost information channels.

Video tapes, newsletters, and bulletins are expected to be used to complement information from group educational activities and individual consultation. VCR tapes also are costlier than mass media and printed material because clientele must spend time traveling to an Extension office to both obtain and return the tape (presuming they have a VCR player). Newsletters complement group activities for these clientele by providing information about times and locations of these activities. Bulletins can provide information to reinforce that provided during consultation.

In sum, the small farm clientele are expected to show preferences for lower cost and higher cost patterns. Furthermore, higher cost/higher benefit patterns are expected to be found with clientele who
prefer group-focused channels and those who prefer channels emphasizing individual consultation.

Influences on preferences

A long tradition of adoption and diffusion research has shown that differences in preference patterns occur because of individual level and structural level attributes (Rogers, 1983; Rogers and Shoemaker, 1971). Individual level attributes reflect the felt need for information, attitudes toward and experience with Extension as a source of information, and the capability to obtain and use information. People who feel that they face a serious problem are more likely to select higher cost information channels than those who perceive a problem to be somewhat or moderately serious (Israel, 1988). Similarly, farmers who have started a new enterprise recently are more likely to face problems than are those who have had the same farming system for a lengthy period of time. Thus, the former group is likely to seek information more than the latter. On the other hand, changing regulations for pesticides, farm labor, etc., unstable markets, and fluctuations in weather (e.g., drought and freezes) can expand the need for information for farmers with long-established enterprises, as well as for those with new enterprises.

The type of commodities produced on the farm also may carry a particular need for information. Nolan and Lasley (1979) reported that utilization of different information channels varied among types of farm operations. Some enterprises require more intensive management skills than other enterprises, and these skills are often limited in the small farm population. As with starting a new enterprise of any type, some enterprises involve a greater need for information. For clientele with these enterprises, the potential benefits of in-depth, specific information obtained through higher cost channels may be worth risking the costs associated with obtaining that information.

Attitudes toward Extension and experience with the organization are expected to play a critical role in preference patterns. Clientele who believed that Extension is among the best sources of information were more likely to select information channels that entail higher costs than individuals who did not hold that view (Israel, 1988). Similarly, those who have used Extension agents as a source of information are likely to have developed a relationship with the Extension staff. These clientele are likely to have, in turn, a greater trust in Extension than
clientele who have not used Extension. Hence, clientele who have obtained information from Extension in the past are expected to have a higher cost preference pattern than would clientele who have not used Extension.

Measures of the capability to obtain information, including income and farm size, also affect preferences for and uses of different information channels (Brown, 1981; Rogers, 1983). Individuals who have greater resources can better afford a more costly pattern of information use. Those with large capital investments also have more at stake, and they can better justify using higher cost information channels. Likewise, the capacity to understand and use information, based on educational attainment, has been found to influence both patterns of information use and methods of delivery (Brown, 1981; Rogers, 1983; Rogers and Shoemaker, 1971). Higher levels of education reduce mental effort and, hence, the cost of using new information. On the other hand, the life cycle effects of age on learning decrease adoption and innovativeness in some instances but not in others (Rogers and Shoemaker, 1971).

Structural attributes can affect preference patterns as well. This is because county and community characteristics affect the capability of Extension to deliver information by each of the channels equally (Brown, 1981). In other words, clientele do not have equal access to information within each county and between counties. Counties with a larger staff, relative to the population in the county, can reach more clientele than can counties with a smaller staff. A more limited ability to meet with individuals might reduce the prevalence of preferences for channels that utilize one-on-one contact.

Similarly, the number of local radio and television stations and circulation of daily and weekly newspapers affects the ability of Extension to disseminate information through these channels. Counties which lack radio and television stations or have small newspaper circulations constrain access to information for clientele. Nonmetropolitan counties are likely to have fewer mass media outlets than are metropolitan counties, and in these counties the number of clientele who express a preference for these channels is likely to be reduced.

Another constraint to equal access is clientele's place of residence. Distance from the county Extension office affects the cost of obtaining information. Longer distances are likely to reduce the prevalence of preferences for patterns which include channels that require clientele
to spend much time traveling. The effect of distance is probably largest for attending group educational activities (meetings, workshops, demonstrations, and field days), picking up bulletins, picking up and returning VCR tapes, and for individual consultation at the Extension office. Distance effects on travel costs are expected to be negligible for mass media and printed materials associated with lower cost/lower benefit preference patterns.

**Data**

Data were obtained from a disproportionate stratified random sample of 1,350 (from a list of 7,951) small farm operators in six counties in Florida. Small farm operators were operationally defined as landowners who held between 5 and 150 acres of agriculturally assessed property. The six counties were selected to represent metropolitan and nonmetropolitan areas of north central and north Florida. A mail survey was conducted in Spring, 1989, using the total design method (TDM) suggested by Dillman (1978). Of the 1,015 small farm operators in the sample who were reachable, a total of 419 provided usable responses to the mail survey (a response rate of 41.3 percent). Of the usable responses, 37 reported operating farms with more than 150 acres. These surveys were excluded, leaving 382 respondents. Of these, 326 reported a preference for one or more channels for receiving information from Extension.

Comparison of the data from the 299 respondents (who provided complete information for the subsequent analysis) with characteristics for farms with 1 to 179 acres in the 1987 Census of Agriculture (U. S. Bureau of the Census, 1989) show a close correspondence in all cases. Selected comparisons shown below in Figure 1 suggest that bias from nonresponse is likely not significant.

The survey data were supplemented with secondary data on metropolitan status (Bureau of Economic and Business Research, 1988), data on Extension staffing patterns in Florida counties for 1988, and mileage data (Western Economic Research Co., 1986; 1987).
**Figure 1. Sample compared to Census**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>SAMPLE</th>
<th>CENSUS*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average number of acres</td>
<td>43.3</td>
<td>39.8</td>
</tr>
<tr>
<td>Number of years farming</td>
<td>15.4</td>
<td>14.2</td>
</tr>
<tr>
<td>Average age (years)</td>
<td>52.3</td>
<td>53.4</td>
</tr>
<tr>
<td>Operator's sex (% male)</td>
<td>82.7</td>
<td>86.1</td>
</tr>
<tr>
<td>Operator's race (% white)</td>
<td>95.2</td>
<td>97.0</td>
</tr>
<tr>
<td>Percent with an off-farm job</td>
<td>63.0</td>
<td>61.1**</td>
</tr>
<tr>
<td>Percent with irrigated land</td>
<td>33.4</td>
<td>33.5</td>
</tr>
</tbody>
</table>

* Farms in Florida with 1 to 179 acres (n = 29,025).
** Percent of farm operators who worked any days off the farm.

**Method of analysis**

The analysis was conducted in two steps. First, confirmatory factor analysis was used to examine models of preference patterns among types of information channels for farmers who said that they wanted information from Extension. The factor model was estimated for a matrix of polychoric correlations using LISREL (Joreskog and Sorbom, 1983). Since a disproportionate stratified sample was used and LISREL has no procedures for assigning weights, the data were weighted by "exploding" techniques (Sonquist and Dunkelberg, 1977). To obtain the desired integer weights (from 1 to 9) for the six counties, each observation was copied until the necessary weight was achieved. The fit of models for higher and lower cost preference patterns was assessed by examining model Chi-square statistics and estimate loadings of the eleven types of information channels and error terms to ascertain that these values were within acceptable ranges.

In the second step, the influence of individual level and community level variables on patterns of preference are estimated. Covariance analysis using the SAS statistical program was employed to estimate these. Due to missing data for some variables, 299 observations were used in this part of the analysis.

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2 The data on preferences were discrete and did not approximate the normal distribution. Unweighted least squares is the preferred method for estimating models in this situation.
Findings

A total of 326 respondents said that they preferred one or more channels for receiving information from Extension. Small farm operators selected an average of 3.5 information channels from among the eleven listed.

Analysis of respondents' preferences provides general support of the notion of lower and higher cost patterns that was specified earlier. Three patterns were identified (see Table 1). These can be characterized as a lower cost preference pattern, a higher cost preference pattern focused around group learning activities, and a higher cost preference pattern focused around individualized learning activities. The factor loadings shown in Table 1 indicate that the lower cost preference pattern relies primarily on mass media channels—newspaper articles, radio, and television—and these channels are complemented by bulletins that clientele pick up, bulletins that are mailed to clientele, trade magazines, and newsletters.

The higher cost pattern with a focus on individualized educational activities emphasizes individual consultation at the Extension office or at the farm and to a lesser extent by telephone. The channels in this pattern are complemented somewhat by meetings and workshops, video tapes for VCRs, and by bulletins that clientele pick-up. In comparison, the higher cost pattern, which carries a focus on group educational activities, emphasizes demonstrations, field days, meetings and workshops. These channels are complemented by newsletters and bulletins that are mailed to clientele, video tapes for VCRs, and bulletins that clientele pick up.

There is a modest positive correlation (.256) between the two higher cost patterns (2, 3). This suggests that some individuals exhibit preferences which are encompassed by both patterns. In contrast, the lower cost pattern is negatively correlated with both of the higher cost patterns. Of note is the correlation (-.463) between the error variances

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3 Data on preferences among the information channels were obtained by asking, "What ways do you prefer to receive agricultural information from Extension? (circle all that you prefer)." Items were coded 1 if circled and 0 otherwise. The items were: bulletins you pick-up, newsletters or bulletins mailed to you, video tapes for your VCR, meetings or workshops, demonstrations or field days, newspaper articles, trade magazines, radio or TV, individual consultation by telephone, individual consultation at Extension office, visit at your farm by county agent, and other. Since only seven respondents circled the "other" category, this was omitted from the analysis.
for bulletins that clientele pick up and newsletters and bulletins that are mailed to clientele (Theta delta 2 1 in Table 1). The negative correlation of the error terms appears to be caused by a tendency among respondents to select one of these items but not the other.

As shown in Table 1, the overall fit of the model is acceptable (model goodness of fit index is .960, the adjusted index is .924). The squared multiple correlation ($R^2_s$) of the individual channels range between .156 and .841. Newspaper articles ($R^2_x = .641$) is the best instrument of the lower cost preference pattern. Demonstrations and field days ($R^2_x = .841$) and meetings and workshops ($R^2_x = .660$) are both good instruments of the group focused higher cost preference pattern, while individual consultation at the Extension office ($R^2_x = .733$) best represents the higher cost pattern which has a focus on individualized educational activities.
Influences on preferences

Data in Table 2 summarize the results of the covariance analysis. An examination of the coefficients and model statistics reveal several points of interest. First, the fit of each of the three models varies. The $R^2$ for the model of individual and structural influences on preference for a lower cost pattern was .102. Better fits were obtained for the higher cost preference patterns which focus on individualized educational activities ($R^2 = .253$) and on group educational activities ($R^2 = .203$). Second, the nature of the relationships varies across the three models, with use of Cooperative Extension agents as a source of information during the past year as a key factor in preferences for both of the higher cost patterns but not for the lower cost pattern. A more detailed analysis of each model follows.

Looking first at the extent of preference for a pattern of lower cost information channels, it can be seen from the coefficients presented in Table 2 that educational attainment is a statistically significant predictor of a preference for lower cost channels. Preference for lower cost channels is higher among small farm operators who have lower levels of educational attainment than for farmers who have higher educational attainment ($\text{Beta} = -.188$). Acres of pasture has a significant negative effect ($\text{Beta} = -.194$) on preference for lower cost channels (as well as higher cost channels) while acres of vegetables shows a positive effect ($\text{Beta} = .128$). Contrary to expectation, metropolitan status (and its better access to mass media channels) did

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4 Variables in the analysis were coded: County extension staff size—number of agricultural agents per 1,000 farmers; Metro status—1 = metropolitan status in 1983, 0 = nonmetropolitan; Miles to CES office—straight line mileage from the center of the farmer’s zipcode zone to Extension county office; Education—1 = some high school or less, 2 = high school graduate or equivalent, 3 = some college or vocational school, 4 = completed college degree, 5 = completed a graduate or professional degree; Age—in actual years; Farm size—total number of acres; Family income—1 = less than $10,000, 2 = $10,000 to $14,999, 3 = $15,000 to $19,999, 4 = $20,000 to $29,999, 5 = $30,000 to $39,999, 6 = $40,000 or more; Use Extension—1 = county Extension agent was used as a source of information on agricultural matters over the last year, 0 = not used; New enterprise—1 = began one or more new farming enterprises over the last 5 years, 0 = did not begin any new enterprises.

5 The effect of producing a number of different commodities were examined in several models. Commodities which showed a significant effect for any one of the preference patterns were retained.
Table 2. Regression of three patterns of preferences of information channels on individual and structural attributes

<table>
<thead>
<tr>
<th>INDEPENDENT VARIABLES</th>
<th>LOWER COST</th>
<th></th>
<th>HIGHER COST</th>
<th></th>
<th>GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>BETA</td>
<td>B</td>
<td>BETA</td>
<td>B</td>
</tr>
<tr>
<td>CES ag. staff size</td>
<td>.012</td>
<td>.035</td>
<td>.032</td>
<td>.075</td>
<td>.005</td>
</tr>
<tr>
<td>Metro status</td>
<td>-.145</td>
<td>-.112</td>
<td>-.119</td>
<td>-.077</td>
<td>-.239</td>
</tr>
<tr>
<td>Miles to CES office .003</td>
<td>.027</td>
<td>-.012</td>
<td>-.107</td>
<td>-.012</td>
<td>-.118*</td>
</tr>
<tr>
<td>Education</td>
<td>-.098</td>
<td>-.188**</td>
<td>.079</td>
<td>.124*</td>
<td>.040</td>
</tr>
<tr>
<td>Age</td>
<td>.004</td>
<td>.087</td>
<td>-.005</td>
<td>-.082</td>
<td>-.004</td>
</tr>
<tr>
<td>Farm size</td>
<td>.001</td>
<td>.070</td>
<td>.002</td>
<td>.080</td>
<td>-.0001</td>
</tr>
<tr>
<td>Family income</td>
<td>.042</td>
<td>.109</td>
<td>-.049</td>
<td>-.106</td>
<td>.020</td>
</tr>
<tr>
<td>Use Extension</td>
<td>.030</td>
<td>.022</td>
<td>.606</td>
<td>.382***</td>
<td>.447</td>
</tr>
<tr>
<td>New enterprise</td>
<td>.025</td>
<td>.018</td>
<td>.150</td>
<td>.090</td>
<td>.040</td>
</tr>
<tr>
<td>Acres of pasture</td>
<td>-.005</td>
<td>-.194*</td>
<td>-.005</td>
<td>-.155*</td>
<td>-.004</td>
</tr>
<tr>
<td>Acres of vegetables</td>
<td>.047</td>
<td>.123*</td>
<td>-.006</td>
<td>-.014</td>
<td>-.026</td>
</tr>
<tr>
<td>Acres of berries</td>
<td>.030</td>
<td>.081</td>
<td>.057</td>
<td>.126*</td>
<td>.052</td>
</tr>
<tr>
<td>Head of cattle</td>
<td>.005</td>
<td>.089</td>
<td>-.001</td>
<td>-.014</td>
<td>.011</td>
</tr>
<tr>
<td>Intercept</td>
<td>.628</td>
<td>.678</td>
<td>.790</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Model Statistics

| F        | 2.490** |
| R²       | .102    |
| Adj. R²  | .061    |

|                       | 7.414*** |
|                       | .253    |
|                       | .219    |

|                       | 5.573*** |
|                       | .203    |
|                       | .166    |

* p < .05, ** p < .01, *** p < .001

not show a significant positive affect on the extent of preference for lower cost information channels.

Influences on the extent of preference for the higher cost pattern which focuses on individualized educational consultation differed from those of the lower cost pattern. Using Extension as a source for agricultural information was a significant positive influence on the extent of preference for this pattern. Small farm operators who used Extension over the last year were more likely to prefer a higher cost pattern focused around individual contact then were farmers who did not use Extension (Beta = .382). In addition, farmers who had higher levels of educational attainment showed a greater preference for this pattern of higher cost channels than did farmers who had less education (Beta = .124). Owners (with a large acreage of berries) also had a greater preference for higher cost individualized information channels than did those with a smaller or no acreage (Beta = .126). Growers with a large berry operation may prefer individualized information channels because production of this crop is relatively new.
to Florida and entails high capital costs and risk. In contrast, preference for this pattern tended to decrease with acres of pasture (Beta = -.155).

Influences on the extent of preference for the higher cost pattern which focuses on group educational activities showed some similarities with the preference pattern for higher cost individual channels. Using Extension for agricultural information was significantly associated (Beta = .311) with the extent of preference for higher cost channels involving group activities. On the other hand, educational attainment showed no significant effect on the extent of preferences for this pattern (Beta = .070), although the sign is the same. Small farm operators who have a farm in a metropolitan county also were less likely to prefer these information channels than were farmers in nonmetropolitan counties (Beta = -.170). As expected, distance to the Extension office had a negative (Beta = -.118) affect on preferences for channels focused on group activities. Finally, preference for this higher cost pattern increased for two types of enterprises, acres of berries (Beta = .127) and head of cattle (Beta = .197).

**Discussion and conclusions**

This paper has focused on the preference patterns of small farm operators for obtaining information from the Cooperative Extension Service. The purpose was twofold. First, to explore the existence of lower and higher cost patterns of information channel preferences for small farm operators, and second, to assess the influence of individual and structural attributes on the extent of preference for lower and higher cost channels.

For the small farm operators who reported a preference for one or more information channels, three patterns of preferences were found. The presence of a lower cost preference pattern and two higher cost patterns (one focused on group educational activities and the other centered around individualized consultation) was supported by confirmatory factor analysis. This supports the view that a combination of channels can (and should) be used to deliver information to Extension's clientele. Whether specific channels of any given combination have more affect during different phases of the adoption process (cf. Rogers, 1983) was not examined and remains for future research.

The covariance analysis shows that preference patterns are distributed unevenly among different segments of small farm operators.
Several individual level attributes were found to be significant influences on preference patterns. The use of Extension as a source of information had a strong positive effect on preferring higher cost information channels. This evidence supports the view that farmers who have obtained agricultural information from Extension are likely to have greater trust in the organization. As this relationship and trust develops, the risk that farmers face in using higher cost channels to obtain information is apparently reduced.

The evidence concerning the effect of need on the preference for higher cost (and higher benefits) patterns was mixed. As expected, some enterprises were associated with a higher cost preference pattern. The production of berries was one enterprise which was associated with a preference for higher cost information channels. The effect was similar for both preference patterns. Since commercial berry production is relatively new to Florida, farmers producing this commodity may still need help in "working the bugs out" and thus prefer specialized one-on-one help from the county agent and "how to" demonstrations (Lionberger and Gwin, 1982). At the same time, starting a new enterprise (irrespective of its history of production in the state or availability of information on the commodity) was not significantly associated with a preference for higher cost information channels.

Contrary to expectations, resources such as family income and farm size had little effect on preferences for higher cost information channels. The ability to understand and use information, as indicated by educational attainment, had a negative effect on the lower cost preference pattern of small farmers but a positive effect on preferences for higher cost channels focusing on individual consultations. This contrasts somewhat with the positive influence of educational attainment that was found for the general population (Israel, 1988). The effect of age was minimal for small farm operators.

Several structural level attributes were found to influence preference patterns of small farm operators. Access to the Extension office, as a function of distance to the Extension office, was associated with a preference for higher cost channels focused on group educational activities such as demonstrations and meetings. The evidence supports the view that selected channels are not equally accessible and some "cost" individual farmers more than others, even when past use of Extension and trust in Extension is controlled (Brown, 1989).
Although the availability of agricultural agents was expected to affect preferences for higher cost channels, especially those involving individual consultation, little support for this was found.

A number of factors in addition to agent staffing patterns are likely to influence the quality of the Extension program experienced by small farm operators, and in turn, affect preference patterns. Extension agents vary from county to county in training, experience, and interest in the development and delivery of specific subject-matter programs. Likewise, organization structure and tradition provides differential resources and rewards for conducting educational programs for small farm audiences. Although data on the content and delivery methods of specific county Extension programs were not available, two indicators of the quality of programs for small farm operators (i.e., the number of agent mandays expended on small farm operator programs during the 1988-89 fiscal year and the number of clientele contacts made during small farms programs) were examined. Neither indicator significantly affected the results reported above (data not shown). This suggests that characteristics and past performance of county Extension professionals may be less important to clientele preferences than previously thought.

Metropolitan status was a significant negative influence on preference for the higher cost pattern focusing on group educational activities. The parameter estimates for metro status were negative for the other preference patterns as well. Although metro status was expected to be associated with greater access to mass media channels and greater preference for these lower cost information channels, the evidence does not support this view. Instead, small farm operators in metropolitan counties have lower levels of preference for all three patterns of information channels.

These findings suggest a strategy for improving the coverage of Extension programs for small farm operators, as well as for other audiences. During the development and planning phase of the program cycle, the profile of the audience should be used to select information channels which are most likely to maximize contact. These methods should be compatible with the characteristics and perspectives of the clientele (Obahayuje and Hillison, 1988) and with the resources and training of the county agent. For example, programs which focus on newly emerging enterprises and associated problems from changing governmental regulations, commodity markets, or new varieties can
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better utilize higher cost information channels, especially those involving consultation between the county agent and small farm operator. These channels allow county agents to deliver information that is tailored to the farmers' specific problems and concerns.

Although small farm operators who may have established a trust relationship with Extension show a preference for higher cost channels, more so for those involving individual consultation, this creates a dilemma for county agents. That is, how does one establish a trust relationship with a larger number of farmers in a county when the agent's resources, especially time, are constrained? This is a problem in Florida, where the number of small farms increased during the early 1980s and has continued to do so (U.S. Bureau of the Census, 1989). Clearly, new techniques are needed to help county agents stretch their resources. Volunteers might be recruited from the farming community to train as "master farmers" to provide additional manpower for delivering information through higher cost channels (e.g., office consultation, farm visits, as well as participating in demonstrations). A strategy which focuses on using higher cost information channels is likely to increase the impact of the Extension program over the course of time because these channels are generally more effective in creating behavioral change (Lionberger and Gwin, 1982).

At the same time, greater emphasis on higher cost information channels means that access costs will need to be addressed. Since preference for these channels is adversely affected by distance, it is important to offer the same educational activities (e.g., meetings or demonstrations) in multiple locations throughout a county. Use of multiple locations may decrease attendance at any single meeting, but is likely to increase total participation since the cost of travel for individual farmers is reduced. Not including the effects of infrastructural constraints, such as travel time, in planning the delivery of educational programs is likely to reduce the impact of Extension's efforts.
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