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ABSTRACT

A technique to measure the quality of agricultural extension programs by the clientele was developed and tested. The study was conducted in three major steps. First, unstructured interviews of forty-eight farmers and agribusiness persons in seven Ohio counties were conducted to identify those factors they considered when evaluating their county's extension agricultural program. The forty-four factors were identified and were categorized as methods, personal qualities of the agent, and quality of extension information. Second, a questionnaire was sent to 248 farmers asking them to rate the importance of each of the forty-four factors. Based on a factor analysis of the responses, a questionnaire was developed which consisted of forty-three factors classified in the following four subscales: information, extension agents, extension methods, and educational program. During the third and final step of the study, the questionnaire was sent to 400 farmers and agribusiness persons in eight counties while six extension professionals, using a paired-comparison procedure, rated the quality of the programs in the same counties. The results of this last step indicated that the instrument and the subscales are reliable. It is recommended that the instrument be used by others, both as an evaluation tool and for further research. (The questionnaire is attached.) (EM)

EXTENSION OUTPUT MEASURES

AS IDENTIFIED BY EXTENSION CLIENTELE

by

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The purpose of this ES/USDA funded research project was to develop and test a technique to identify output measures as perceived by Extension clientele.

Limited to clientele in agricultural programs, the technique involved relatively unstructured personal interviews with a sample of Extension agricultural clientele in Ohio, and responses to a mailed questionnaire from other clientele in subsequent stages of the project. Also involved were panels of experts - administrators and specialists in Ohio agricultural Extension programs.

Although the techniques involved were rather unorthodox, making data analysis more difficult than in more structured types of research, we feel the procedures used were successful enough to recommend their use with other Extension program areas.

The primary product of the project was a 43 item scale of items identified by clientele as the factors they use in evaluating Extension agricultural programs in their counties. Four subscales of the instrument were classified as (1) Information, (2) Extension Agents, (3) Extension Methods, and (4) Educational Program. Statistical analysis of the instrument and the subscales showed them to be highly reliable. We recommend that the instrument be used by others, both as an evaluation tool and for further research.

We acknowledge the excellent contributions to the success of the project by two graduate research assistants, Wayne M. Keffer and S. Alden Hilliker.

A more detailed report is available on request to the Ohio Cooperative Extension Service.

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EXTENSION OUTPUT MEASURES
AS IDENTIFIED BY EXTENSION CLIENTELE

All public agencies, including the Cooperative Extension Service, are faced with the growing demand to demonstrate program accountability. Indicators of program resource input are readily available; however, few measures of Extension output effectiveness have been developed for documentation purposes. Very few attempts have been made to determine the perceptions of clientele regarding evidence of program accomplishments.

With this in mind, the Ohio Cooperative Extension Service submitted a proposal for research to the Extension Service, United States Department of Agriculture. The purpose of the funded study was "to develop and test a technique to identify output measures as perceived by Extension clientele".

Objectives

The approved proposal contained two objectives; one long range ". . . . . to identify, as perceived by clientele, the concrete evidences they accept as demonstrating Extension program accomplishment". The other objective was more immediate ". . . . . to create and test a technique for obtaining from Extension clientele, valid output measures of an Extension program".

Procedure and Findings

Agricultural industry was the program area of the Ohio Extension Service that was chosen as the focus for this study. It was felt that resources could most efficiently be utilized by concentrating on one program area, rather than all four.

The study was conducted in three major steps. In the first step a specific audience was defined as the focus for the research and from those persons a list of items that they perceived as outputs of Extension was determined. In the second step those items were further tested and analyzed as preparation for the third step during which a questionnaire was field tested.

Development of Output Items

Traditional research methods were neither planned nor used in conducting the study. The research team felt a need to permit clientele freedom to disclose their Extension evaluation techniques without bias of a structured interview or questionnaire. The researchers thus planned to utilize an unstructured form of interview -- including open-ended questions and extensive use of probing questions -- for data gathering.

The interview schedule was pretested with 13 farmers in two counties. The revised schedule and procedures were then used in interviewing 48 farmers and agribusiness persons in seven counties. Efforts were made to insure that those included in the sample were

representative of Extension agricultural clientele in the state. Purpose of the interviews was to elicit comments on factors that respondents considered when evaluating their county's Extension agricultural program.

Two techniques during the interviews seemed to be the most productive. In one the interviewer asked the respondent to rate the quality of the program on a scale of one to seven; once the respondent indicated his/her choice, the interviewer asked the respondent to relate some of the "things" that he/she thought about in making the choice. In the other technique the interviewer asked the respondent to assume that support for the Extension agricultural program in the county had been lost; what arguments would the respondent use in an effort to get support reinstated?

Forty-six of the interviews were successfully tape recorded and subsequently transcribed. A panel of 20 experts (area supervisors, state agricultural specialists and area agricultural agents) reviewed the transcripts with the purpose of identifying and categorizing evaluative "output measures". Each interview was reviewed by two panel members. In order to provide a means of quantifying the factors identified, a factoral weight was placed on identified items. A value of 3 was given to any phrase noted as a factor by both experts and placed in the same category. Such common interpretation was classified as a "joint agreement". When both experts noted the comment but placed it in different categories, the interpretation was labeled as a "joint identification" and a value of 2 placed in each category. If only one expert saw a comment as indicating

a measure of Extension output, it was labeled as an "identification" with a value of 1 placed in the appropriate category.

Table 1 lists the forty-four factors that received weighted values of 15 or more.

TABLE 1

WEIGHTED VALUES OF EXTENSION OUTPUT MEASURES IDENTIFIED BY EXTENSION CLIENTELE

Rank	Measure	Weighted Value
1	Information via mailing lists or direct mail	97
2	Newspaper and magazine articles and columns	63
3	Personal assistance from Extension Agent	49
4	Newsletters and calendars of events	47
5	Extension information is current	43
6	Extension is a good source of information and help	40
6	Formal education and training of Agent	40
8	Agent knows where to get information and resources	39
9	Agent relates well to community citizens	38
10	Experience and background of agent	37
11	Information available quickly on request	36
11	Information is practical	36
11	Radio and television programs and spots	36
14	Agent is helpful and gets things done	35
14	A source of new information and methods	35
16	Scope of total program	34

Rank	Measure	Weighted Value
17	Agent helps sort out agriculture information	32
17	Information and assistance meets needs	32
17	Localized meetings for citizen needs	32
20	Special subject matter meetings	31
21	Agent is knowledgable	30
21	Honesty and devotion of agent	30
23	Seminars, conferences, schools, field days	29
24	Agent or specialist come to home or farm	28
25	Agent response to requests for assistance	27
25	Help from agent via telephone	27
25	Information is educational with university base	27
25	Program meets local expectations	27
29	Agent works hard	26
29	Number of meetings held	26
31	Help clientele save money	25
32	Programs locally oriented and adapted	23
33	Agent's ability to apply knowledge	22
33	Agent's character is good	22
33	Opportunity to serve on Extension Boards and Committees	22
36	Bulletins and Publications	21
36	Personal qualities of agent	21
38	Accurate information	20
39	Communication with public	18
39	Demonstrations and testing programs	18
39	Agent respected by farmers	18
39	Programs for special clientele groups	18
39	Staff involvement in civic activities	18
44	Improved standard of living	15

Observation of these items shows that interviewees tended to use three categories of factors as they evaluated their county Extension agriculture programs --- methods, personal qualities of the agent, and quality of Extension information.

Testing and Categorizing Items

The second phase of the study had as its major product a questionnaire of valid output items placed in categories that would help both respondents and those who would analyze the data.

This phase was carried out by asking a sample of 248 farmers (none of whom were involved in the earlier interviews) to rate how important each of the 44 items from the first phase of the study was as a measure of a county's agricultural program. Nearly 75% of the sample returned the mailed questionnaire.

Because one purpose of this phase was to categorize the items, the statements were in random order on the instrument to which the farmers responded. Factor analysis was used as a helpful aid to this phase; it helped measure the reliability of the instrument and its sub-scales (categories) and in decisions to keep or delete individual items.

Mean importance scores were calculated for each item on the basis of a five-point scale from extremely important (5) to not important (1). The range was from 2.76 to 4.74 with only two items below 3.00. No item was deleted on the criterion of lack of importance.

After several factor analysis runs and visual inspection of their results, the instrument consisted of 43 items ("Agent is helpful and gets things done" was the deleted item) in four categories.

Reliability tests showed a Kuder-Richardson Test Reliability Score of .93 for the total instrument. Scores for the sub-scales ranged from .70 for the eight-item Program sub-scale to .85 for the 14-item Information one.

Field Testing the Instrument

The third, and final, step in the project was to test the instrument that resulted from the preceding steps with a sample of farmers and agribusiness people in a small number of Ohio counties. An attempt was also made to validate the instrument by comparing clientele evaluations with evaluations of county agricultural programs by knowledgeable Extension professionals

Four hundred farmers and agribusiness persons (50 from each of the eight counties in one Extension area) were mailed a copy of the instrument and asked to respond. Forty-one percent did so within three weeks. A panel of six Extension professionals (the area supervisor, area agents who worked in the area and the associate state agriculture leader) rated the quality of the agricultural programs in the eight counties using a paired-comparison procedure.

The professional panel agreed on their rankings of the eight counties (Kendall's W tested the agreement). And although there was

a tendency toward agreement between the ranking of the professionals and the ranking of counties according to clientele responses, the Spearman rank correlation coefficient showed the agreement not to be great enough to be statistically significant. (Required level of significance was .05.)

On a scale of 5 to 1 -- from excellent to poor -- the range in mean item scores was from 3.54 (good +) to 4.43 (very good +). Mean scores were calculated for each of the four sections and for the total instrument. They were:

Information	-	3.95
Agent	-	4.12
Methods	-	3.75
Program	-	3.76
Total	-	3.91

To check on internal consistency, Kuder-Richardson test reliability scores were calculated for each of the four sections and for the total instrument. Table 2 shows that each score was very high, even for the eight-item Program scale. The entire instrument was extremely reliable; each sub-scale also could stand alone as a highly reliable instrument.

TABLE 2

SUMMARY OF INSTRUMENT INTERNAL RELIABILITY

N = 162

Section	No. of Items	K-R Test Reliability
Information	14	.96
Agent	11	.96
Methods	10	.94
Program	8	.94
Total	43	.98

Table 3 demonstrates the high correlation between the total instrument and each of the sub-scales. This shows that each sub-scale tended to measure the same thing as the total instrument did. All other inter-relationships are also shown, and while the correlations are not as strong as those with the total scale, they do show substantial consistency among the various parts of the instrument.

TABLE 3

CORRELATIONS AMONG SUB-SCALE AND

TOTAL INSTRUMENT SCORES

N = 162

	Information	Agent	Methods	Program	Total
Information	1.00	.86	.81	.86	.95
Agent		1.00	.80	.80	.93
Methods			1.00	.88	.92
Program				1.00	.93
Total					1.00

From the data in Tables 2 and 3, it is apparent that, for the evaluator who might be interested in a short, reliable instrument that would give a measure of the quality of a county's Extension agricultural program, any one of the four sub-scales should do quite well, though the Information sub-scale would be best. On the other hand, if data are needed to measure the quality of other factors in the program -- factors that this project showed to be important as seen by clientele -- then all four sub-scales would need to be used.

Conclusions

Each of the two objectives of the project was attained, but neither to the extent, nor in quite the way anticipated.

The instrument that resulted from the project consisted of 43 "things" that Extension agricultural clientele in Ohio said they considered as they evaluated the quality of Extension agricultural programs in their counties. The extent to which those items could be termed "concrete evidences" was of concern to the researchers who anticipated that clientele would identify indicators that might be measured without the necessity of having clientele respond to an instrument.

A good share of other studies in which clientele have rated the effectiveness of Extension programs have asked clientele to rate the extent to which state or national objectives were being met. This project showed that Ohio agricultural clientele used criteria other

than state or national objectives in their evaluations. They were more concerned with the quality of the information they received, the personality and character of their county agricultural agent, and the quality and quantity of methods they saw being used by the agent.

The project was limited to agricultural clientele in Ohio and thus generalizations beyond that state would be risky. On the other hand, the researchers felt confident that similar responses to their procedures, would be found in other states.

The second project objective contained two components ---- 1) developing and testing a technique which would result in 2) valid output measures.

The technique and its procedures involved unorthodox methods. And on reflection they were successful.

The relatively unstructured interviews, though difficult to conduct -- and even more difficult to analyze -- did permit clientele to relate, as well as they could on short notice, the factors they considered when evaluating their county agricultural programs.

All interviews were tape recorded; no resistance to that procedure was encountered. The recorded interviews were transcribed to facilitate their analysis; this was essential to the procedure. The panel of experts who read the transcribed interviews and identified "output measures" mentioned by interviewees found their task to be time-consuming and somewhat tedious; yet the researchers felt this to be a necessary step in the procedure.

The verification by clientele of the identified items as "important" indicators of Extension output was another essential part of the process. Respondents were able to do this, but they had difficulty responding from a frame of reference more general than their own county. Factor analysis and item analysis of the responses helped place items in logical categories and to confirm that the instrument was high in internal consistency.

The final step in the project -- field testing of the instrument -- yielded evidence to show the instrument to be extremely reliable. It seemed to be able to measure county-by-county differences in program quality consistently. In addition, a computer generated analysis of each county's data was provided for the county agent.

Though the procedure was somewhat unorthodox, and though it was time consuming, the researchers felt that each step was essential and that the final result was worth the effort expended.

The extent to which the items in the final instrument are "valid output measures" of Ohio county Extension agricultural programs may need further testing. But they did result from personal interviews with clientele during which every effort was made to elicit measures of Extension output. And all subsequent analysis and testing served to enhance rather than diminish the validity and reliability of those items.

Recommendations

The primary recommendation from the project is that the instrument be used as a device for measuring the quality of county agricultural Extension programs.

Related to the above recommendation is this: when the instrument is used, further analysis should be made of the resulting data as a means to add further confidence in it. A question might be added to ask respondents for a rating of their overall evaluation of their county Extension agricultural program; the correlations between individual item scores and category scores to this general rating would provide additional evidence of reliability.

The instrument could be used as a component in other Extension related research. For example, what relationships would be shown between respondent scores on this instrument and such clientele variables as extent of participation in Extension programs, participation on Extension committees, farm income, age, and farm enterprise?

If used in several counties, relationships between county mean scores on the instrument (and its subscales) and input variables such as time spent by Extension professionals on agricultural programs, bulletins distributed, radio programs presented, and personal data regarding the agent might be explored. Other county data, such as average crop yields and agricultural income could also be compared with instrument scores.

In those states where the use of key result indicators has been tried, the resulting measures for each county might be compared with clientele evaluations of their county Extension agricultural program as measured by this instrument.

Clientele evaluations of the extent to which county, state and/or national objectives are being attained might be compared with their scores on the instrument.

A final recommendation is that the procedures used in this project be tried with the other program areas in Extension --- home economics, community resource development and 4-H youth.

INSTRUMENT
FOLLOWS

For each of the following items, please circle the response in the column which best expresses your evaluation regarding that element of the total Extension agricultural program in your county.

Item	Excellent	Very Good	Good	Fair	Poor
A. INFORMATION					
1. Help from agent by telephone.	E	VG	G	F	P
2. Agent knows where to get information and resources.	E	VG	G	F	P
3. Information is accurate.	E	VG	G	F	P
4. Quality of bulletins and publications.	E	VG	G	F	P
5. Information and assistance meets individual needs.	E	VG	G	F	P
6. Agent is knowledgeable.	E	VG	G	F	P
7. Information is current.	E	VG	G	F	P
8. Agent responds to requests for assistance.	E	VG	G	F	P
9. Personal assistance from Extension agent.	E	VG	G	F	P
10. Extension as a source of new information and methods.	E	VG	G	F	P
11. Information is practical.	E	VG	G	F	P
12. Information is quickly available on request.	E	VG	G	F	P
13. Extension is a good source of quality information and help.	E	VG	G	F	P
14. Agent helps sort out conflicting agricultural information.	E	VG	G	F	P

Item	Excellent	Very Good	Good	Fair	Poor
B. EXTENSION AGENTS					
15. Personal qualities of agent.	E	VG	G	F	P
16. How agent relates to local citizens.	E	VG	G	F	P
17. Agent's ability to apply knowledge.	E	VG	G	F	P
18. Hard working agent.	E	VG	G	F	P
19. Formal education and training of agent.	E	VG	G	F	P
20. Experience and background of agent.	E	VG	G	F	P
21. Honesty and devotion of agent.	E	VG	G	F	P
22. Respect for agent by local farmers.	E	VG	G	F	P
23. Involvement of agent in civic affairs.	E	VG	G	F	P
24. Character of agent.	E	VG	G	F	P
25. Agent's communication with the public.	E	VG	G	F	P
C. EXTENSION METHODS					
26. Newspaper and magazine articles and columns.	E	VG	G	F	P
27. Radio and television programs and spots.	E	VG	G	F	P
28. Information received via mailing lists or direct mail.	E	VG	G	F	P
29. Seminars, conferences, schools, and field days.	E	VG	G	F	P
30. Programs for special clientele groups.	E	VG	G	F	P

Item	Excellent	Very Good	Good	Fair	Poor
31. Number of meetings held.	E	VG	G	F	P
32. Visits by agents or specialists to farm.	E	VG	G	F	P
33. Newsletters and calendars of events.	E	VG	G	F	P
34. Demonstrations and testing programs.	E	VG	G	F	P
35. Special subject matter meetings.	E	VG	G	F	P
D. EDUCATIONAL PROGRAM					
36. Program meets local expectations.	E	VG	G	F	P
37. Information is educational with a university base.	E	VG	G	F	P
38. Program is adapted and oriented locally.	E	VG	G	F	P
39. Meetings that meet needs of local citizens.	E	VG	G	F	P
40. Citizens' opportunities to serve on Extension boards and committees.	E	VG	G	F	P
41. Scope of the total Extension agricultural program.	E	VG	G	F	P
42. Extension's influence in an improved standard of living for local citizens.	E	VG	G	F	P
43. Extension's efforts to help clientele save money.	E	VG	G	F	P

Thank you for your time and frank responses to the above statements. Please check again to see that you have responded to each item. After you have done so, place the questionnaire in the provided envelope. Please mail both the envelope and the coded card as soon as possible to: