

A Comparative Study of Management Effectiveness Under the Training and Visit and General Extension Systems in Ghana

Edward Ntifo-Siaw
Robert A. Agunga
The Ohio State University

One of the most effective means of transforming Africa's potential agricultural resources into sustained agricultural development is through an effective extension system. Improved agricultural extension management system is recognized "as a central mechanism to achieving increased food production through technology transfer" (Food and Agriculture Organization, 1990, p. 45). African governments and international aid agencies have promoted and supported new extension approaches to help small-scale farmers increase food production. The Training and Visit (T&V) system has been the latest extension method to be promoted. T&V seeks to replace the general (or traditional) extension system which has been in use in many developing countries since independence.

Montague Yudelman (1984), a former director of World Bank's Agricultural and Rural Development Department, stated that the T&V system:

Provides a sound institutional framework for reaching large numbers of farmers, and it has many elements that can be adapted to be effective in a range of different environments. T&V is based on a set of managerial and organizational principles that are of broad applicability and which, when applied together, constitute an extremely powerful managerial tool. (p. vii)

By 1988, over \$2 billion dollars were channeled into T&V extension programs in developing countries (FAO, 1990).

General Extension Approach

The general extension approach is practiced mainly by agricultural ministries of developing countries. The main goal is to increase the agricultural production of subsistence farmers. Since a subsistence farmer grows different crops, such as maize, millet and rice and keeps different

livestock, such as cattle, sheep, pigs and poultry, the extension agent is expected to be expert in these areas. In addition, the extension agent, as the only government representative in the village, is often asked to perform other functions, such as inputs distribution and tax collection (Swanson, et al., 1990; Boone, 1989). Although the general extension system is still popular, it has serious deficiencies. These include the lack of adequate and well-trained extension workers; the lack of participation by small farmers in extension decision-making; poor extension/research linkages; the lack of adequate infrastructure and other support facilities; and above all, poor management (FAO, 1987).

Training and Visit (T&V) System

The T&V system was designed to improve extension by eliminating deficiencies of the general extension system. It is promoted mainly by the World Bank, which has invested over \$2 billion in T&V extension activities worldwide (FAO, 1990). Other development agencies like United Nations Development Program (UNDP), International Fund for Agricultural Development (IFAD), the United States Agency for International Development (USAID) and FAO, have used aspects of the approach in their projects (FAO, 1990).

Like the general extension approach, T&V seeks to benefit small farmers by urging them to adopt technological innovations, usually selected for them by the funding agency. Unlike the general extension system which seeks to develop all aspects of rural farm life, T&V extension focuses on specific crops. T&V also differs from the general extension approach by its emphasis on frequent inservice training for extension personnel, regular visitation to farmers' farms, promotion of extension/research linkage and improved extension management (Benor et al., 1984). The main goal of T&V is the transformation of the extension administration (Gustafson, 1990).

Training and Visit System of Extension in Ghana

Ghana is one of over 60 countries now using the T&V system of extension. Like many developing countries, Ghana adopted the T&V system because of its promise of improving extension management--the key to increased agricultural production and national development. The Upper Region (now Upper East and Upper West regions) was the first to adopt the T&V system in Ghana in 1978. Ghana obtained a World Bank loan that year to implement the Upper Region Agricultural Development Program (URADEP) and T&V was a component of that loan package. The Volta Region also adopted the T&V system when Ghana obtained another World Bank loan for the Volta Region Agricultural Development Program in 1981. There are attempts to replicate the T&V system in the remaining seven regions of Ghana in the form of more agricultural development loans (MOA, 1990). The question is whether agricultural development is occurring in Ghana as a result of these loans. More specifically, is T&V improving extension management in Ghana? Are the claims that T&V has been a better way of (a) utilizing limited resources effectively; (b) increasing farmer participation; (c) improving agents' professional skills; and (d) providing adequate monitoring supervisory and support services justified in the two regions of Ghana where the T&V system has been in use for over 14 years?

Purpose and Objectives

The purpose of this study was to determine if the T&V system was better than the general extension system in developing management effectiveness. The specific objectives of the study were to:

Identify demographic characteristics of district agricultural extension officers in the general extension and T&V systems.

Describe officers' perceptions of extension performance of T&V and general extension systems.

Compare the effectiveness of the general and T&V extension systems on the following indicators: training, research-extension linkages, farmer participation, logistics and support services, extension methods, and resource allocations.

Procedures

The target population frame for this study was established from the 1992 Personnel Directory of the Extension Service of Ghana's Ministry of Agriculture. All 52 district agricultural extension officers in the Western, Central, Upper East and Volta regions were involved in the study.

The Central and Western regions practice the general extension approach whereas the Upper East and Volta regions practice the T&V system. Of the 52 respondents selected, the Central region had 15, Western region 13, Upper East 10 and Volta region with 14.

A descriptive research design, with a correlational component, was used to identify current practices and make comparisons regarding performance of the T&V and general extension approaches. The research hypothesis was that perception scores of T&V extension officers would be significantly greater than the scores for the general extension officers.

A questionnaire was developed to identify performance indicators and collect perception data from participants. The questionnaire had two sections. Section I had items covering demographic and job characteristics of extension officers, such as gender, years in the Extension service, region, district, highest educational level, and in-service training. Section II contained 81 items on officers' perceptions of the performance of the two extension approaches. Extension performance was represented by six indicator variables: adequacy of training, research-extension linkages, farmer participation, methods used, logistics, and conditions of services (Campbell, 1976 and Howell, 1988).

A set of items were used to determine respondents attitudes for each variable. Likert-type scales, ranging from 0 to 5 were used. High perception scores indicated more favorable attitude. For some items, perception values scored ranged from 1, "very low" to 5, "very high."

There are two reasons favoring the use of opinions and perceptions in survey research. One is that perceptual data are easier and less costly to collect. The other is that there is a positive correlation between perceptual data and objective

facts (Forgus & Melamed, 1978; Bennett, 1979). As a result, perception scores can be used to compare performance in different organizations (Campbell, 1976).

A panel of experts, comprised of five faculty members and four graduate students, was used to establish suitability and content validity of the instrument. A small group of extension staff also reviewed the instrument and offered valuable suggestions on content. A pilot test for reliability was conducted with a sample of extension officers and agents in Greater Accra Region, using a test-retest procedure (Fraenkel & Wallen, 1990). The reliability score was $r=0.79$.

The questionnaire booklets were personally sent to officers to control nonresponse error. Discussions were held with agricultural officials in each region to clarify responses, and to obtain information to augment what is obtained from the formal interviews. The population list was purged of duplicates to avoid frame error. Of the 52 subjects selected, 51 responded yielding almost 100 percent response rate.

Data was organized in a database setup and analyzed by a Statistical Package for the Social Sciences (SPSS-PC) statistics software. Descriptive statistics, such as frequencies, percentages, and measures of central tendency were calculated for each variable. Group distributions of officers by gender, level of formal education and years of experience were calculated. Means and standard deviations were also calculated to describe groups. T-test and ANOVA calculations were done to determine group mean differences. A null hypothesis of no difference between the means of general extension and T&V groups was used, based on a priori alpha level of 0.05 for each test of significance.

Results

Respondents' Characteristics

Results of the demographic data showed that the majority of respondents were male (76.5%); twenty-four extension officers (47.1%) had diploma certificates; twenty-five (49.1%) had at least a college degree, including six people with Master's degrees in agriculture; the majority of respondents (51%) had worked for extension between two and ten years; and that 12 percent of the respondents had

worked for extension for over 20 years.

Table 1 shows the distribution of respondents and their characteristics in the two extension approach groups. T&V district extension officers had more in-service training than general extension officers. T&V extension officers also averaged 13 years of experience whereas general extension averaged 10 years. Over 60 percent of T&V respondents served more than 11 years; 63 percent of general had served between two and ten years.

Table 1. Characteristics of Respondents by Extension Approach*

Characteristic	General Extension Approach		T&V Approach	
	n	%	n	%
Gender				
Female	6	22.2	6	25.0
Male	21	77.8	18	75.0
Educational level				
School certificate	2	7.4	0	0.0
Diploma (Agric.)	12	44.4	12	50.0
BSc. (Agric.)	9	33.3	10	41.7
MSc. (Agric.)	4	14.8	2	8.3
Years of service				
Up to 10	17	63.0	9	47.5
11 to 15	7	25.9	12	50.8
> 20 years	3	11.1	3	12.5
Mean (years)	10.1		13.3	
Standard deviation	7.2		5.1	
In-service training				
Up to 10 days	14	51.9	9	37.5
11 to 20 days	6	22.2	12	50.0
> 20 days	7	25.9	3	12.5
Mean	16		14	
Standard deviation	6.5		3.2	

*For general extension, n=27; T&V, n=24. Total percentage = 100.

Performance Indicator Scores

Table 2 shows sample means and standard deviations for the six composite performance indicators. Overall, district extension officers perceived extension performance as low. There were no significant differences between the two extension systems on all six indicators.

Table 2. Extension Performance Indicator Mean Scores

Indicators	General*		T&V		t-value
	Mean	SD	Mean	SD	
Adequacy of job skills	2.67	.58	2.67	.65	0.1
R-E linkages	1.54	.88	1.35	.80	0.8
Farmer participation	2.87	.62	2.69	.64	1.0
Method/media use	2.41	.60	2.13	.52	1.8
Support services	2.21	.84	2.46	.67	1.2
Service conditions	2.35	.81	2.17	.56	0.9

*For general extension, n=27; T&V, n=24.

T&V and general extension officers did not differ significantly on job skills ratings. The mean scores were 2.64 and 2.67 respectively. Respondents were relatively knowledgeable in extension principles, staff evaluation, and program scheduling. The mean scores indicated a need for improvement. Officers perceived a need for training in communication skills, especially in the use of audio-visual equipment.

Research-extension linkage is a measure of extension administrators' access to information. The composite indicator scores for T&V and general extension administrators were rated low. The mean scores were 1.58 and 1.35 respectively. Joint research-extension activities in training programs, joint technology trials and field days items were all rated low (.67 < mean < 1.82). General extension respondents rated access to University researchers significantly higher than T&V officers (1.52 > .67, $p < .05$). This may be due to the fact that general extension administrators studied stay close to the University of Cape Coast.

The two extension groups were not significantly different on degree of farmer participation. General extension respondents differed significantly from T&V respondents on fertilizer application (3.19 > 2.47), $p < .05$; storage

methods (3.72 > 2.91), $p < .05$; and farm management (2.96 > 2.50), $p < .05$. On fertilizer use, fertilizer storage and farm management, and ability to involve farmers, general extension respondents scored higher than T&V respondents.

"Methods and media used" items referred to the level of effectiveness of extension administrators in "teaching methods," "audiovisual equipment" and "design and implementation of extension campaigns." General extension officers rated extension methods higher than T&V officers (2.41 > 2.13). T&V officers rated use of contact farmers as an effective extension method higher than general extension officers (3.80 > 3.33), $t(49) = 2.2$, $p < .05$.

The T&V and general extension groups rated logistical support as moderately adequate. T&V respondents had higher mean ratings than did general extension respondents on all seven items that constituted the performance indicator. These were staff supervision, 3.10 > 2.78; specialists' support, 2.88 > 2.60; monitoring and evaluation support, 2.67 > 2.40; secretarial services, 2.63 > 2.04; office supplies, 2.58 > 2.54; general transport, 2.33 > 2.15; audio-visual support, 1.10 > .89 for T&V and general extension respondents respectively.

Both T&V and general extension groups rated financial allocation for services low. The mean scores were 2.35 and 2.17 for general extension and T&V respectively. The T&V group rated salaries and vehicle financial allocations adequate whereas general extension staff did not. Adequacy of financial resources for in-service training and workshops were rated moderately high by both groups.

Conclusions

The results of this study indicate the lack of significant difference between the general and T&V extension organizations in terms of performance effectiveness. Each group rated extension performance low. Services conditions, effectiveness of teaching methods, ability to involve farmers in decision making and management training skills have not improved under T&V. For instance, T&V officers attended more in-service training but their management skills have not improved. In-service training focused primarily on technical agricultural subjects at the expense of

communication and adult education skills.

Farmers' participation in technology transfer programs under T&V did not differ from that of general extension. The principle that extension workers must concentrate on information dissemination exclusively of input distribution has not been justified (Benor & associates, 1984; Gustafson, 1990; Kingshotte, 1980). Farmers participate in extension activities when they expect to obtain usable technical advice. Technical advice is most useful to farmers, and easily adopted when combined with access to key related services and inputs (Bryant & White, 1982).

Extension/research linkages were also rated low, thus meaning that the claim that T&V enhances this linkage had not been proven. Research-extension linkage in Ghana may be constrained by the fact that extension and research were located in separate ministries. Crop research institutes, for example, are under the Ministry of Science and Technology, whereas extension is under the Ministry of Agriculture. District extension administrators need coordination and communication skills to interact effectively between these organizations. Extension organizations in Ghana also do not utilize the information available at research centers. It will take a person skilled in communication to link researchers and extensionists.

The results of this study confirm the criticisms that the T&V approach has not improved extension performance (Howell, 1988; Roberts, 1989; Israel, 1987). The generous allocation of funds to T&V projects ensured better salaries, vehicles and other costly infrastructure as a basis for enhancing performance. However, converting these resources into actual results proved elusive. The mixed results also reflect the negative "withdrawal" effects associated with well-funded but short-lived agricultural development programs in Africa (Roberts, 1989).

For an extension organization to improve its performance, a continuous and systematic evaluation of its activities is necessary. When expensive pilot projects like T&V are introduced into a developing country, they must be tested for their costs and long-term viability under local conditions. A common tendency of the T&V approach is also to assume that the technologies to be promoted are appropriate, even when no need

assessment has been conducted.

This study showed that the T&V system had not improved extension effectiveness in those regions of Ghana where it had been tried. The strategy should not be replicated in other regions unless the communication skills problem is addressed. "The purpose of experimentation is not only to demonstrate the virtues of the new system, but also to work out problems and adapt the system to the realities of the regional or local conditions" (Hage & Finsterbusch, 1987, p. 111). The Ghana government and the World Bank may learn from this study.

Recommendations

Based on this study, the following recommendations are made:

Extension administrators should include communication skills training in T&V programs.

Development support communication is an effective way of providing communication training for extension workers and should be adopted.

The agricultural universities in Ghana should become more practically involved in extension work as a way of improving extension/research linkages.

Future studies on farmers' perception of extension effectiveness could strengthen this study and should be pursued.

Another finding of the study was that the T&V system does not strain extension agents in problem-solving skills as the general extension system strives to achieve. Agents are simply told to extend to farmers innovations pre-selected by the funding agency.

References

- Bennet, C.F. (1979). Analyzing impacts of extension programs. ES-575, Washington, D.C.: USDA
- Benor, D., Harrison, J.Q., & Baxter, M. (1984). Agricultural extension: The training and visit system. Washington, D.C.: The World Bank.

- Boone, E.J. (1989). Philosophical foundations of extension. In D.J. Blackburn (Ed.), Foundations and changing practices in extension. Guelph: University of Guelph: 1-9.
- Bryant, C. & White, L.G. (1984). Managing rural development with small farmer participation. West Hartford, CT: Kumarian Press.
- Campbell, J.P. (1976). Contributions research can make in understanding organizational effectiveness. In Spray, S. Lee (Ed.), Organizational effectiveness: Theory-research-utilization. Kent: Comparative Administration Research Institute, Kent State University.
- Food and Agriculture Organization. (1987). Improving agricultural extension to increase food production in Africa. Report of the expert consultation, Arusha, October, 1986. Rome.
- _____, (1990). Global consultation on agricultural extension. FAO report, Dec. 1989. Rome.
- Forgus, R.S. & Melamed, L.E. (1976). Perception: A cognitive state approach. New York: McGraw-Hill Book Company.
- Fraenkel J.R. and Wallen, N.E. (1990). How to design and evaluate research in education. New York: McGraw-Hill Publishing Co.,
- Gustafson, D.J. (1990). Training and visit as an approach for sustainable agricultural extension: applications in the Philippines. In Brinkerhoff & Goldsmith (Eds). Institutional sustainability in agriculture and rural development. New York: Praeger.
- Hage, J & Finsterbush, K. (1987). Organizational change as a development strategy: Models and tactics for improving third world organizations. Development Management Series. Boulder, CO: Lynne Reinner Publishers.
- Howell, J. (1988). Making agricultural extension effective: lessons of recent experience. Training and Visit Extension in Practice, Occasional Paper No. 8. London: Overseas Development Institute, Agricultural Administration Unit.
- Israel, A. (1987). Institutional development: incentives to performance. Baltimore: Hopkins University.
- Kingshotte, A. (1980). The organization of agricultural extension and farmer assistance: A note on development in Botswana, part 2". Agricultural Administration, 7, 297-322.
- Ministry of Agriculture (1990). Proposed agricultural extension strategy under the medium term agricultural development plan, July. Accra, Ghana.
- Roberts, N. (Ed.) (1989). Agricultural extension in Africa. Washington, DC: World Bank.
- Swanson, B.E., Farner, B.J., and Bahal, R. (1990). The current state of agricultural extension worldwide. In Global consultation on agricultural extension, FAO Report, December 1989, pp. 42-76. Rome, Italy: FAO.
- Yudelman, M. (1984). Foreword. Training and visit extension. Benor, D. & Baxter, M. (eds.). Washington, D.C.: A World Bank Publication.
- World Bank. (1992). Development and environment. Washington, D.C.: World development report.