



EFFECTIVENESS OF NGO-LED FOOD SECURITY PROGRAMMES IN BO DISTRICT SOUTHERN SIERRA LEONE

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ABSTRACT

Effectiveness has to do with how well the organization satisfies the needs and expectations of the clientele in terms of programme execution and how informed are the clients of the organization's activities and services rendered. This study investigated the effectiveness of the NGO-led food security programmes in Sierra Leone. The research was conducted on 25 NGOs implementing food security programmes in Bo District. Stratified and proportional random sampling was adopted in obtaining a sampling size of 100 (70 farmers and 30 NGO executives). The study was guided by five research questions. The questionnaire was divided into five subsections with closed-ended questions. This was used to collect data from all 15 Chiefdoms in Bo District. The findings of the research revealed that more respondents than expected said the NGO-led food security programmes were not adequate and effective (50.0%). The Chi-Square (χ^2) test result of 7.8465 with 2 degree of freedom at 5% level of confidence was greater than the tabulated χ^2 value of 5.911, indicating that there was an evidence of significant relationship between adequacy and the effectiveness of the NGO-led food security programmes implemented. It further revealed that there was no evidence of significant relationships between satisfactions ($\chi^2_{\text{cal.}}=5.999$) and adoption ($\chi^2_{\text{Cal.}}=6.615$) showing a degree greater than $\chi^2_{\text{tab.}}=5.911$. There was no relationship between sustainability ($\chi^2_{\text{Cal.}}=0.50$, $\chi^2_{\text{tab.}}=3.841$) and effectiveness of NGO-led food security programmes implemented. A major recommendation based on the finding was that the government and donor agencies should adopt a vibrant monitoring and evaluation technique that would encourage NGOs to review their implementation strategies.

KEY WORDS: Effectiveness, NGO-led food security, Programmes, Household food self-security.

INTRODUCTION

The concept of effectiveness is very difficult to define because various schools of thoughts and agencies perceive it differently. Collin (2000) states that, effectiveness has to do with the degree of performance or progress; it describes the level of success of a process or action. However, in research, the word effectiveness has been defined in various ways by different researchers. Mott (1972), for example, defines effectiveness as an organization's ability to harness its resources to adequately meet its demands in the area of production. Yukle (1981) perceive organizations effectiveness in terms of the ratings given by clients. In this case effectiveness has to do with how well the organization satisfies the needs and expectations of the clients in terms of programmes execution and the degree of awareness of the clients of the organization's activities, and services rendered. Similarly, Warner *et al.* (1976) defines an organization's effectiveness as the degree to which the organization's goal or objectives are realized and how well the activities are carried out. Etzioni (1971) also defined effectiveness in terms of the level of goal achievement of an organization. Claar and Bentz (1984) perceive effectiveness as how well the organizational management structures and operations reinforce their operational procedures. In this connection,

factors such as how favourable the environment is and the use of appropriate skills so as to result to systematic and appropriate delivery of services or tasks. Dane (1990) views effectiveness as the ability of agricultural education and training to mobilize their capacity to meet production of female farmers. It is very difficult to accurately define the effectiveness of a change agent, an extension agent or even a farmer. The problem often arises from operationalizing the performance measured. This is also because effectiveness could mean differently to various professionals. To the economist, for example, effectiveness in production is a measure of yields or output using various measurement procedures such as cost-benefit analysis and other micro-economic functions of production (Odierno, 1983). In this way, for example, they can measure or predict what profitability of production units such as land, capital, labour, and entrepreneurship of the business are. For social scientists, such as researchers in education and agriculture, however, effectiveness is measured differently. A researcher in agriculture, for example, measures the effectiveness of programmes or services of change agents and extensionists as the distribution criteria, level of education of the change agent, the ability to communicate with clients, the number of visits to the farmers, the degree to which the change agent or

the extensionists can explain or deliver a development programme and above all the degree of adoption of innovation by the farmers and their farm families; all are measures of effectiveness of the implementing change agent or extension agent. Chambers (1983) and Foubert (1987) are concerned with the degree to which agricultural education reach farmers. They use indicators such as the number of contacts with farmers by the change agent or Extensionist within a given period of time, the total number of farmers contacted, the types of farmers reached and the degree to which farm demonstrations are carried out as performance of the change agent or Extensionist. Riddell & Robinson, (1993) state three indicators of an extension agent's effectiveness. These are the informedness of the agent (the level of technical knowledge), the explanatory ability of the agent— how well the change agent can explain details of an agronomic practices and the average number of times the change agent visits the farmer per day. However, these indicators have certain weaknesses because they do not really guarantee or tell the degree of farmer's success. A number of researchers such as Bangura (1983) and Lakoh (1978) measured the level of adoption of the farmers as a measure of the change agents' effectiveness. This is more logical and realistic because the aim of all agricultural extension programmes is to adopt innovation so as to improve on the farmers' level of production. How far the farmers adopt a technology provided by change agent or extension education services, however, may be contingent upon other factors such as the level of the education of the farmer, income, and age. Some researchers argue that when farmers have some degree of technical orientation the essence of training helps in improving these technical knowledge they already possess (Chambers, 1983). It therefore follows that the level of the knowledge of farmers as a function of the services produced by the change agent or extension agent holds only when the orientation and previous technical knowledge are held constant (Lahai, 1998). Tracey and Tews (1995) consider several factors in determining the effectiveness of NGOs implemented programmes. They proposed that in determinating the effectiveness of NGO programmes, heads of implementing programmes need to look beyond the usual factors of need assessment, programme design, implementation, and follow up. In addition, consideration must be made of external factors such as employees' characteristics such as motivation, attitude, and basic ability and the work environment, particularly the characteristics of the job, social networks, corporate culture, appraisal, and reward schemes. This is realistic because taking into account the change agents' external factors as well as traditional measures of the implementation effectiveness, heads of implementing organizations can begin to assess how well the implemented programme is performing and determine what changes will make these organization more effective. Determination of effectiveness of any implemented programme must consider the states of performance of the beneficiaries before and after the implementation process. It is only when comparisons of the two are made that logical

conclusions can be made as to whether the implemented programmes had had any impact or not (Travers, 2001). In their study on the effectiveness of training on farm women of Adaman and Nicobar, Travers (2001) used the before-after design to measure knowledge gained, skill acquisition and symbolic adoption, effected performance in farming operations. Four types of training programmes were evaluated: kitchen gardening, mushroom cultivation, layering, and freshwater pisciculture. Frequency tables and percentages were used to collate the results. The result after the training showed that about 50% of the trainees gained medium level of knowledge and skills in all programmes, 35% had medium level of symbolic adoption and 15% had a high level of symbolic adoption. The problem with this method is that assumption were made regarding the state of the farmers (previous knowledge and level of education of the farmers were all not considered) before the training. Without considering the previous knowledge of the farmers it will be very difficult to conclude that the current training was a significant factor in adoption of technology by the farmer (Chambers, 1983; Frutchey, 1983). Other factors that influence programme improvement to consider as suggested by Harris and Philips (2003) are programme planning and implementation; overall programme management; strategies, and methods of training. In a similar vein, Sinha, *et al.* (1976) used a number of indicators to measure the effectiveness of extension programmes in India. He used indicators such as awareness of villagers of the village level works; adoption of suggested improved practices by villagers; perception of the villagers of the credibility of the village level workers in relation to technical knowledge; and the credibility of the village level workers in relations to communication skills. The declaration of Food Security Proclamation on May 19, 2002 in Sierra Leone necessitated the development of policy statement to address the problems and constraints of and also highlights all the potentials to be explored in preparation for realization of the Ministry of Agriculture Forestry and Food Security's Mandate. The Ministry's mandate essentially entailed the creation of an enabling environment for increased farm and food productivity through extension and input supply, applied research into yielding varieties, best practices in farming, the provision of markets information, and appropriate price incentives through, value added and agro-processing. This mandate was fulfilled through the following objectives: Increased diversified production and productivity of crops and livestock to increase rural incomes and create employment in agriculture and in downstream processing industries and to ensure equitable income distribution, balanced agricultural growth and maximize foreign exchange earnings from the sector.

Many different programmes are being undertaken by government, as well as other food security agencies in order to attain food security in Sierra Leone. These include construction of roads/bridges, development and rehabilitation of swamps, creation of seed-banks, empowerment of women groups, supply of tools and other inputs, restocking of livestock, construction of dry floors and

stores, training youth and farmers, income generation and microcredit; pest and disease management and budgeting, marketing and communication technology, construction of toilets, construction of water wells, and installation of pumps, construction of schools and health centres, promotion of adult literacy education, etc.

The government of Sierra Leone alone would not implement all these programmes, and therefore, contracted agencies which were competent enough to carry out these programmes. Government therefore contracted many implementing partners to affect the food self-security programme, among which were the Non-Governmental Organizations (NGOs). The NGOs implement most development programmes in third world countries. They are better equipped, more mobile, more flexible, reasonable, and communicate with rural populace better than the government. However, for such an important programme, Sierra Leoneans need to be adequately and appropriately informed on how successful their ambitious food self-security programmes are going on. More importantly, focus on information flow must be made on how effective the implementing partners are effecting the food self-security programmes. Since the start of the food self-security programme in 2002, the government and her donors have contracted several implementing partners. One of such implementing partners had been the NGOs. The main food security implementing NGOs are Christian Assistance Relief Everywhere (CARE), ACTION AID, German Agro-Action (GAA), WORLD VISION-Sierra Leone (WVSL), Bo-Pujehun Development Association (BPDA) /Deutsche Gesellschaft Für Technische Zusammenarbeit (GTZ), European Union (EU), Archdioceses Development Office (ADDO), Network Movement for Justice and Development (NMJD), One Blood International (OBI), Food and Agricultural Organizations (FAO), and Medicine Sam Frontiere (MSF). The strategies used in the implementation involves teaching and training of farmers on the use of innovations, supply of farm inputs, making farm visits, control of pest and diseases, cultivation of crops, harvesting, processing, construction of dry floors, stores, toilets, water wells, and marketing of crops. Assessment of the satisfaction of farmers with the NGOs-led food security programmes would be effected only by a research of this nature. The roles of NGOs have often come under scrutiny because of their pronouncements that they reach the rural needy more than any other institution including government and their numerous agencies. Also, though it is expected that the measures to increase domestic food production will contribute to a reduction of national food gap, it is obvious that this reduction is gradual and Sierra Leone continues to depend on import of rice, and dependence on food imports does not necessitate food security, but may have negative implications for national food security and overall development of the country. As the food self-security programme had taken off for more than a decade now, the target year 2020 is imminent and is, therefore, necessary to ascertain whether the implementing partners of the food self-security are making any headway. Such an important

programme, Sierra Leoneans need to be adequately and appropriately informed on how successful their ambitious food self-security programmes are going on, yet no formal research has been conducted in the Southern Region of Sierra Leone to show how effective the NGOs implementing food security programmes are. In addition, effecting food self-security requires inputs by various stakeholders namely the government, the populace, NGOs, various parastatals, researchers and the like. How these stakeholders effect the food self-security programme, the inputs of the programmes and its impact on the clientele (the farmers and the nation as whole) require investigations. As “global food self-security” is the current watch phrase, realising food self-security in a country like Sierra Leone that has just emerged from more than a decade of civil war, is like a dream come true. At the moment, there has been very little research on the impact of the food self-security programme on the people of Sierra Leone. Therefore, the thrust of this study is to investigate and reveal how effective the NGO-led food security programmes in Bo District are. It is hoped that the findings of this study will be useful not only to policy makers, NGOs, donors, academia, but also to Sub-Sahara countries for planning and contacting agencies for implementing food self-security.

PURPOSE AND OBJECTIVES

The purpose of the study was to investigate the farmers' perception on the effectiveness of NGO-led food self-security programmes in Bo District. To achieve this, the research was guided by five research questions as follows:

1. What NGO-led Food self-security programmes does each agency implement in the District?
2. How adequate are the programmes implemented; does this determine the programmes' effectiveness?
3. How satisfactory are these programmes implemented; are they related to the effectiveness of the food self- security programme?
4. Are farmers satisfied with the food security programmes implemented in their communities, if so what is the relationship between satisfaction of programme and their effectiveness?
5. Are NGO-led food self-security programmes implemented sustainable, if so, what is the relationship between satisfaction of programme and its effectiveness?

METHODOLOGY

Research design: The research design is descriptive in nature. A systematic research approach has been adopted for conducting the present study. The units selected for the study consisted of NGO-led beneficiary- farmers and Extension Agents in Bo District. The probability sampling method used in this study was simple random sampling – where the items for the sample were selected randomly by the researcher.

Study population: The population of the study composed of all NGO-led food security programme beneficiaries and field extension agents in Sierra Leone.

Study area: The study was conducted in Bo District of Southern region of Sierra Leone (Figures 1). It is one hundred and fifty two miles (152 miles) from the capital city, Freetown. Bo District is bounded to the North by Tonkolili District, North–Northeast by Kenema District, to the South by Pujehun District, to the Southwest by Bonthe District, and to the West and West-north by Moyamba District. The entire district comprises of fifteen (15) chiefdoms: Badja, Bagbew, Bagbo, Baoma, Bumpah Ngao, Gbo, Jaiama Bongbor, Kakua, Komboya, Lugbu, Niawalenga, Selenga, Tikonko, Valunia and Wunde

chiefdoms. Muslims and Christians mutually live across the district tolerating one another's belief. The population of the district constitute several ethnics and cultural groups such as Mende, Temne, Limba, Loko, Fullah, Susu, Kono, Creole, Mandingo, Shebro, Kissy and Yaronka. Mendes, however, form the bulk of the population. The population of this district has undergone dramatic changes over the past five years. According to Central Statistics Office (SSL, 2004), the population of Bo District is 463,668 people with as much land area as 1,500 sq km.

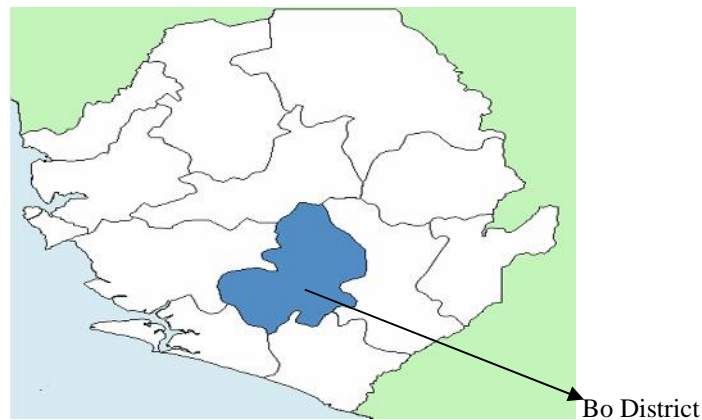


FIGURE 1: Map of Sierra Leone Showing Bo District

Sampling and sampling procedure: The sampling method adopted was a multi-stage and purposive random sampling technique. The first stage involved the selection of Bo District from among the four districts in the southern region. This district was selected for two main reasons. First, many NGOs operated in this district implementing community development programmes. Second, the district is highly dominated by farmers who have had longtime experience with extension activities. The second stage in the multi-stage sampling procedure involved the selection of 25 different NGOs implementing Food Security programmes. The sample frame used in selecting the sample was the list of all NGOs operating in the Bo District and the beneficiaries of their activities as compiled by SLANGO and the NGOs respectively. The NGOs and beneficiaries, on the other hand, were stratified thus: of the 25 NGOs and 88,519 beneficiaries, seven were dealing with relief and other refugee programmes to 24,785 beneficiaries; five were dealing with peace, reconciliation, resettlement, and rehabilitation with 17,704 beneficiaries; the remaining NGOs were implementing humanitarian activities, community development and food security programmes. Since the author was interested in the third category; the first and second categories of the beneficiaries were therefore eliminated. NGOs implementing community development and food security programmes only formed the stratum and now gave a new total of 46,030 (52.0% of the total). The author initially determined a sample size of 150: 50 from NGO management and 100 from the beneficiaries. During the initial stage of fieldwork, this was reduced to 100 (30

NGO management and 70 beneficiaries). The determination of 100 was made based on the considerations:

1. That it is a reasonable sample size forming 0.22% of the total population from which the sample was drawn, and
2. because of resource limitations- finance, time and personnel.

Next, the proportion in the new sample (46,030) was calculated giving a new percentage (52.0%) of the NGOs implementing only food security programmes. The final step was the selection of the sample itself from the population. Using the sample frame of (1 in 21), the first sample number was selected randomly from the first 4 NGOs and beneficiaries on the list and then every 21st NGO or beneficiary was selected and included in the sample. Thus, 30 NGO executives and 70 beneficiaries were selected. All the number of beneficiaries was interviewed as selected, because the one whose name was next on the list automatically replaced any beneficiary selected, who had died or migrated.

Research Instrument for data collection: The instrument for data collection for this study consisted of structured questionnaire composed of closed-ended questions. Two types of questionnaires were used. The first type of questionnaire – Survey Form A – was administered to some sample beneficiaries (Farmers). It was structured to illicit information on the beneficiaries' perception on the effectiveness of NGO-led food security programmes. The second type of questionnaire –Survey Form B – was administered to sample NGOs executives and extension agents. The questionnaires were each divided into five

sections. The first section included questions on the different programmes the NGOs implement in the study area. The second section through the fifth section solicited information on the adequacy, satisfaction, adoption, and sustainability of NGO-led food security programmes and their effectiveness. The variable on sections two to four have optional responses on a three-scale point of: Not adequate, Adequate, Very Adequate; Not Satisfy, Satisfied, Very satisfied; Not easy, Easy, very easy; and Not sustainable and Sustainable. The individual responses for these variables were combined to establish the overall effectiveness of NGO-led food security programmes attaining food security.

Validity: The validity of the instrument was validated by 5 experts from Agriculture and Food security, Extension, Economics, and other related disciplines. The experts' suggestions led to a modification of some items in the questionnaire.

Pilot Study: A pilot study was conducted to validate the questionnaire and to confirm the feasibility of the study. Thus the questionnaire was subject to a pilot test conducted with 5 NGO-led beneficiaries (farmers) and 3 extension agents in Moyamba district which was not included in the survey. Cronbach's Alpha test was applied to test the reliability. Only elements with alpha value of 0.73 or above are considered (Nunnally, 1978). For all the variables Cronbach's Alpha value is 0.838 which shows the internal consistency of the scales. This also elucidates that the statements in the questionnaire were understood by the sample respondents. The quality of the questionnaire was ascertained and the test showed high reliability. Based on the pilot study the questionnaire was reviewed and modified duly to bring out response from the sample women beneficiaries.

Data Collection: A triangulation of qualitative and quantitative data was collected for this study. The data of this study were therefore collected by employing a number of data collection techniques. The techniques used were meant to reinforce each other and to enhance the reliability of the data. The data collection techniques used in the field survey were questionnaires, oral interviews and formal discussions, Participant Observation, Focus discussion, Desk survey, and Examination of NGOs' regional as well as national records and other relevant literatures. The fieldwork lasted for five months from November 10th 2011 and March 10th 2012. There was no ethical Conduct for the Research as the research was born in this district and was very familiar with most authorities in some of the chiefdoms.

The fieldwork was supported by 3 local research assistants in each of the chiefdom. The research assistants assisted in organizing the focus groups and individual interviews, as well as in translating sessions and answering questions during participant observation. Lists for both Ngo-led food security beneficiaries (Farmers) and extension agents in Bo District were made available by the District Agricultural Extension Officer and NGO executives in the in the district.

Data analysis techniques: Many tools that offer the framework for the analysis of data survey exist. In order to

handle the research questions following analytical methods were used namely: (1) Descriptive statistics and (2) Chi – Squire Test. To answer the first research question, a descriptive statistics was used. The information collected was first summarised to give raw scores. Some of the raw scores were now converted into percentages and presented in tabular forms. The second type of the application of Chi-square test (Test for independence in contingency Table) (Gomez and Gomez, 1976) was utilised in the study. The level of significance chosen for this study was 5 % (0.05). The numbers of classes in the data were tested on two classification criteria, one with row (r) classes and another with columns(c) classes. This non-parametric statistics was used to calculate relationship between variables and effectiveness of NGO-led food security programmes.

RESULTS & DISCUSSION

1. NGO-led Security Programmes implemented for attaining household food security

The data showed that twenty-four food security programmes are implemented by the NGOs operating in the study area. Of these, creation of seed banks, empowerment of women groups; supply of agricultural tools and equipments; livestock restocking; construction of dry-floors and stores; school and health centers; training farmers on post harvest losses; its management and budget planning; and food processing and preservation techniques were implemented in almost all chiefdoms. These were followed by pest and disease management practices; marketing and communication technologies; swamp development and rehabilitations; construction of fishponds; and justice for all; which were implemented in a very small number of chiefdoms in the district. This is an indication that diverse programmes are carried out in the study area in order to raise the standard of living of the beneficiaries.

2. Adequacy of NGO-led Food Security Programmes

The findings revealed that over half of the respondents (55.0%) claimed that the NGO-led food security programmes were not adequately implemented in their communities and the number of females who said so is greater than males. One-fourth of the sample (25.0%) said the programmes are adequate and for these, the number of males exceeds that of the females. One-fifth of the respondents (20.0%) said they do not know whether programmes were adequately delivered or not and the number of females is greater than males. The relationship between adequacy and the effectiveness of the NGO-led food security programmes was tested. The Chi-Squire (χ^2) test result of 7.8465 with 2 degree of freedom at 5% level of confidence was greater than the tabulated χ^2 value of 5.911. This shows that there is an evidence of significant relationship between adequacy and the effectiveness of the NGO-led food security programmes implemented. More respondents than expected said the NGO-led food security programmes were not adequate and effective.

TABLE 1: Distribution of NGOs by Food Security Programmes Implemented

| | NGOs | | | | | | | | | | | | | |
|---|------|---|---|---|---|---|---|---|---|---|---|---|---|--|
| | A | A | A | B | C | C | E | F | G | M | N | O | W | |
| | A | C | D | P | A | C | U | A | A | S | M | B | V | |
| | | F | D | D | R | S | | O | A | F | J | I | S | |
| Food Security Programmes | | | O | A | E | L | | | | | | D | L | |
| Construction of Roads/ Bridges | | | | x | | | | | | | | | | |
| Construction of water wells and installation of pumps | | | | x | | | | x | | | | | x | |
| Development and Rehabilitation of swamps | | | | x | | | | x | | | | | x | |
| Creation of Seed banks | x | x | x | x | x | x | x | x | x | | | x | x | |
| Empowerment of women’s groups | x | x | x | x | x | x | x | x | x | | X | x | x | |
| Construction of Toilets | | | x | x | x | | | | | | | | x | |
| Supply of tools and other Inputs | X | x | | x | x | x | x | x | x | | | x | x | |
| Restocking of Livestock | x | | x | x | x | x | x | x | x | | | x | x | |
| Justice for all and good governance | | | | x | x | | | x | | | X | | x | |
| Construction of dry floors and stores | | | x | x | | | x | x | | | | | x | |
| Training youths and Farmers | | | | x | x | x | x | x | x | | | | x | |
| Construction of schools and Health Centres | x | x | x | x | x | x | x | x | | x | | | x | |
| Income generation and micro-credit | x | | x | x | x | x | x | x | x | | | | x | |
| Marketing and Communication Technology | | | x | x | x | | | | | | | x | x | |
| Promotion of Adult Literacy Education | X | | x | x | x | | | | | | | | x | |
| Pest and Disease Management | X | x | | | | | | x | | | | | x | |
| Construction of Food processing plants | | | | | | | X | | | | | | | |
| Child and Human Right | x | | x | x | x | | | | | | X | | x | |
| Training on Post Harvest Losses | x | x | x | x | x | x | | | x | | | | x | |
| Training on Food processing and Preservation | | | | | | | | x | | | | | | |
| Construction of the Fish Ponds | | | | | | | | x | x | | | | x | |
| Post Harvest Management and Budgeting | x | x | x | x | x | x | x | x | x | | | | x | |
| Promoting Health and Hygiene for all | | | | | | | | | | | x | | | |
| Promoting Family Planning | | | | | | | | | | | x | | | |

TABLE 2: Distribution of Respondents by Adequacy of NGO-led Food Security programmes

| Adequacy | Male | | Female | | Total | |
|-------------------|--------------|------|----------|------|---------------|------|
| | No. | % | No. | % | No. | % |
| Don't | 12 | 18.5 | 8 | 22.0 | 20 | 20.0 |
| Not Adequate | 31 | 47.7 | 24 | 68.6 | 55 | 55.0 |
| Adequate | 22 | 33.8 | 3 | 8.5 | 25 | 25.0 |
| Effectiveness | Not Adequate | | Adequate | | Very Adequate | |
| | No. | % | No. | % | No. | % |
| Not effectiveness | 12 | | 31 | | 22 | |
| Effective | 8 | | 24 | | 3 | |
| Total | 20 | | 55 | | 25 | |

$$E_1 = \frac{20 \times 65}{100} = 13, E_2 = \frac{55 \times 65}{100} = 35.75, {}^1E_2 = \frac{25 \times 65}{100} = 16.25$$

$$E_4 = \frac{20 \times 35}{100} = 7, E_3 = \frac{55 \times 35}{100} = 19.25, E_6 = \frac{25 \times 35}{100} = 8.75$$

$$X^2 = \frac{(12-13)^2}{13} + \frac{(31-35.75)^2}{35.75} + \frac{(22-16.25)^2}{16} + \frac{(8-7)^2}{7} + \frac{(24-19.23)^2}{19.25} + \frac{(3-8.75)^2}{8.75}$$

$$= \frac{(1)^2}{13} + \frac{(-4.75)^2}{35.75} + \frac{(5.75)^2}{16} + \frac{(1)^2}{7} + \frac{(4.77)^2}{19.25} + \frac{(5.75)^2}{8.75}$$

$$= .0769 + 0.6311 + 2.0346 + 0.1428 + 1.1831 + 3.778 = 7.8465$$

$$X^2_{cal} = 7.8465$$

$$X^2_{tab} = 5.991$$

$$df = 2$$

$$P = 5\%$$

3. Satisfaction with the NGO-led Food Security Programme
The data revealed that over two-fifths of the respondents (46.0%) were satisfied with the NGO-led food security programmes implemented in their communities. Of these, the number of female is higher than males. Also, more than one-third of them (38.0%) were very satisfied and the number for males is greater than females. Over one-tenth of the sample (16.0%) was not satisfied and the number for males exceeds that of females.

The relationship between satisfaction and the effectiveness of the NGO-led programmes were tested. The Chi-Square (X^2) test result of 5.994 with 2 degree of freedom at 5% level of confidence was greater than the tabulated X^2 value of 5.991. This shows that there is no much evidence of significant relationship between satisfaction with and the effectiveness of the NGO-led food security programmes implemented. However, more respondents than expected were satisfied with the NGO-led food security programmes in the study area.

TABLE 3: Distribution of Respondents by Satisfaction with NGO-led Food Security Programmes

| Satisfaction | Male | | Female | | Total | |
|----------------|------|------|--------|------|-------|------|
| | No. | % | No. | % | No. | % |
| Not Satisfied | 11 | 16.9 | 5 | 14.3 | 16 | 16.0 |
| Satisfied | 26 | 40.0 | 20 | 57.1 | 46 | 46.0 |
| Very Satisfied | 28 | 43.1 | 10 | 28.6 | 38 | 38.0 |

| Effectiveness | Satisfaction | | | | Total |
|---------------|---------------|--|-----------|--|-------|
| | Not satisfied | | Satisfied | | |
| Not effective | 11(10.4) | | 26(23.4) | | 65 |
| Effective | 5(5.6) | | 20(12.6) | | 35 |
| Total | 16 | | 36 | | 100 |

$$E_1 = \frac{16 \times 65}{100} = 10.4, E_2 = \frac{36 \times 65}{100} = 23.4, E_3 = \frac{38 \times 65}{100} = 24.7$$

$$E_4 = \frac{16 \times 35}{100} = 5.6, E_5 = \frac{36 \times 35}{100} = 12.6, E_6 = \frac{38 \times 35}{100} = 13.3$$

$$X^2 = \frac{(11-10.4)^2}{10.4} + \frac{(26-23.4)^2}{23.4} + \frac{(28-24.7)^2}{24.7} + \frac{(5-5.6)^2}{5.6} + \frac{(20-12.6)^2}{12.6} + \frac{(10-13.3)^2}{13.3}$$

$$= \frac{(0.6)^2}{10.4} + \frac{(2.6)^2}{23.4} + \frac{(3.3)^2}{24.7} + \frac{(-0.6)^2}{5.6} + \frac{(7.4)^2}{12.6} + \frac{(-3.3)^2}{13.3}$$

$$= 0.0346 + 0.2889 + 0.4408 + 0.0643 + 4.346 + 0.8188 = 5.994$$

$$X^2 \text{ Calculated} = 5.994$$

$$X^2 \text{ tabulated} = 5.991$$

$$df = 2$$

TABLE 4: Distribution of Respondents by Ease of Adoption of Technologies

| Ease of Adoption | Males | | Females | | Total | |
|--------------------|-------|------|---------|------|-------|------|
| | No. | % | No. | % | No. | % |
| Not easy to Adopt | 14 | 21.5 | 11 | 31.4 | 25 | 25.0 |
| Easy to Adopt | 34 | 52.3 | 9 | 25.7 | 43 | 43.0 |
| Very easy to adopt | 17 | 26.2 | 15 | 42.9 | 32 | 32.0 |

| Effectiveness | Ease of Adoption of Technologies | | | | Total |
|---------------|----------------------------------|--|-----------|--|-------|
| | Not Easy | | Easy | | |
| Effective | 14(16.25) | | 34(27.95) | | 65 |
| Not Effective | 11(8.75) | | 9(15.05) | | 35 |
| Total | 25 | | 43 | | 100 |

$$E_1 = \frac{25 \times 65}{100} = 16.25, E_2 = \frac{43 \times 65}{100} = 27.95, E_3 = \frac{32 \times 65}{100} = 20.8$$

$$E_4 = \frac{25 \times 35}{100} = 8.75, E_5 = \frac{43 \times 35}{100} = 15.05, E_6 = \frac{32 \times 35}{100} = 11.2$$

$$(14-16.25)^2 + (34-27.95)^2 + (11-20.8)^2 + (9-15.05)^2 + (15-11.2)^2$$

$$= \frac{(2.25)^2}{16.25} + \frac{(6.05)^2}{27.95} + \frac{(-9.8)^2}{20.8} + \frac{(2.25)^2}{15.05} + \frac{(3.8)^2}{11.2}$$

$$= \frac{5.0625}{16.25} + \frac{36.6025}{27.95} + \frac{14.44}{20.8} + \frac{5.0625}{15.05} + \frac{14.44}{11.2}$$

$$= 0.3115 + 1.3096 + 0.6942 + 0.5786 + 2.4321 + 1.2893 = 6.6153$$

$$X^2_{cal} = 6.615$$

$$X_{tab} = 5.991$$

$$df = 2$$

$$P = 5\%$$

4. Adoption of Technologies Disseminated through NGO-led Food Security Programmes

The data showed that slightly over two-fifths of the respondents (43.0%) said the NGO-led food security programmes implemented in their communities were easy to adapt. For these, the number for males (52.3%) is greater than that of females. Also, nearly one-third of the sample (32.0%) said the programmes were very easy to adopt and the number of females is higher than males. Only one-fourth of the respondents (25.0%) said the programmes were not easy to adopt for which the number of females is higher than men.

The relationship between ease of adoption of programmes and the effectiveness of the NGO-led food security programmes was tested. The Chi-Square (X^2) test result of 6.615 with 2 degree of freedom at 5% level of confidence was greater than the tabulated X^2 value of 5.911. This is an indication that there is not much significant evidence of relationship between ease of adoption of the technologies disseminated and the effectiveness of the NGO-led food security programmes implemented. However, more

respondents than expected said it is easy to adopt technologies in the NGO-led food security programmes in the study area.

5. Sustainability of NGO-led Food Security Programmes

The result revealed that over half of the respondents (61.0%) claimed the NGO-led food security programmes are sustainable and for these the number for females is higher. Nearly two-fifths of the sample (39.0%) denied the sustainability of the NGO-led food security programmes and the number for females are greater than males

The association between sustainability and the effectiveness of the NGO-led food security programmes was tested. The Chi-Square (X^2) test result of 0.5031 with 2 degree of freedom at 5% level of confidence was less than tabulated X^2 value of 5.911. This is an indication that there is no significant evidence of association between sustainability and the effectiveness of the NGO-led food security programmes implemented. However, more respondents than expected said that the NGO-led food security programmes were sustainable and effective.

TABLE 5: Distribution of Respondents by Sustainability of programmes

| Sustainability | Males | | Females | | Total | |
|-----------------|-------|------|---------|------|-------|------|
| | No. | % | No. | % | No. | % |
| Not sustainable | 27 | 41.5 | 12 | 34.3 | 39 | 39.0 |
| Sustainable | 38 | 40.0 | 23 | 65.7 | 61 | 61.0 |

| Effectiveness | Not sustainable | | Sustainable | | Total | |
|---------------|-----------------|-------|-------------|-------|-------|---|
| | No. | % | No. | % | No. | % |
| Effective | 12 | 13.65 | 23 | 21.35 | 35 | |
| Not effective | 27 | 25.35 | 38 | 39.65 | 65 | |
| Total | 39 | | 61 | | 100 | |

$$E_1 = \frac{39 \times 35}{100} = 13.65, \quad E_2 = \frac{61 \times 35}{100} = 21.35, \quad E_3 = \frac{39 \times 65}{100} = 25.35,$$

$$E_4 = \frac{61 \times 65}{100} = 39.65$$

$$X^2 = \frac{(12-13.65)^2}{13.65} + \frac{(23-21.35)^2}{21.35} + \frac{(27-25.35)^2}{25.35} + \frac{(38-39.65)^2}{39.65}$$

$$= \frac{2.7225}{13.65} + \frac{2.7225}{21.35} + \frac{2.7225}{25.35} + \frac{2.7225}{39.65}$$

$$= 0.1995 + 0.1275 + 0.1074 + 0.0687 = 0.5031$$

$$X^2_{calculated} = 0.5031$$

$$X^2_{tabulated} = 3.841$$

$$df = 2$$

$$P = 5\%$$

DISCUSSION

1. NGOs and Food Security Programmes they implemented

In this study, NGOs implementing food security programmes integrated various programmes in their operational communities in order to ease the problems of the rural poor. The implications is that this large number of NGOs will lead to the divisions of beneficiaries among the

various NGOs and their programmers making some dedicated to specific NGOs and programmers and hating others. Similarly they will speak well of only NGOs and programmes they favour. Some may even sabotage certain programmes or even convince others not to participate in these programmes. This in turn will have negative effect on the operations of these NGOs and their programmes. Abrews (2003) stated that food security programmes that use

integrated approach to development make more impact on the beneficiaries than those which focus on only one programme. Similarly, Lahai, (1998) stated that agricultural development programmes should integrate other aspects of development such as education, health, transport and communication programmes in their activities as a holistic development approach. The food security programmes NGOs implemented in communities either make them popular or unpopular among the people. NGO-led food security programmes which involve people in their planning and implementations processes and serve the real needs of the people are highly appreciated than those which are imposed on the beneficiaries from outside

2. Adequacy of NGO-led Food Security Programmes

In this study, more respondents than expected said the NGO-led food security programmes were not adequate and effective. The implication of this is twofold. Firstly, this will discourage the full participation of beneficiaries in the NGO-led food security programmes causing most of them to withdraw their memberships. Secondly, this will make beneficiaries think that the NGOs executive workers are cheating them; this perception will in turn lead to loss of confidence in all other future NGOs that may want to implement development programmes in the area. The qualities and quantities of technologies–tools, implements, farm inputs, information, and training programmes that NGOs implementing food security programmes disseminate to farmers in any community influence the behaviour of their beneficiaries towards the NGOs programmes. When these programmes are sufficient and satisfactory, the farmers are motivated to fully participate in the implantation processes of all the NGO-led food security programmes.

3. Satisfaction with NGO-led Food Security Programmes

The study revealed that more respondents than expected said the NGO-led food security programmers are not satisfactory and effective. The implication of this is that some beneficiaries can connive with some dishonest field agents to squander, misappropriate, and misuse programmes packages entrusted in their hands for dissemination. This in turn will affect the implementation processes of the NGO-led food security programmes by discouraging the honest, hardworking and committed members of the programmes, leading to their withdrawal of their memberships. If this continues, the NGOs will not make substantial impact on their target groups, hence not achieving their objectives. The good feeling that people get when NGO-led food security programmes are implemented in their communities motivate them to fully participation in the programmes' activities. They become more enthusiastic to work fully with the NGOs when they are satisfied with the technologies the NGOs programmes disseminate to their beneficiaries, and willingly devote their available resources –time, finance, human and material to the programme activities.

4. Adoption of NGO-led Food Security Technologies Disseminated

The study revealed that more respondents than expected said the NGO-led food security programmes are not adequate and effective. The implication of this is that less of the

innovations will be adopted and most needy farmers will not have access to the few that is disseminated. This will in return affect the implementation of the programmes as it will discourage the full participation of the participants. It will also lead to loss of confidence in the field agents as the farmers may feel that they are may be cheating them. Farmers are most willing to adopt innovations that are easy to use, understand and fit their own conditions (Alex, et al, 2002). The more frequently farmers adopt innovations, the more satisfied they are with the technology. The different adoption rates of various innovations reflect the different adoption behaviours of clients as a consequence of the innovations' properties such as socio-economic biophysical factors. . In addition, these farmers farmer will feel they are ignored, which in turn will affect the sustainability of the programmes.

5. Sustainability of NGO-led Food Security Programmes

The result of this study showed that more respondents than expected said the programmes are not sustainable and effective. This is a signal that the people will not devote all their resources to the implementation processes of the programmes. They do not have the confidence that the programmes will continue if the donors leave. Expect the implementing partners decide to change their strategies to one that encourages the full participation of the beneficiaries; the NGOs will hardly achieve their objectives. Programmes in which beneficiaries are highly involved in the planning and implementations of activities are more sustainable than those in which they are not (Hubbard, 1995). This will make the beneficiaries to dedicate more of their resources-money, time and human skills in carrying out these programmes. They may also belong to them and will stay even after donors pull out.

CONCLUSION & RECOMMENDATIONS

It is concluded from the discussion that though NGOs integrated various programmes in their operational communities in order to ease the problem of rural poverty, the programmes were not adequate enough to make the programmes effective. Though the beneficiaries were satisfied with programmes, there was no significant evidence between adoption, suitability, sustainability and extension delivery methods of the NGO-led food security innovations. It is therefore recommended that the government and donor agencies should adopt a vibrant monitoring and evaluation technique that would encourage NGOs to review their implementation strategies.

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