

Full Length Research Paper

Prioritizing needs assessment techniques for agricultural programs implementation: The case of Northern Region, Ghana

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The Northern region is among the poorest in Ghana. The Southern regions possess a lot of natural resources, and at the same time viable for the production of cash crops. The Northern regions however, have agriculture as their most dependable source of livelihood. The proportion of people working as farmers in the region is 73%, making it the highest in the country. In the light of this, most developmental programs in the region are agriculture based. However, the impact of these programs is not being felt as farmers continue to experience lower harvest and productivity. We however blamed the situation on the absence or inappropriate Needs Assessment. We tried to establish from the farmers the programs they found successful. It was established that, an insignificant number of programs were adjudged successful. Reasons why they considered projects successful or otherwise were also investigated. Combining the results from the data and the practical application of the techniques in the study area, we prioritized these techniques. It was realized that individual group techniques were complements to group techniques in the context of the study area. A case is made for the prioritized techniques as well as further discussion on the highly prioritized ones.

Key words: Agricultural programs, needs assessment, need assessment techniques.

INTRODUCTION

Ghana's economy is economically dependent on agriculture, not in terms of how much it contributes to gross domestic product (GDP) and economic growth but rather in terms how many people it employs. It is the least in terms of contribution to GDP, but the highest in terms of population employed. Agriculture, industry and services contribute 21.9, 28.6 and 49.5% respectively to GDP (Ghana Statistical Service, 2014a:5) and (World Bank Ghana Development Indicators, 2014). Agriculture

however, employs 44.7% of the labor force as at October 2013 (Ghana Statistical Service, 2014b:51). The intricate nature of agriculture in rural setting makes implementation of agriculturally oriented programs very difficult. Unlike industrial farming which operates as an economic unit with higher efficiency and productivity, small scale farmers who comprise most of the world farmers simultaneously operate as an economic, social and cultural unit. This means, the implementation of any

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program needs to strike a balance among these aspects of the rural community life. The regions in the Northern Ghana are typically less developed than those in the south where there are a lot natural resources and cash crop production. Apart from the fact that the countries mineral resources like gold, diamonds, bauxites, manganese and oil are found in the south, the production of Ghana's most important and precious cash crops; cocoa and coffee are viable only in the south. The Northern regions have only small scale agriculture as the only livelihood of most people. It is also the region with the highest proportion of its population as farmers; 73.11% (Ghana Statistical Service, 2012:76).

However, most of the agricultural outputs in the northern region especially food crops are below 50% of their potential productivity. These include important ones like maize, rice, cassava yam, tomato, and cocoa (Ministry of Food and Agriculture, 2011:12). Furthermore, the productivity levels of some of the crops are not only below the national average, but are continuously declining over the years. For example, while the national productivity of cassava, yam, maize, rice and soybean improved from 2010 to 2013, that of Northern region for the same crops, with the exception of the tubers decreased from 2010 to 2014. For 2010, the national yield for cassava, yam, maize, rice and soybean were 15.4, 15.5, 1.9, 2.7 and 1.5 respectively, while that of 2013 were 18.3, 16.8, 1.7, 2.7 and 1.9. However, at the Northern regional level, the yields were 13.28, 12.53, 1.83, 2.95 and 1.97 for 2010, and 16.5, 17.2, 1.43, 2.16 and 1.96 for 2014 respectively. The unit of measurement is metric ton per hectare (Mt/Ha) (MoFA, 2010 and 2013) and (FAOSTAT, 2015).

Even though Ghana as whole is improving in terms of poverty reduction, the source of this positive development is not from the agricultural sector but rather the service sector. This explains why poverty among the farmers in the northern region is rising. Between 1992 and 2006 for instance, the number of poor people in the southern regions decreased by 2.5 million while the northern regions experienced an additional 900,000 more poor people within the same time period (IFAD, 2012:5). The combined effect of poverty, falling agricultural productivity and some other factors force the youth in the north to migrate to the south to work as head potters, store keepers, maids, farm work etc.

In an effort to bridge this gap between the South and the North, agriculture has been the target of most development programs and policies in the Northern Region. While some programs target yield improvement, others consider marketing. Others may attempt to solve problems along the entire agricultural value chain. The government of Ghana through the Ministry of Food and Agriculture (MoFA), private and non-governmental organizations implement programs aimed at fulfilling any or a combination of the above objectives. In this regard the Agricultural program implementers and extensionists

play a major role. It has to be noted that almost all the government programs are supported by international organizations or a country that is a development partner. In some cases a Non-Governmental Organizations (NGOs) undertake a project with funding mostly from outside Ghana. This type of organizations has a little coordination with the MoFA and most time none with other partners working in the same districts with the same farmers. Sometimes too, development partners execute a project directly through some other official organizations within the country. The development partners who are directly or indirectly involved in executing agricultural projects in Ghana are African Development Bank (ADB), Alliance for Green Revolution for Africa (AGRA), Canadian International Development Agency, Food and Agriculture Organization (FAO), German Development Cooperation in Agriculture, International Fund for Agricultural Development – IFAD, United States Agency for International Development (USAID), Millennium Challenge Corporation, World Bank, World Food Program, Japan International Cooperation Agency and more (MoFA's website).

Most programs go into these communities with very good objectives and solution to a particular agricultural problem, but the problem has always been obstacles at the implementation stage. These obstacles include lack of community support, lack of corporation from participants, timing, funding, incompetent staff etc. These obstacles subsequently lead to agricultural programs that do not promote voluntary participation, adoption, and sustainable implementation of outcomes. Most of these obstacles could have been prevented if proper planning and consultations were done before the implementation. We therefore think that, the missing link in these project implementations is proper Needs Assessment (NA) and the appropriate NA techniques.

NA is basically the life line of every successful socially oriented project or program. This takes an objective overview of the current situation in the society and what it should have been. It is a multi-disciplinary concept so wide that its definition depends on the discipline, organization and focus of the researcher or the decision maker. This situation between the current state and the desired or targeted state is called the gap and the contributing factors to help close this gap is called needs (Watkins et al., 2012:19). However, a need is the same as a gap if the word 'need' is defined as a noun (Witkin and Altschud, 1995:9). The Gap forms the bases for any NA and any decision taken should be focus on addressing the gap. It tells where you are and where you intend to go.

Why needs assessment

For any gap in agriculture to be addressed the project implementer or the extensionists play a significant role.

The farmer is always at the center of all these and makes most of the decisions, hence whatever decision is to be taken about the program and its implementation, the farmer needs to be part of it and be well informed.

NA is critical in the execution of any program. Agricultural programs and extension in general is required by statute to consider stakeholder input as part of the designs and delivery of programs (McCawley, 2009:4).

According to McCawley (2009:3), NA for agricultural programs and extension purposes is done by first learning what the audiences (in this case farmers) already know and thinks, so that an educational product and services can be designed to address their need. For example, if farmers want to increase productivity of wheat per acre in a particular community. So many needs might have accounted for low productivity but the researcher or the program formulator cannot just guess the ones really responsible. He or she must use any of the NA techniques. Sometimes it can be one particular need or a combination of more than one. These needs may include inadequate machinery, inadequate pesticide and weedicides, inadequate labor, the inappropriate use of equipment, and so on. Further scrutiny has to be made regarding this information gathered. For example, all the above may be adequate or enough in that particular community, but however the inappropriate use of pesticide, weedicides and machinery may be the problem. If the researcher finds out that there is a combined effect of three of the above listed problem, they must be prioritized, that is, which is more pressing or needed then the other to address the said goal (increasing productivity per acre).

Some authors stress the need to make distinction between a Need, Want and an Interest, as these terms are often confused and used interchangeably by program implementers, extensionists and farmers. "Needs refer to something considered necessary or required to accomplish a purpose. Wants, on the other hand, are considered desirable or useful, but not essential. Interests indicate an individual's concern or curiosity about something" (Swanson et al., 1997). In the scenario above, the difference between want and need is exemplified by the fact that the farmers want to increase productivity, but they actually need education on the usage of farm equipment. When that equipment usage gap is reduced or closed, we can be sure that productivity will increase. This explains how suicidal it to execute agricultural programs in farming communities without NA.

In some cases, the buck does not stop at perfectly identifying the need. Some cultural and social lifestyle of the community may impede on the program implementation. Rural life in most part of Africa has a form of collective socialist behavior ingrained in them. They are ready to abandon anything that they think is not in the collective interest of their community especially their beliefs, customs and tradition. Some of their

lifestyles however, are anemic to their development. In fact some of them prevent innovation, networking, technology, education and gender equality. It is rather the duty of the project implementers and the extensionists to be aware and well informed about them so as not to be obstructed by them in the implementation process. Since the primary aim of the agricultural program is not to change those lifestyles, it is prudent to avoid or managed them. A classic example is distributing a medicine whose structure or packaging looks like a cross to a Muslim dominated community, considering how Muslims abhor the cross. To some extent, NA can reveal the attitude the community will have towards the program when it is being implemented. This will give an expectation as to the pace of implementation. Lastly, knowledge about existing government policies as well as meeting other program implementers in the same communities is essential. Sometimes the objectives of the current policies or programs may be counter reactive or overlap with the one to be implemented.

It is in the light of these that we decided to evaluate the successes or otherwise of these agricultural programs from the farmers' own perspective. It has to be noted that the farmers' definition of success is more paramount to the programs definition of success in their reports. Using the results from the data gathered in addition to the practical applicability of each technique in our study area, we prioritized the techniques in order of importance.

METHODOLOGY

Numbers will not reveal the unquantifiable explanations behind the topic of discussion, while qualitative methods is not capable of giving a vivid picture of events. We therefore resorted to a mixed methodology, which is considered appropriate in a socially oriented research like this (Bryman, 2008). Qualitative research answers research questions from the perspective of the respondents. Therefore its application is paramount to this study because we seek to assess those programs directly from the farmers. This will enable us to calculate some quantitative results as well as give answers to the what, how and why questions. Considering the fact that the two methodologies have interviews as a common data collection instrument, we tend to have a face to face interview with each respondent. The difference being that, interviews for quantitative analysis will be less in-depth as compare to the qualitative (Trochim, 2000). The first part of the questionnaires would be structured, while the last part of it will be in-depth interviews.

What we requested as the main yardstick for success of a program was whether the program satisfied all or some of their needs as farmer. Reasons for the success or otherwise of programs were also investigated, ranked and discussed. Their knowledge about the project before implementation was also sort. We also enquired from them what their needs are. Their responses were ranked in order of frequency. From the responses we evaluated and established the NA techniques that were used for each successful project. The target respondents are Farmer Based Organizations' (FBOs) leaders and members.

Descriptive statistics such as the mean mode and frequency tables will be used. Some of the analysis will also be done using the graphical representations such as the bars, lines and the dots.

Table 1. Selected FBOs.

Districts	Number of FBOs	Total membership
Chereponi	7	183
East Gonja	7	99
Gushegu	7	229
Savelugu Nanton	7	262
Saboba	7	108

Table 2. Number of successful projects.

Districts	Total number of projects	Successful
Chereponi	28	8
East Gonja	17	3
Gushegu	21	8
Savelugu Nanton	31	5
Saboba	30	7
Total	127	31

Based on the open ended questions asked, qualitative analysis would be made using direct responses from the farmers.

Data

The information is gathered on wide range of issues to assess the NA techniques used in the formulation of the agricultural programs. For any FBO, a member of the executive and a group member are interviewed. It is expected that the executives will have much information about the projects as well as their assessment of it. Information is gathered on the number of projects they participated, their knowledge about the projects before implementation, their assessments etc. A random sampling of 5 districts was chosen from among the total of 20 in the region. Out of which 7 FBOs were randomly selected from each of the 5 districts given a total of 35 FBOs. Since two members from each FBO are to be interviewed (an executive and a member), the total sample is 70 farmers (Table 1).

RESULTS

On the number of projects each group participated the number varied between the two respondents for the same FBO. We considered the report of the executive as right one because they have the records. The member may be new to the group and may not be aware of other projects that the group participated. The other thing worth mentioning was the fact that many of the members and some few executives could not identify projects by their specific names but by the country or the international organization that supported or a famous personality directly or indirectly involved the implementation of the project (Table 2).

As seen in Figure 1, the FBOs in Savelugu and Saboba implemented the most projects. However it has to be

acknowledged that more than one FBO could be refereeing to the same project. This means that the results are aggregated at the district level. For example MiDA was a common name that came up in almost all the FBOs in the district in which it was implemented. The proportion of successful programs is indicated by the percentage figure above each bar.

It was also observed from further questioning that there were common names among the projects deemed successful. MiDA for example was considered successful for all FBOs that participated in it. It was implemented in five district of which Savelugu Nanton and Gushegu was part. In the Gushegu district, all the seven FBOs participated in it and considered it the only successful project they have participated. Only one considered an additional project a success. This additional program was a nucleus farmer. These are farmers who extend services to other farmers mostly on credit. They pay back the loan mostly in the form of harvested crop after the farming season. This makes a total of 8 (Table 2). In the case of Savelugu Nanton, only 5 FBOs participated in the MiDA program and it was considered the only successful program among all the programs they have participated. The other two think all the projects they have ever participated have not been successful or useful to them. Saboba and Cheriponi districts have the same explanation. In this case all the seven districts in both districts considered EPDRA program as the only successful project they have participated. The eighth successful project in the case of Chereponi was a project that provided the community with boreholes. They however could not identify the program by name. In East Gonja, one FBO referred to SEND Ghana project as the only successful project while another FBO mentioned

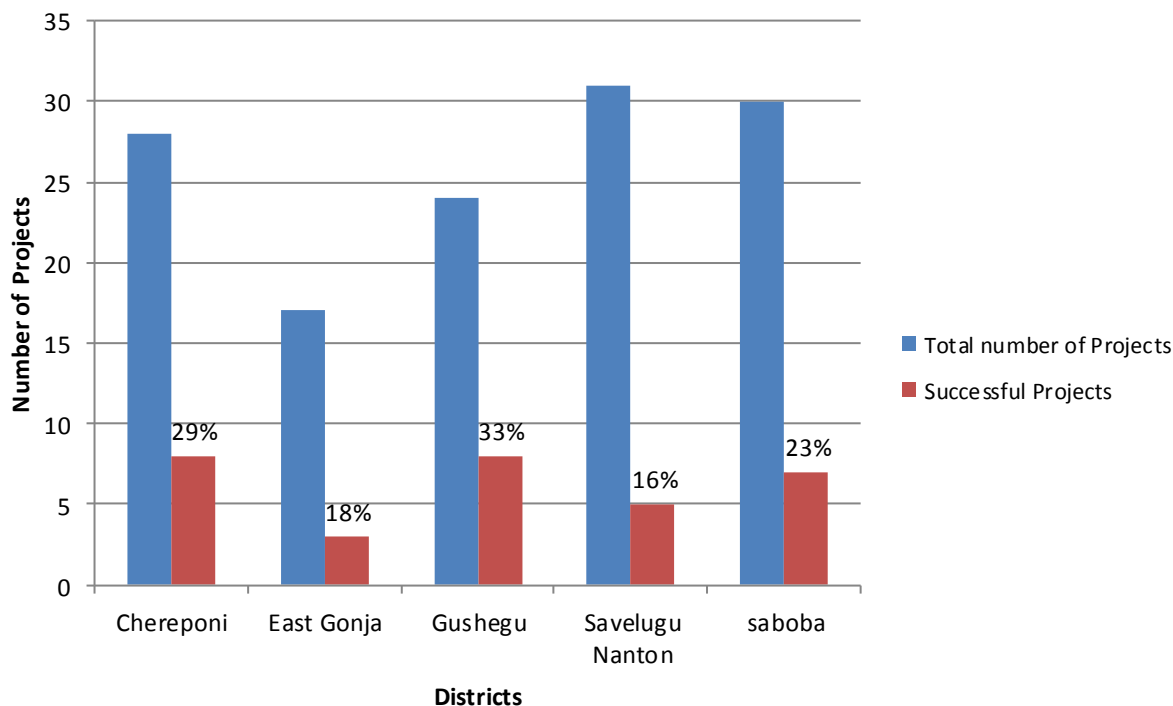


Figure 1. Proportion of total projects which are successful.

SEND Ghana in addition to a project whose name they could not remember.

In all, out of about an average of four projects each FBO participated, an average of one was considered successful that is, 25% of total projects implemented. Considering the yardstick for a successful project and the results in Figure 1 we conclude that most of the programs did not meet the needs of the farmers.

Pre knowledge about projects

The FBOs in Savelugu Nanton and Gushegu Districts singled out MiDA project as the only projects they had information about before its implementation. According to them, there were stake holder and consultative meetings at the district level to sensitize them about it. Their inputs and suggestions were taken but were not sure whether they were incorporated into the program. In the case of Saboba and Cherponi districts were EPDRA program was considered a success among all projects, it was revealed that EPDRA programs are continual. They work with them throughout the farming season and have meetings with them to plan for the coming season. Because of this, they have a permanent secretariat in those districts they are operating. This means that farmers are abreast with their activities before any farming season. The other issue has to do with the Nucleus farmers. According to them these business people inform them earlier and organize meetings to

explain the modalities in what he or she is going to offer them. Because it is always in the form of credit and other services, those meetings are necessary for legal issues. Some of them are made to sign contracts to that effect. Other nucleus farmers make their transactions based on trust. These farmers are members in the community and they already know the package he or she is offering. They claim for all other projects, they are only informed about programs at the implementation stage. We therefore conclude no NA was conducted for most of the projects, and even if it was done, it was not properly done.

Why projects were successful

It was only logical to probe further to understand why they think some of the projects were considered successful. There were varied reasons given. We decided to arrange them in order of frequency.

1. The objectives were holistic
2. It addressed some of their needs
3. Continuity
4. Still benefiting from it.

The challenges in agriculture is spread across the various stages of the value chain; production, harvesting, processing, storage and marketing. Farmers would often like a project that seems to solve the various challenges

along the chain. For example a project or program that seeks to increase productivity by acquiring good seed variety and fertilizer, tractor and plough availability for timely production, processing equipment, storage facilities, good prices for their produce and most importantly credit of any form. MiDA for instance, strengthened the organizational structures of the FBOs, gave them technical training on good farming practices, linked them up with agro dealers, gave them loans, build storage facilities for them, provided tractor and implements, assigned buyers (aggregators) to the participating FBOs. The EPDRA program doesn't do as much as MiDA did but virtually assist farmers in most part of the production process. The package of some Nucleus farmers is also holistic; from production to marketing. They mostly act as aggregators of the produce of their clients. The holistic nature of these projects earned them the success tag from all the FBOs that participated in them.

According to them, some programs wasted their precious time. They were not just what they needed. Among the examples mentioned was a project that wanted to promote farm insurance, another one was teaching them precision agriculture, market linkage project etc. The holistic nature of the EPDRA and MiDA projects meant that some or all of their farming needs would have been addressed by those projects. Programs that are rolled out yearly are considered successful as compared with those that have a limited lifespan. Those types of programs are scanty. EPDRA programs in Saboba and Chereponi, and SEND Ghana program in East Gonja are good examples. Even though their activities vary, the fact that they are always around for the farmers to rely on every season make them important in the eyes of the FBOs. Lastly, they also attach importance to projects that have left an important impression on them even after it has folded up. Farmers in Gushegu district considered a project a success even though they could not identify its name. They pointed to a silo provided by the project for storage of their cereals. They could only identify the project as a German funded project and that there are other silos in other communities. The MiDA FBOs also added the presence of an Agribusiness Center (ABC). These centers were provided by the project to form as a meeting and learning place for the FBOs. It also harbors a tractor and its implements as well as rice mills for rice processing. They also mentioned of some roads that were constructed to link some communities to the main road, as well as the existence of the FBO itself. Most of the FBOs were formed purposely because of the MiDA program and they still exist four years after the end of the Project.

Why projects were unsuccessful

A lot of reasons were also given under this question.

Again the responses are ordered in terms of frequency.

- 1 The implementers were not serious
2. It was very complex
3. We lacked information
4. It was expensive to implement
5. Do not know
6. We did not need it
7. Our chiefs did not support it
8. FBO organizational problems
9. Ethnic unrest
10. No credit component
11. Apathy towards the implementation

Most of the farmers blamed the unsuccessful nature of some project to the nonseriousness the implementers attached to the project. They claim it often leads to the truncation of the project without any official communication from the implementers. Sometimes, the complexity of the project couple with lack of information makes it difficult for the farmers to identify with it. The farmers in the rural Northern region are mostly illiterates who find it difficult to identify with anything that is little complex. A farm insurance project was launched in the Savelugu Nanton district, which the farmers thought was too complex for them to understand not to talk of adopting it. Farmers did not turn up for the second meeting and that marked its demise. Farmers also alluded to the fact that some projects are not just feasible in terms of their financial situation. The implementation of those projects is expensive both in terms of time and money.

The case is worsened when those programs do not have a credit component. Examples were given of projects that came to promote a high yielding hybrid maize seed which require four times the fertilizer they normally use. The other common answer to our question was 'I do not know'. This was mostly coming from FBO members. When a program is discontinued, the reasons are not normally communicated to the FBOs, hence this response. As mentioned earlier, the farmers thought some projects are just not important to them, that is, they do not need it. This normally leads to the abandoning of the project or it ends without making any impact.

In some cases, the traditional authorities impede on the implementation of certain projects. Even though Ghana has a constitution, the traditional authorities (Chiefs and kings) wield much power and authority especially in the rural setting. They have full control over all lands under their jurisdiction. In instances where they are not okay with the implementation of a certain project they have all what it takes to stop the project or impede its implementation. One sure way is by refusing to give out lands. Few farmers blame the truncation of some projects on the organizational structure of their FBOs. Sometimes organizational conflicts can crop up in the middle of a

project implementation. This normally arises out of distrust among members and executives of the FBO. There are sometimes ethnic conflicts in the region. Some farmers attributed the failure or the truncation of some projects to the emergence or start of a conflict between families or tribe within the district.

There was only one farmer who raised a very vital point that is worth mentioning. He explained there is general apathy towards projects if they do not have the credit component. Their main concern is what they will use to implement the recommendations of the programs on their farms. The last concern was a reason a farmer felt contributed to the general apathy towards agricultural programs. He said they are confused on what to do concerning good farming practices and other agricultural educational programs. For example, while some projects came to discourage them on the use of chemical fertilizer, others encouraged them to even apply more of it. The same contradiction is seen in the use of pesticides.

What are their needs?

About 95% of the reasons assigned to the failure of the projects would have been avoided if time was invested in conducting NA. Each respondent was asked to rank in order of importance, what they think their Needs are, as farmers. We also arranged their responses in order of frequency as seen below;

1. Tractors and plough
2. Credit of various forms
3. Irrigation
4. Wells and boreholes
5. Electricity
6. Roads

The availability of tractors is a major need according to the responses. If the land is not ploughed, nothing can be done in the farming season especially for cereals. Normally the Northern region has a single maxima rainfall pattern which lasts for about five months. However, the unpredictability of the rains forces farmers to wait till it starts before they can plough. When the rains finally set in, there is a mad rush for tractors to plough the land. The tractor operators takes an advantage to exploit them by either charging them exorbitant prices or ploughing less than the required land size. A farmer in the East Gonja district explained that some members of their FBO could not cultivate their crops because it is always late by the time the tractors get to their turn. Those who are not able to plough on time will normally end up abandoning their farms or harvest very little. Even though they admitted an ownership of a tractor by the FBO would have been better, they just need it to be available when they need it.

Credit was the second most important need according to the responses. They are of the view that, the availability of credit will help expand their scale. With the exception of a few, most of them use up their harvest before the next farming season. This is because, the size of the farm they are using commensurate the little capital they have for the farming season. The credit they said could be of any form; cash or rendering services on credit. According to them the most common one is the rendering of agricultural services on credit. For example, the tractor operator can plough additional acres on credit, payable after harvest. Agro dealers can also extend more fertilizers and pesticides on credit. The mode of payment is mostly the harvest. For example, the supply of a bag of fertilizer on credit will attract one and half bags of maize. Irrigation facilities to them will not only help them cultivate in the dry season but will help augment the rains when it delays in starting. Even though the rains come in a short period, it is normally very heavy that most parts of the region get flooded. All what is needed is a technology to harvest this water during the raining season. Most parts of the region lack portable drinking water. They rely on the streams and dams which dry up in the dry season. Some part of the region is blessed with underground water, however extracting it has always been a problem. Though the need for wells and boreholes are not for agricultural purposes they still saw it as a necessity. This underground water also has the potential for irrigation in the dry season. The availability of electricity will help directly in the agro processing and other related agricultural activities. Roads will ease transportation and other related agricultural activities.

Needs assessment techniques

Watkins et al. (2012:83) outlined 7 techniques, Royse et al. (2009:44), Witkin and Altschud (1995:101) and Swanson et al. (1997) also outlined some techniques. Swanson et al. (1997) however went a little further to classify them into four major categories; individual, group, secondary source, and rapid rural appraisal techniques. With this categorization, we group all the techniques outlined by the above references in Table 3.

As observed earlier, there were some kind of NA conducted for the projects deemed successful; MiDA, EPDRA, SEND Ghana and the Nucleus farmers. We narrowed the discussion to these projects so as to identify the sort of NA technique or techniques that were used. The responses from those questions are matched with the NA techniques in Table 3 to determine what specific technique or category of techniques was used. We assume every project will one way or the other refers to some secondary source about the region. More so, the use of this technique cannot be verified from the farmers. We are therefore left with two groups since the fourth category is already a combination of the other three categories (Table 3).

Table 3. Needs assessment techniques.

Individual	Group	Secondary source	Rapid rural appraisal
1). Face-to-Face Interviews.	1). Community forum	Document and Data Review	This method is a synthesis of the other 3 categories in a superficial way especially when the information is needed urgently. (Freudenberger, 1994)
2). Key Informant Interviews.	2). Focus group	can be done by using information from;	
3). Questionnaires.	3). Delphi	1). Census Reports.	
4). Informal personal observations.	4). Nominal group	2). Previous Studies	
5). Formal personal observations.	5). World Café	3). Administrative Records and Reports	
6). Dual-Response Surveys.	6). Informal group	4). Guided Expert Reviews	
7). Critical Incident technique.	7). Dacum process		

Matching responses about programs to the above NA techniques, we found out that MiDA used focus and nominal group techniques. The farmers claim to have had series of meetings with the FBOs as whole and separate meetings with only their executives. EPDRA also uses face-to-face interviews as well as some form of nominal and focus group techniques. Like the EPDRA projects, some Nucleus farmers also use face-to-face interviews, nominal and focus group techniques. In addition some of them employ informal group techniques and informal personal observation since they are part of the community. Even if their package is not holistic they know the specific need they should target by their program, since they are part of the community. From the responses in the East Gonja districts it was discovered that SEND Ghana programs used focus group technique to solicit the marketing needs of their FBOs.

Prioritizing NA techniques

With the multidisciplinary nature of NA, it is almost always impossible to define the most suitable method to be used in conducting it. Every need, targeted audience, organization and community is unique and hence depending on the practical feasibility and the researcher's discretion, a suitable method or a combination of methods will be used. However in the area of agriculture that deals with the holistic rural community, the type of data being sort should be facts and not opinions. The data should be voluntarily given by the farmers and are well informed of its intent. Witkin and Altschud (1995:46) has it that there are two kinds of data collected for NA purposes; they are facts and opinions. Researchers should go for the facts and even when respondents mixed it up with opinions, they should be able to separate them. With this consideration, a lot of NA techniques fall short of the criterion to establish an agricultural program which seeks to promote voluntary participation, adoption, and sustainable implementation of outcomes. This does not close the doors on the use of the other techniques but just to emphasis that priority should be given in our opinion to some techniques more than others in the area

of agricultural programs implementation. Secondly some of the techniques are structurally difficult if not impossible to be used in remote rural setting. Thirdly, some techniques do not promote the participatory extension being promoted by the FAO. Combining these three criterions with the empirical responses from the survey, we prioritized the techniques in order of importance in the context of northern region.

First of all, as can be seen from the results all the successful programs used the group or a combination of group and individual techniques. This goes to emphasize the fact theoretically and practically, individual NA techniques are compliments to group techniques when it comes to agricultural program which seeks to promote voluntary participation, adoption, and sustainable implementation of outcomes. Because of this we are inclined to those that have to do with grouping of farmers and stakeholders in agriculture. From our point of view, unlike other organizations where there is an organizational structure and levels of authority defined, agriculture is not like that. That is why farmers must be involved in every stage of activities leading to the decision making and outcomes. In a private company or government institutions, not everybody must accept a decision before it is implemented. Most people have to just obey and execute instructions. In the case of the farmers, their acceptance is key to the success of any project. Consider observation as a NA technique. When there is any need gap to be closed or solved in a company, observations can be used and recommendations made to the employees by the employers and it takes effect. Even though valuable NA data can be gathered especially through Informal Personal Observations (Swanson et al., 1997), recommendations thereof can be used for anything other than asking farmers and the community to implement them. This will sometimes see an outright rejection or it implementation will be a nine-day wonder.

It is in the light of these that we give less priority to Individual and Secondary techniques. In addition, structurally, telephone interviews will not be effective as few have access to telephones or mobile phones in the rural communities in the Northern region. Questionnaires

for NA purposes in agriculture are mainly used in developed countries (Swanson et al, 1997). Postal survey and Dual-Response Surveys will face the problem of high illiteracy and lack of postal addresses. Very poor record keeping will make Document or Data Review and Guided Expert Reviews techniques less effective. Secondary sources techniques generate data for future use with often unknown application. By its very nature, we do not prioritize it for NA technique for agricultural programs. Agriculture and rural development have ever changing challenges which requires current information and data to tackle them. It is no surprise that it is rarely used by Extension agents as a NA technique. This Sofranko and Khan (1988) attributed to its lack of straightforward application couple with the fact that extension staffs have little understanding about the role of secondary data.

The order

With the group techniques, there is still a need to prioritize them in terms of which technique ultimately promote the whole essence of agricultural programs; that is voluntary participation, adoption, and sustainable implementation. We consider the first four as highly prioritized and the rest less prioritized. In order of priority, they are; 1. Community forums, 2. Focus groups, 3. The World Café, 4. Nominal Group, 5. Delphi Technique, 6. Informal group, 7. Dacum process.

Starting from the bottom of the hierarchy, Dacum process as a group technique is very effective in identifying effective procedures built on a set of behavioral nature of the people involved, for a particular occupation (Witkin and Altschud, 1995:189). As the name suggests (DACUM stands for Developing a Curriculum), its final objective is to develop a curriculum which outlines the job descriptions and captures the best practices in that particular job or occupation. The question now is, is farming not a job? Yes it is and would have been better with such a curriculum. However the dynamic nature of farming does not make it attractive to the use of such curriculum. Farming as a job varies a lot within a particular community not to talk of regional and national levels. The unstructured nature of farming as a job makes its activities very diverse in terms of procedures even within one community. Again, per the procedures in conducting the Dacum Process, people who are successful and out-standing in that job constitute the group (Witkin and Altschud, 1995:189). In the case of farming that will require only successful farmers to form that group for the process. This form of discrimination will ultimately not enforce voluntary participation. Finally, the process itself is very complex and will require not only successful farmers, but highly technical ones who can do a lot of brainstorming on technical issues. In rural communities, this technique is disabled.

Informal groups as a technique in our opinion are not

so much different from observation as a technique. According to Swanson et al. (1997), this form of information gathering is done at events which involve the grouping of people. It is believed that, prevailing discussions in those meeting reveal the unadulterated problems confronting the community which the extensionist or the researcher can easily capture. In rural setting, Social gatherings such as recreational, cultural, and religious occasions provide a platform for this, while in organizations, tea and coffee breaks provide the environment for this technique. Even though programs formulated from this technique are likely to reflect the authentic views of the people, they will not have confidence in its source. Like observation technique this will be good for structured organizations and public institutions.

The criticisms of Delphi survey technique come in three ways. First the faceless interaction of the participants does not augur well for a rural setting. Farmers do not have confidence in this form of interaction and will not identify their opinions in the final report even if it is captured. Secondly, it is biased towards literates. All contributions and discussions are expressed in writing, making it a privilege for those who can read and write. In rural setting, as researches have shown, the level of education of a farmer does not contribute positively to agricultural productivity (Alemdar and Oren, 2006). The educated farmer considers farming as a second job and does not pay much attention to their farms leading to lower productivity. The literate farmers in many cases may not be the right people to gather information from for NA purposes. Finally the medium with which it is conducted may as well not be appropriate for a rural setting. Most rural communities are so remote that mailed surveys will take a lot of time to reach there, couple with the fact that most of the rural farmers do not have mail addresses with which they can be reached.

The highly prioritized ones (Community forum, Focus Group Interview, World Café and Nominal Group Technique) appear to be more effective both in terms of empirical evidence above and practical application in the study setting. Even though they also have some disadvantages similar to the less prioritized ones, their advantages offset some of these disadvantages. For example, the Nominal group technique shares the second criticism of the Delphi technique; writing skills of participants. However, it is face to face and allows some degree of discussion and sharing ideas verbally. Community forum technique for instance has the advantage of announcing the presence of the program to a larger part of the community. All the four highly prioritized techniques tend to promote trust between the community and the researcher, which is very relevant in project implementation. With the exception of Nominal Group Technique, the rest do not limit participation of people in terms of literacy level. However, it is still worth mentioning that a combination of these group techniques

can yield more effective results.

Case for selected techniques

In the words of Akridge (1992), it is very important to pick a niche in the development of an agricultural program. When the exact problem is not identified the program will end up not fitting anyone in the community. Different farmers will have different views about the same issues and problems. What is happening in someone farm may not be exactly what is happening in the others farm. A Group NA method like community forums, nominal Group, focus group will not only help identify the exact problem, but will open up further discussions about the problem completely unknown to the researcher or the extensionist. Furthermore, these methods provide the implementer a quick, intensive picture of the real problem.

In any successful agricultural program, the trust and confidence of the community is very paramount (Oakley and Garforth, 1985; Petrović et al., 2010; Buck and Alwang, 2011). In outlining the problems in Agricultural programs and Extension Petrović (2010) and the colleagues identified farmers' lack of trust in government, its institutions and as well as its agricultural policies. According to Buck and Alwang (2011), farmers' lack of trust and interest in extension programs emanates from two sources; lack of trust and confidence in the extension agent or implementer and the source of the information. This situation can only be improved if there is a two way communication channel between the stakeholders involved. The group techniques can effectively build trust with the local citizens in planning, publicizing, moderating and evaluating of the program. These group techniques especially the highly prioritized ones has the potential to offset the two concerns raised by Buck and Alwang (2011). What these techniques do is to increase the interest of the farmers in three fronts; 1. When these methods are used in the NA stage, they get a better understanding into the program increasing their trust and confidence in it. Even when there are some grey areas, the researcher through meetings and discussions, takes care of that before the program starts. 2. The fact that the farmers are involved with the researcher and other experts through these techniques boosts the confidence and trust they impose on the extension agent or the implementer. 3. Some farmers especially the less educated who mostly constitute the large proportion of the target group finds confidence and trust neither in the agent or the source, but from their fellow farmers who they consider trust worthy and role models in the area of farming amongst them. These techniques create a situation where these role models form part of the interactions leading to the formulation of the program. Their trust in the program has a ripple effect in this situation. To sum up, the more farmers develop trust and confidence in the agent and source of information, the

more they are willing to voluntarily participate, adopt, and sustain implementation of outcomes of the agricultural program.

According to Ponniah et al. (2008:62), outlined four major factors for a successful agricultural extension program. First among the four factors is participation and empowerment of farmers and communities. The participation aspect of this has been dealt with in the preceding paragraph. Even though the concepts of participation and empowerment are the catch phrase of the current extension paradigm, their realization depend on the NA technique used. The group techniques ensure their empowerment at the NA stage where they understand and appreciate the whole program. It opens up a continual two-way communication between farmers and all stakeholders involved, which to Ponniah et al. (2008) is invaluable when it comes to fostering participation and empowerment of farmers through agricultural and extension programs. Linkage between farmer groups and institutions, innovative learning and communication and policy, and political influence are considered second, third and fourth factors respectively. With the exception of the fourth factor, the success of all of them is deeply rooted in the group techniques at the NA stage. The employment of any other NA techniques will not guarantee the positive outlook of these factors.

Conclusion

The ultimate aim of every agricultural and extension program is that farmers should voluntarily participate, adopt and implement the outcome in their farms. The greatest success is when this adoption is sustained over a long period of time. Agricultural and extension programs that promote participation and interactions between implementers or extensionists and farming communities should be encouraged. The NA that is conducted before these programs are rolled out goes a long way to ensure the above mentioned measure of success of any agricultural program. It could be seen that, all the unsuccessful programs did not conduct a NA or they used other techniques other than the group and the individual techniques. This accounted for the fact that the farmers had no knowledge of those programs until the implementation stage. All the reasons assigned to why those programs failed would have been avoided if a proper NA techniques was used. The availability of tractors, credit of any form and irrigation facilities are the most pressing needs of the farmers. If a program cannot be holistic like the case of MiDA, it can target any of these for effective impact on the farmers' lives. Going through the prioritized techniques, the common trend that runs through them is the sense of ownership the farmers feel. This translates into whatever extension or agricultural program that comes out of it. As seen from responses of the FBOs and the discussion of the chosen techniques, the group techniques are complemented by

the individual techniques in the context of a rural agriculture. It could be seen that a combination of some group techniques complimented by individual techniques could even provide better results. In our opinion, apart from these group techniques, any other technique can be used with even higher rate of adoption, objective and relevant information gathered but sustainability and sense of ownership cannot be guaranteed which is very crucial to rural agricultural development.

Conflict of Interests

The authors have not declared any conflict of interest.

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