Technical and Entrepreneurial Training Needs of Agricultural Extension Workers for Service Delivery in Borno State, Nigeria

Gambo Abba [1], Adamu Ibrahim [1], Aminu Maidala [1]

[1]*Faculty of technology Education, Department of Vocational and technology Education, Abubakar Tafawa Balewa University, Bauchi Bauchi State, Nigeria.*

Corresponding Author: abba.gambo@gmail.com

Abstract: - The study investigated the technical and entrepreneurship training needs of agricultural extension workers for service delivery in Borno state, Nigeria. The study was guided by two specific objectives, two research questions and two null hypotheses. Descriptive survey research design was adopted for the study. The population of the study was 405 Agricultural Extension Workers in Borno state and the entire population was used for the study. The instrument for data collection was adopted 4-point scale structured questionnaire. The instrument was validated by experts and pilot tested at Yobe state and a reliability coefficient of 0.82 was obtained. The researchers personally administered the instrument. The data collected were analyzed using Statistical Package of Social Science (SPSS), 23 to run mean scores and standard deviations to answer the research questions. The Analysis of Variance (ANOVA) was used to test the research hypotheses at 0.05 level of significance. The results indicated that Agricultural Extension Workers in Borno state highly need technical and entrepreneurship training for effective service delivery. It was concluded that, providing the training to the workers will help them to acquire requisite skills needed for effective job performance. The study recommended that, Borno state government should organize workshops, conferences and seminars for the extension workers. In addition, the extension workers should be encouraged to undergo staff development programme in tertiary institutions.

Key Words: — ***Technical, Entrepreneurship, Training, Agricultural, Extension, Workers.***

I. INTRODUCTION

Agriculture continues to feature prominently in the global development agenda as a results food security, employment opportunity and provision of raw materials to industries. The development of an efficient agricultural sector stimulates the national and rural economy by improving incomes, food security and living standards (Government of the Republic of Kenya (GOK), 2009). According to Madukwe and Ozor (2004), Agricultural production remains the main source of livelihood for most rural communities and it employed 70% to 80% population in Nigeria. This therefore indicated that agricultural sector is of great importance because it directly influences the country's economic, employment opportunities, food security and technological development of the country.

Manuscript revised September 01, 2021; accepted September 02, 2021. Date of publication September 03, 2021.

This paper available online at www.ijprse.com

ISSN (Online): 2582-7898; SJIF: 5.494

The increasing importance attached to agriculture has influence various Governments at all levels to develop various strategies aimed at improving agricultural sector in the country (Idrisa and Ogunbameru, 2008).

In Nigeria, Agricultural extension Agent is one of the strategies adopted by Federal and State Government to enhance the agricultural practices and increase agricultural productivity in the country. Agricultural Extension Agents are specialist employed by the government to provide information, skills, training and knowledge to farmers that will help to enhance agriculture (Aina, 1989).

According to USAID (2011), agricultural extension agency is designed to help farmers boost crops and livestock production. The specific objectives of Agricultural Extension Service according to Ovwigho, Isiorhovoja and Idoge (2014) were to:

(i) Provide advice to farmers on problems or opportunities in agricultural production, marketing, conservation and family livelihood;

(ii) Facilitate development of local skills and organisations, and to serve as links with other programmes and institutions;

(iii) Transfer new technologies to farmers and rural people; and (iv) address public interest issues in rural areas, resource conservation, health and food security, monitoring agricultural production,, monitoring food safety, nutrition and family education as well as youth development. It is hope that these services will help farmers to adopt new technologies for increase production and profitability.

The importance of Agricultural Extension Workers has continued to advance in terms of activities rendered to farmers. The traditional knowledge posse by extension workers of educating farmers of importance of technological adoption can no longer meet the needs of farmers. (FAO, 2013). Studies conducted by Cochran, Ferrari, and Chen (2012), Maguire (2012), Melak and Negatu (2012) reported that the diverse and dynamic agricultural systems, advancing science and technologies and the need for food security demand agricultural extension professionals to be proficient in the technical aspects of their areas of expertise, as well as in the processes and delivery of the service.

Despite the importance of agricultural extension workers in agricultural development, study by Mohammad (2009) has shown for extension workers to be effective, they required more training needs in some crucial areas of new techniques. To this end study conducted by Mithal, Bayan and Ahlam (2012) reported that extension workers need more training in technical aspect of extension service.

Similarly, study conducted in Nigeria by Chikaire, Emerhirhi, Anyoha and Onoh (2018) observed that extension workers should posse marketing skills. The foregoing assertions led the researcher to empirically determine the (1) technical training needs of agricultural extension workers in Borno state, and (2) entrepreneurship training needs of agricultural extension workers in Borno state.

1.1 Research Questions

In line with the specific objectives, the following research questions were raised.

- What is the technical training need of agricultural extension workers in Borno state?
- What is the entrepreneurship training need of agricultural extension workers in Borno state?

Research Hypotheses:

The following hypotheses were raised and to be tested at the 0.05 significance

H01: There is no significant difference among the mean responses of Agricultural Extension Workers in the three agricultural zones (Biu, Bama and Kukawa) on their technical training needs in Borno state.

H02: There is no significant difference among the mean responses of Agricultural Extension Workers in the three agricultural zones (Biu, Bama and Kukawa) on their entrepreneurship training needs in Borno state.

Method:

The research design for the study was descriptive survey. Descriptive survey is a method of collecting information by interviewing or administering a questionnaire to a sample of individual (Adamu & Kabir, 2019). Similarly, Emaikwu (2015) reported that when study involve the use of questionnaire to elicit the opinions of respondents on the present state of affairs with regard to some variables that change over time for a large group of subjects, descriptive design should be employed. Based on these submissions, the researchers considered the design suitable for the study because the present study involves the use of questionnaire to collect relevant information directly from the respondents to be used for the study.

The population for the study comprised of 405 Agricultural Extension Workers in three agricultural zones (Biu, Bama and Kukawa) in Borno state in 2019/2020 farming season. The researchers adopted Total Population Sample (TPS) for the study. Glenn (2009) who recommended that t Precision level of ±3% of population of ≤ 1,000, the entire population can be used for the study.

Similarly, Crossman (2018) stated that with Total Population Sample can be adopted when the population is manageable. Based on these submissions, the entire 405 Agricultural Extension Workers were used for the study.

The instrument for data collection was structured questionnaire. The instrument was adapted from previous studies as suggested by Kabir and Adamu (2019) who opined that, instrument can be adopted or adapted when the present and the previous study were found to be similar or closely similar. Based on instrument adapted from Ja'afar-Furo, Neils, Mojaba, Sulaiman and Shall (2012); Al-Zahrani1, Aldosari1, Baig, Shalaby and Straquadine (2017) was used for the data collection.

The instrument is closed ended, structured in 4-point scale of Very Highly Needed (VHN), 4 points; Highly Needed (HN), 3 points; Moderately Needed (PN), 2 points; Partially Needed (RN), 1 point.

The questionnaire was validated by three experts and pilot tested at Yobe state which is outside the study area and share common characteristics base on Religion, Climate, Whether and insecurity challenges with the study area. The researchesr used 40 Agricultural Extension Workers in the state. A Cronbach Alpha reliability coefficient of 0.82 was obtained. The instrument was found valid as suggested by Uzosike (2008) who opined that, the average value of correlation co-efficient should not be less than 0.70.

The researchers personally collected the data. The data were administered using direct approach method. Adamu and Kabir (2019) maintained that direct contact enables a researcher to create good working relationship with respondents, clarify areas of difficulties and increase the percentage of retrieval of properly completed questionnaires. Based on these advantages, the researchers considered direct contact approach suitable for the data collection. The exercise lasted for five weeks.

In the first phase of the data analysis, the researchers entered the data collected into Statistical Package of Social Science (SPSS), 23. The package was used to mean and standard deviation which were employed in answering the research questions.

The decision rule was based on interval scale as follows: 1.00 to 1.49 (Rarely needed); 1.50 to 2.49 (Moderately Needed); 2.50 to 3.49 (Highly Needed); and 3.50 to 4.00 (Very Highly Needed).

In test of null hypotheses, Analysis of Variance (ANOVA) was used to test all the hypotheses at 0.05 significance. The reason for choosing ANOVA to test the seven null hypotheses is based on the assertion of Kabir and Adamu (2019) who stated that the most common way to determine whether there are differences in the means of a continuous DV across a set of three or more groups is to perform analysis of variance (ANOVA).

The decision rule for the rejection and acceptance of hypothesis was based on the set value of 0.05. Where the $p \geq 0.05$, the null hypothesis was retained, on the other hand, when the $p<0.05$, the null hypothesis was rejected.

II. RESULTS

2.1 Research Question One

What is the technical training need of agricultural extension workers in Borno State?

Table.1. Descriptive Statistics of Technical Training Needs of Agricultural Extension Workers in Borno State

QI	Mean	Std. Dev	Remark
1. Horticulture and gardening training	2.62	1.026	HN
2. Training on farm management	3.33	.982	HN
3. Training on weed identification and control	3.75	.581	VHN
4. Training on identifying major pests	3.72	.501	VHN
5. Training on Livestock products	3.82	.385	VHN
6. Fertilizer application training	3.87	.408	VHN
7. Animal husbandry training	3.46	.642	HN
8. Soil testing	3.07	1.145	HN
9. Diffusion of innovations training	3.14	1.152	HN
10. Operation and maintenance of agricultural machines training	3.41	.923	HN
11. Livestock Production and Disease control training	3.60	.776	VHN
12. Storage and Post-harvest technology training	3.72	.669	VHN
13. Crop Production Technology training	3.60	.703	VHN
14. Rodents and Pest Control training	3.72	.645	VHN
15. Irrigation farming training	3.37	.954	HN
Grand Mean	**3.48**	**.446**	**HN**

Source: Fieldwork, 2021

The outcome of descriptive statistics used to determine the technical training needs of agricultural extension workers in Borno State. The result in Table 1 indicates that with exception of item 1, all mean scores of technical training needs are above 3.00 with. The mean scores ranged 3.07 to 3.75 with grand mean of 3.48 and standard deviation of .446. This indicates that

indicated that technical training is highly needed among agricultural extension workers in Borno State.

2.2 Research Question Two

What is the entrepreneurship training needs of agricultural extension workers in Borno State?

Table.2. Descriptive Statistics of Entrepreneurship Training Needs of Agricultural Extension Workers in Borno State

QI	Statement	Mean	Std. Dev	Remark
16	Client orientation and customer focus training	3.14	.850	HN
17	Value Addition on agricultural commodities for consumer satisfaction training	3.17	.829	HN
18	Marketing of Agricultural commodities training	3.17	.999	HN
19	Agricultural marketing training	3.25	.955	HN
20	Entrepreneurship/apprentices skill training	3.11	1.052	HN
21	Skills for teaching farmers advertisement training	3.24	1.067	HN
22	Principles of Recording purchases and sales training	3.14	1.087	HN
23	Skills of calculating income and expenditure account training	3.14	1.052	HN
24	Skills of marketing agricultural products training	3.14	.938	HN
25	Skills for teaching farmers storing of goods training	3.72	.501	VHN
26	Skills for teaching farmers on sales strategies training	3.59	.589	VHN
27	Accounting skills for recoding income and expenditure training	3.52	.631	VHN
28	Skills for teaching trading, profit and loss account training	3.14	.851	HN
29	Skills for teaching management of agribusiness training	3.30	.953	HN
30	Skills for business plans training	3.52	.631	VHN
Grand Mean		**3.29**		**HN**

The descriptive statistics used to assess the entrepreneurship training needs of agricultural extension workers in Borno State is as presented in 2. From the Table, the mean scores of all items of entrepreneurship training needs are above 3.00 with. The mean scores ranged 3.11 to 3.72 with grand mean of 3.29 and standard deviation of .665. The obtained mean indicated that entrepreneurship training is highly needed among agricultural extension workers in Borno State.

2.3 Research Hypothesis One

There is no significant difference among the mean responses of Agricultural Extension Workers in the three agricultural zones (Biu, Bama and Kukawa) on their technical training needs in Borno state.

Table.3. One-way analysis of variance for mean difference Agricultural Extension Workers in on their technical training needs in Borno state.

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	33.462	2	16.731	12.237	.901
Within Groups	46.956	402	.117		
Total	80.418	404			

Source: fieldwork 2021

The output of ANOVA used to determine the difference among the mean responses of the three groups of respondents in hypothesis one presented in the Table 3 revealed the F (2, 402) = 12.237, p = .901. The obtained p-value was greater than the level of significance (.901>0.05). The result indicated there was no significant difference among the mean responses of agricultural extension workers in the three agricultural zones of Borno state with regard to their technical training needs: Hence, hypothesis one is retained.

2.4 Research Hypothesis Two

There is no significant difference among the mean responses of Agricultural Extension Workers in the three agricultural zones (Biu, Bama and Kukawa) on their entrepreneurship training needs in Borno state.

Table.4. One-way analysis of variance for mean difference Agricultural Extension Workers on their entrepreneurship training needs in Borno state.

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	75.208	2	37.604	11.156	.581
Within Groups	103.430	402	.257		
Total	178.638	404			

Source: fieldwork 2021

The result of test of hypothesis two in Table 4 disclosed the F (2, 402) = 11.156, p = .581. The obtained p-value (.581) was greater than 0.05 level of significance. The result suggested that, there was no significant difference among the mean responses of agricultural extension workers in the three agricultural zones of Borno with regard to their entrepreneurship training needs state. The hypothesis two is retained.

III. DISCUSSION

The result of research question one and test of corresponding null hypothesis one disclosed that the technical training needs of agricultural extension workers in Borno state is high. The finding of the study is in line with the study conducted by Melak and Negatu (2012) who opined that, the need and demand for extension professionals to demonstrate a higher level of professionalism in their services are growing. The scope of agricultural extension services (AES) has been widening, and the need to adapt to changing contexts is also growing which will require training and re-training exercise (Rajalahti, 2012). The finding is also in line with that of Timothy (2015) which reported that, agricultural field workers need to expose them to operation and maintenance of agricultural machines, as they affirm that this skill will ensure they pass innovative mechanization to farmers for improved productivity. The author lamented that there is need to provide training for the extension workers for effective job performance. The study of Ndlovu, Moyo, Zikhali and Mabhen (2015) also revealed that dimensions of agricultural extension services;

the educational component which helps in changing the behaviour and attitude of farmers, the economic dimension which helps to improve the living standard of the farmer and the social dimension which includes improved health of the farmer, leadership development and increased zeal for development can better be achieved by providing the field workers with the requisite job skills. Singh and Burman (2019) maintained that the main task of the Agricultural, Technical and Extension Services of transmitting new techniques to farmers cannot be achieved without providing them technical skills needed for effective job performance.

The results of research question two and test of hypothesis two shows that agricultural extension workers in Borno state highly need entrepreneurship training. The outcome of the study agreed with the earlier submission of Sulaiman and Davis (2012) who reported that, the challenges in the service of extension workers which include offering new services, ensuring the quality of services, and strengthening collaboration and synergy among extension service providers require them to be more skillful in business and technical aspects. The outcome of the study also agreed with the Ja'afar-Furo, Neils, Mojaba, Sulaiman and Shall (2012) shows that there was improvement in the production trend by farmers in the geo-political zone, marketing, storage/preservation and value addition of agricultural commodities still remain major constraints leading eventually to wastages and by extension reduction in the incomes of the small-scale farmers. The authors argued that there is need to provide marketing skills to extension workers. The study of Mohamad (2016) also revealed that, Agricultural Extension agents in implementing the agribusiness extension of rice field, in addition to be supported by the technical competencies such as competencies to cultivate the rice field, the agents also need to have managerial competencies that are closely related with sustainable agribusiness management such as, marketing, and access toward working capital. Therefore, the farmers will feel that they are being assisted in developing and increasing the rice field agribusiness through agricultural development programs in order to increase the rice field productivity. This also concurred with the recent report of Singh, and Burman (2019) which stated that the field staff employees who are responsible of providing farmers with non-formal training on the use of new production techniques, the economic benefits and financial returns that can be yielded when new techniques are used need to have entrepreneurship training.

IV. CONCLUSION

The outcome of the study indicated that Agricultural Extension Workers needed some essential skills for effective

job performance. Consequently, this will therefore affect their job performance of responding to the needs of farmers for knowledge with which to improve their productivity, incomes, welfare, managing of the natural resources, for sustainable agricultural development and food security in country. It was concluded that, if the situation remained the same, farmers in the state will not fully benefit from the service of the extension workers. This will go a long way to affect the agricultural development of the farmers in the state.

Recommendations:

Based on the outcome of the study, it was recommended that:

- Borno state government should organize conferences and seminars for the agricultural extension workers.
- Entrepreneurship education should be integrated into the curriculum of agricultural extension programme in tertiary institutions. This will enable the pre-service workers to acquire the business skills needed for their job performance.

REFERENCES

[1]. Adamu, I. and Kabir, Y. (2019). Influence of Technical and Vocational Education Training Centers on Youths' Self-Reliance in Bauchi State, Nigeria. Journal of Science, Technology and Education, 7 (1) 264-275.

[2]. Aina, L. O. (1989) Information needs of agricultural extension workers in Nigeria, Annals of Library Science and Document, 36 (1-2), 28-35.

[3]. Al-Zahrani1, K. H., Aldosari1, F. O., Baig, M. B., Shalaby, M. Y. and Straquadine, G. S. (2017) carried out a research work assessing the Competencies and Training Needs of Agricultural Extension Workers in Saudi Arabia, J. Agr. Sci. Tech., 19, 33-46.

[4]. Chikaire, J. U., Emerhirhi, E., Anyoha, N. P. and Onoh, P. A. (2018). Perceived Competencies of Agricultural Extension and Advisory Services Providers in Building Rural Farmer Capability in Imo State Nigeria, International Journal of Research in Agriculture and Forestry, 5 (6), 25-32.

[5]. Cochran, G. R., Ferrari, T. M., & Chen, C. Y. T. (2012). Trends affecting Ohio State University extension in the 21st century and the implications for human capital. Journal of Agricultural Education, 53(2), 43-57.

[6]. Crossman, A. (2018). Understanding purposive sampling: An overview of the method and its applications.

[7]. Emaikwu, S.O. (2015). Fundamentals of research methodology and statistics. Makurdi: Selfers Academic Press Limited.

[8]. FAO (2013) the economic lives of smallholder farmers. FAO information products are available on the FAO, Rome.

[9]. Glenn, D. L. (2009). Determining sample size. Retrieved March 23, 2018.

[10]. Government of the Republic of Kenya (GOK, 2009). Agricultural Sector Development Strategy. 2010-2020 ASCU. Ministry of Agriculture. Nairobi.

[11]. Idrisa, Y. L. and Ogunbameru, B. O. (2012). Analysis of the refresher training courses attended by extension workers in Borno State, Nigeria, Greener Journal of Agricultural Sciences, 2 (2), 046-052.

[12]. Ja'afar-Furo, M. R.., Neils, J. S, Mjaba, D. I. Sulaiman, A. and Shall, J. D. (2012). Training needs assessment of mid-career agricultural extension officers: Evidences from Sasakawa Africa Fund for Extension education (SAFE) intervention in North-east Nigeria, Journal of Agricultural Extension and Rural Development 4(18), 471-477.

[13]. Kabir, Y. and Adamu, I. (2019). Influence of Pedagogical Approach on Entrepreneurial Competencies and Entrepreneurship Readiness of Undergraduate Students In North Western Nigeria, Educational Research International, 8 (4), 24 -31.

[14]. Madukwe, M.C and N. Ozor (2004) Emerging approaches and strategies in the delivery of agricultural extension services to farmers. Journal of Agricultural Management and Rural Development, 1, 50-63.

[15]. Maguire, C. J. (2012). Agricultural education and training to support agricultural innovation systems. In Agricultural innovation systems: An investment sourcebook. Washington, DC: World Bank.

[16]. Melak, D., & Negatu, W. (2012). Agricultural education and technical competency of development agents in Ethiopia. Journal of Agricultural Extension and Rural Development, 4(11), 347-351.

[17]. Mithal A. Salman, Bayan A. Ridha and Ahlam T. Kadhum, (2012). Training Needs for Agricultural Extension of Work in The Preparation of The Extension Worker Plan afield Study in the Central Region of Iraq. Department of Agricultural Extension / College of Agriculture / University of Baghdad.

[18]. Mohamad, I. B. (2016). Assessing Professional Competencies of Agricultural Extension Workers: A Case Study of Indonesian's Agribusiness Sector, International Journal of Agriculture Innovations and Research, 4 (4), 744-746.

[19]. Mohammad, C. (2009). Analysis of the Training Needs of Multi-Functional Extension Worker Associated with Sustainability Department of Agricultural Extension and Education Tarbiat Modarres University.

[20]. Ndlovu, T, (2015) Farmer participation: A drive towards sustainable agricultural production in Makwe irrigation scheme, Zimbabwe. Global Science Research Journal, 3 (9), 308-320.

[21]. Ovwigho B. O. Isiorhovoja, R. A. Idoge, D. E. (2014).Positions and Roles of Agricultural Extension Workers in Poultry Egg

Marketing in Delta State, Nigeria, Mediterranean Journal of Social Sciences MCSER , 5 (2), 197-206.

[22]. Rajalahti, R. (2012). Sourcebook overview and user guide. In Agricultural innovation systems: An investment handbook. Washigton, D.C.: World Bank.

[23]. Singh, A.K. and Burman, R. R. (2019). Agricultural Extension Reforms in South Asia Status, Challenges, and Policy Options pages, 289-315.

[24]. Sulaiman, R. V., & Davis, K. (2012). The 'new extensionist': Roles, strategies, and capacities to strengthen agricultural and advisory services. Lindau, Switzerland: Global Forum for Rural Advisory Services (GFRAS).

[25]. Timothy, A. O. (2015). Analysis of Competency and Training Needs Among Agricultural Extension Personnel in Lagos State, International Journal of Forestry and Horticulture (IJFH), 1 (2), 14-21.

[26]. United States Agency for International Development, USAID (2011). Rural Extension and Advisory Services. USAID Agriculture

[27]. Uzosike, C. (2008). A study of the relationship between consumer behaviors and acquisition of household equipment: implication for teaching home management is secondary school. A M.Ed Thesis submitted to Ahmadu Bello University, Zraria.