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ASSESSMENT OF THE IMPACTS OF AGRICULTURAL DEVELOPMENT PROJECT (ADP) ON THE ADOPTION OF IMPROVED FARMING TECHNOLOGIES ON THE LIVING STANDARD OF THE RURAL FARMERS IN NORTH CENTRAL NIGERIA

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ABSTRACT

Assessment of the impacts of Agricultural Development Project (ADP) on the Adoption of improved farming Technologies on the living standard of the rural farmers in North central Nigeria. In line with the objectives, two research questions were answered and two hypotheses tested at 0.05 level of significance. The study adopted survey research design. The population of the study was 223. All members of the population were used because they were accessible and manageable. The instrument used for data collection was a structured questionnaire. The instrument was validated by five experts. The reliability of the instrument was established using Cronbach alpha method and the reliability coefficients obtained were 0.86, 0.83, 0.72, 0.73 and 0.77 for sections A and B respectively. The overall reliability was therefore 0.78 indicating that the instrument is high in internal consistency and hence reliable for use in the study. Data was collected by the researcher and five research assistants. 217 copies representing 97% of the instrument were retrieved and analyzed using mean and standard deviation for research questions and t-test for testing hypotheses. It was found from the study that there are 18 training methods used by ADP extension agents, Adoption of improved farming practices by farmers as learnt from the ADP extension agents has influenced their standard of living to a very high extent. It was also found that there is no significant difference between the mean response of farmers and extension agents in the two hypotheses tested for the study at 0.05 level of significance. It was further concluded that (ADP) has to a very high extent influenced the living standard of the rural contact farmers. Based on the findings of this study, it was recommended among others that; farmers should seek more services of the extension agents and that ADP extension agents should continue to improve farmers' production practices through their various services as it has been established that it influences their standard of living.

Keywords: Assessment, Impact. Adoption, Farm technologies, Living standard.

1.0 INTRODUCTION

In many developing countries today, there is a growing need for rapid rural development in which Agricultural Development is increasingly utilized to be an essential component that enhanced rural farmers' living standard. The concept of Agricultural Development Projects (ADPs) evolved from the desire of the Federal Government to throw its might behind the states government's efforts in the development of agriculture. This desire was reflected in the third National Development plan in which it was recognized that rapid economic development cannot be achieved within defective institutional framework (Madukwe, 2019).

Since the inception of ADPs in the North central Nigeria, studies on the Assessment of the impact of ADP on the living standard of rural farmers have never been explored in the literature. Thus, the probability of Agricultural Development Projects resulting in increased foodstuff for rural dwellers is yet to be ascertained. Moreover, the likelihood of farmers having easy access to improved seeds, pesticides and fertilizer for farming has never been investigated. Equally very essential and related to the foregoing but yet to be examined is the probability of ADP granting farmers adequate access to credit facilities. Apart from its academic worth to the body of knowledge, this study intends to discover if the existence of Agricultural Development Programmes has actually impacted on the rural population, in respect of food production and infrastructural facilities. Hunger and poor infrastructural facilities in rural areas have been associated with criminal activities and rural-urban migration (Asiabaka, 2020; Angus, 2020; Aworemi et al., 2021; BBC, 2022; International Monetary Fund, 2018; The Economist, (2019) in many societies. If the problem of food and infrastructural facilities are adequately addressed in rural areas, it could reduce the rate of stealing and rural-urban migration in Nigeria.

Falusi (2018) states that ADP has helped to raise crop productivity, income and standard of living of rural farmers in Nigeria by transfer of relevant and proven production technologies to farmers, easing constraints on input supplies and provision of rural infrastructures. The Agricultural Development Project through its extension sub-projects in particular has helped to increased food production and farm incomes for the majority of the rural household in the defined project regions. Evbuomwan, (2017) assessed the activities/objectives of ADPs in Nigeria that has enhanced rural farming to include, conducting worthwhile trainings on improved agricultural

technologies, provision of rural infrastructure such as portable rural roads, construction of dams and boreholes for water supply. Others include supply of farm inputs such as fertilizers, herbicides, Planters, harvesters, processing machines and other agro-chemicals through farm services centres to enhance the technical and economic efficiency of small farmers in general. Naswem & Ejembi (2017) emphasis further that ADP also helped in the improvement of extension staff and farmers' training, introduction of new credit and marketing services and Provision of improved seeds. Osuntogun, Oni and Oluro (2019) stressed that ADP generate modem farming technologies in conjunction with relevant agricultural research institutes, disseminate improved agricultural technologies to contact farmers through effective extension delivery and linking farmers to sources of fund (soft-loan grants) and to educate farmers on how to get better market for their produce.

Omonijo, *et al* (2016) pointed out the methods used by ADP extension agent to influence rural farmers' adoption of farm technologies in the crop sub-sector to include the employment of On-farm Adaptive Research (OFAR) and Small Plot Adoption Technique (SPAT). These were achieved under the umbrella of the Training and visit (T & V) system of extension with contact farmers as the centre piece of all extension actions. Hanson and Just (2017) identified training and visit as yet another effective method of communicating the farmers by the Extension agents. They said that visitation enables the extension worker get acquainted with a villager. Target farm families or farm groups (contact farmers) were visited on fixed schedules. Obibuaku (2016) also noted that demonstration method was used to present an improved practice in an interestingly convincing way and which makes rural contact farmers understood the need for it and its practical application to their situation. Demonstration teaches skills, stimulates and motivates action and builds confidence in the extension worker.

Olaolu (2018) indicated other strategies used by the ADP extension system to include use of mass media method such as radio, television, newspapers, cinema and magazines. Amao, Adebayo and Ayanwuyi (2016) pointed out that Radio activities, such as radio farm forum, has proved popular in in North central zones. Farm discussion was given in radio talks for farmers. As the number of farmers to be reached per field worker increased, attention was turned to the use of mass media to reach many more with the same message at approximately the same time. ADPs have set up media units for production and distribution of media materials to points of greatest utility. Akpobo (2017) also stated the use of Bulletins, Pamphlets, circular letters, leaflets and posters as important method of disseminating information to the farmers.

Ukaegbu (2015), highlighted fruits of adoption of modern farming practices to include better nutrition, lower death rates, a broader consumption basket, improved productivity, rising incomes and enhanced quality of life. There are several performance indicators to assess rural community development or the effectiveness of adoption of modern farming practice. Pinstrup and Pandya (2017) associated significant improvement in living standards in ADP enclave areas to increase in crop production. KWA (2015) reported that maize production doubled from 237 million tons in 1985 to 460 million tons in 1991 in ADP enclave areas. The high rate of adoption was due to intensive extension activity, high rates of subsidization profitability and availability of fertilizer to farmers**.**

Rural farmers' adoption of improved farm technologies has helped to impact their living standard in various ways. The expenditure on goods other than feeding and clothing and purchase of radios, televisions, furniture and vehicles was an indicator of improved standard of living or quality of life. In the ADP, the ownership of various household equipments increased among farmers during the project life, e.g for radios 16% (Kwa, 2015). The ownership of various transport facilities among farmers has increased by 25% and 4% for Bicycle and motorcycle respectively in the ADP project cycle (Kwa, 2015). Rural people like stable existence and for most of them, the building of a family house is the ultimate. When farmers build -their own house from increasing proceeds of the farming business, it becomes an index of improvement in the quality of life or rural community development (Kwa, 2015).

The ability of a farmer to train his children from his farm income is a measure or index of his standard of life and hence the quality of life he experiences. Abutu (2016) states other indices of improved quality of life to include improved life expectancy and nutritional intake; decline in the incidence of diseases, infant mortality and death rate; and increased human resource capacities. The present Economic reality in the country shows that the only way out of the present economic recession is going back to agriculture. The improved living standard manifested in rising proportion of rural households owning items like motorcycles, bicycles and radios. There was also increased proportion of households that obtained adult education, engaged in tradition as secondary occupation and enjoyed better health conditions. The continuous increase in the demand for agricultural products by an enlarged populace has put the rural farmer in such a position where he needs the knowledge of modern farm technologies through the ADP and its extension services. Since the majority of the farmers in rural areas are illiterates and use primitive and less productive

technologies in farming, they need an agency which will disseminate such information about the new farming technologies from research station. Such an agency is the Agricultural Development Project (ADP) which forms a link between the rural farmers and the research institutes and which this study sought to find its influence on rural farmers.

Over the years, several farmers had practiced agriculture using crude implements and local farming system inherited from ancestors. These methods of farming did not result to increased production or profitability from sale of farm produce. Further investigation by the researcher as to the cause of continuous decline in production of basic food crops such as maize, rice and yams revealed that farmers had no access to basic training on improved agricultural technologies and farm inputs. The neglect of the agricultural sector in favour of the oil sector and the nature of the agricultural system had severe impact on the living standard of rural farmers.

The purpose of this study is to assess the Impact of Agricultural Development Project (ADP) on the adoption of improved farming technologies and its effects on the Living Standard of the Rural Farmers in North Central Nigeria. Specifically the study sought to:

(1) Identify training methods used by ADP extension agents for effective teaching of farm technologies to enhance the living standard of Rural Farmers.

(2) To assess the extent to which Rural Farmers' adoption of improved farm technologies have effects on the living standard of rural farmers.

To facilitate the investigation of the problem of this study, the following research questions were drawn to guide the study.

i. What are the training methods used by ADP extension agents for effective teaching of farm technologies to enhance the living standard of the rural farmers?
ii. To what extent do rural farmers' adoptions of improved farm technologies have impacts on their living standard

The following null hypotheses were formulated and tested at 0.05 level of significant.

1. There is no significant difference between the mean response of rural contact farmers and agricultural extension agents on the Training methods used by ADPs for effective training of improved farm technologies to impacts the living standard of the rural farmers.

(2) There is no significant difference between the mean response of rural contact farmers and agricultural extension agents on the extent to which the adoption of improved farming practices have impacts on the standard of living of rural farmers.

2.0 LITERATURE REVIEW

2.1 Theoretical framework of the study

The theoretical frame work of this study consist of Change Theory and Transfer of Technology Theory (TOT) system of agricultural extension

2.1.1 The Theory of Change (TOC)

A theory of change is a method that explains how a given intervention, or set of interventions, is expected to lead to specific development change (Valters, 2014). The theory of change is appropriate strategy for this study since it serves the objectives of monitoring and evaluating. As a theoretical framework, the theory of change has been used by Barnett *et al* (2015), Kawuma, *et al* (2017) in the fields of agriculture, medicine and healthcare, as well as education.

A theory of change is relevant to the study because it can help Agricultural Development project team (ADP) systematically think through the many underlying and root causes of development challenges, and how they influence rural farmers standard of living. The theory of change helps ensure a sound logic for achieving change. The theory of change (TOC) applied by ADP helped to identify critical gaps towards the goal and allowed flexibility that lends to addressing the changes influencing rural farmers' standard of living, a scenario that prompted independent evaluators of the ADP projects to conclude that though the value chain ADP approach is promising, it needs to be fully implemented through adequate resourcing. Applying the theory of change (TOC) at the beginning of a project can generate and answer specific prioritized evaluation questions and address hypotheses mapped to each assumption and enhance efficiency for researchers.

It identified key areas for participatory approaches, stakeholder involvement and capacity development for value chain development.

To contribute to this body of evidence, the approach was adapted, applied and integrated with Agricultural Research for Development (AR4D) context in Tanzania, the Maziwa Zaidi (Swahili for "more milk") programme to test its practical application to contextualize smallholder dairy value chains with a view to generating appropriate evidence and evaluate progress from

research outcomes towards development outcome. The design of Maziwa *et al* 2017) was informed by the need to provide a robust framework for channeling evidence to address persistent challenges in smallholder dairy systems in Tanzania in a sustainable manner. Testing of the use of theory of change (TOC) was to reinforce the robustness of the approach.

2.1.2 Transfer of Technology Theory (TOT) of Agricultural Extension

The transfer of technology theory (TOT) of agricultural extension is a linear top –down system of technology transfer in which information flows in a one way fashion from research to the farmer through the mediation of an extension work (Davidson and Ahmad 2013). In many developing countries according to Belay and Abebaw (2017), the transfer of technology (TOT) model has been the prevalent practice for developing and spreading innovations. In the transfer of technology thinking, innovation transfer is usually one –directional and linear.

The theory is applicable to the study because new innovations are generated from a central source such as the research institute; by researchers. The function of the extension organization is to promote the dissemination and adoption of the technologies via extension agents who 'advise' passive farmers about the innovation in order to increase agricultural productivity which is the ultimate goal.

Douthwaite, keatinge, and park (2016), notes that the theory has worked well with ADPS in delivering simple technologies, such as high yielding crop variety into relatively favorably production systems thus giving rise to the green revolution. However, there was great none or poor adoption by smallholder farmers in especially local contexts and where technologies are not simple in nature. This lead to the recognition that innovation is not a linear process in which technical knowledge is generated by science and subsequently transferred to the end- users, but involves a collective interactive processes of multiple stakeholders in its generation, adaption and transfer (Klerkx, Kilelu, Omore, Baltenweck, Leeuwis & Githinji, 2017).

The transfer of technology approach is applicable to ADP as in most instances, the TOT only works to assist farmers adopt technology that focuses on improving farm yields and income of the rural farmers. It can be applied in this study and greatly account for the increasing of most technologies that have been promoted using the transfer of technology theory (TOT). For example, it was applied in analyzing the roles and challenges of agricultural extension in Africa. Belay and Abebaw (2017) notes that extension workers in Sub-Saharan Africa farmers benefited from ADPS innovation to their farming system. For instance, because most of the technologies comes in

packages, (high yielding seed variety will need fertilization and maybe pest treatment) most farmers' farm inputs were subsidized or provided for free. The approach also considered the fact that innovations are context specific so that farmers do not just adopt innovations but need to adapt them to suit their specific needs and context. These points to the fact that many innovations are not just generated in research institutes but by farmers and researchers build upon insights of the innovativeness of the farmers in the field. The innovation process was thus not a one way communication or linear process as was previously thought, but involved an exchange of knowledge and information among farmers, researchers and other stakeholders with the agricultural extension serving to facilitate this process.

3.0 METHODOLOGY

3.1 Research Design

The study adopted survey research design. This type of research gathers data from a large number of subjects that represents the population. Survey employs questionnaire as the mechanism for data gathering techniques in which findings are generalized about the whole population (Emaikwu 2019),

3.2 Area of the study

The study was conducted in North central region of Nigeria. North Central Nigeria is a region of Nigeria. Otherwise, known as Middle Belt, and is comprised of the following states: Benue, Kogi, Kwara, Nasarawa, Niger, Plateau, and the Federal Capital Territory Abuja, spanning from the west, around the confluence of the River Niger and the River Benue. It is one of the six geo political zones in the country and lies within the guinea savanna region along 50E -100E and latitude 7030'N-100N (Oladimeji, Abdulasalam, Damisaand and Omokore 2015).

3.3 Population of the Study

The population of the study is 223 comprising 205 Contact farmers' and 18 Agricultural extension Agents serving in the different ADPs agro ecological zones in North Central Nigeria

3.4 Sample and Sampling Technique

There is no sampling because the researcher can effectively manage the population for the entire 223 respondents. This is in line with Anikweze (2017) and Emaikwu (2019) who stressed that if the total population is not too large, it should be used as the sample for the study. Furthermore, involving the entire population in the study will help to eliminate sampling errors

3.5 Instrument for Data Collection

The instrument used for data collection was a questionnaire titled: Impact of Agricultural Development Project Questionnaire (IADPQ)

3.6 Validation of the Instrument

Five experts validated the instrument and the instrument was trial tested so as to ascertain its reliability using Cronbach Alpha

3.7 Reliability of the Instrument

The reliability coefficient obtained was 0.78 indicating that the instrument is high in internal consistency and hence reliable for use in the study.

3.8 Method of data collection

The questionnaire was administered to respondents by five (5) research assistants trained by the researcher in different ADPS offices across North Central zones. Descriptive statistical tool (mean and standard deviation) was used to answer research questions 1-2, while inferential statistical tool (t-test) was used to test the hypothesis 1-2. The null hypothesis was tested at 0.05 level of significance.

3.9 Methods of Data Analyses

The data collected from the respondents was analyzed using mean, standard deviation and t-test statistics. The mean was used to compute data aimed at answering research questions 1 to

2.While the t-test statistics was employed in the computation of data related to the test of hypotheses 1 to 2. The null hypothesis was tested at 0.05 confidence level.

The following guidelines were used to interpret and make decisions on the findings of the study. Any item with a mean score of 2.50 and above was accepted, while any item with mean below 2.50 was rejected. Therefore the value of 2.50 is fixed as a cut-off point. The bench mark was calculated using 4 +3+2+1=10/4=2.5

4.0 RESULTS AND DISCUSSION

4.1 Results and Data Presentation

The results of the data analyzed and its interpretation for research questions answered and hypotheses tested. It was presented under results, findings and discussion of finding

4.1.1 Research question 1: What are the training methods used by ADP extension agents to impact the living standard of the rural farmers?

Table 1: Mean Rating and Standard Deviation of Respondents on Training Methods used by ADP Extension Agent to Impact Living Standard of Rural Farmers N-217

SN	Items The ADP Training Methods of farm technologies to impact rural farmers living standard	N_1	N_2	X_1	X_2	S_1	S_2	RMK
1	Household approach,	17	200	3.52	3.43	.51	.49	A
2	Individual approach	17	200	2.52	3.31	.51	.48	A
3	Farmers group field day.	17	200	3.17	3.38	.39	.51	A
4	Forth night Training meeting approach	17	200	3.64	3.49	.49	.57	A
5	Training and visit approach (T&V)	17	200	3.17	3.37	.63	.62	A
6	ADP use demonstration methods	17	200	3.64	3.3	.49	.49	A
7	On-farm adaptive researches (OFAR) were carried out	17	200	3.23	3.47	.43	.52	A
8	Small plot adaptive techniques (SPAT) on crops were established	17	200	3.41	3.54	.5	.53	A
9	Radio and Televisions are used as a medium of training	17	200	3.88	3.53	.33	.53	A
10	Group meeting is used to train farmers on new technology..	17	200	3.47	3.35	.62	.6	A
11	Offices calls is used to gather farmers	17	200	3.41	3.37	.5	.5	A
12	Field trips and tour Farmers watch and see people doing encouraging grasping and retaining the subject matter presented	17	200	3.23	3.46	.43	.56	A
13	Bulletins are used as medium of teaching and learning	17	200	3.29	3.54	.46	.57	A
14	Newspapers are used as medium of teaching and learning	17	200	3.29	3.41	.46	.51	A

15	use discussion method to adopt new farm innovations	17	200	3.64	3.48	.49	.51	A
16	Experimentation method used by the extension workers improved farm practices to farmers	17	200	3.7	3.43	.58	.57	A
17	ADP use tours/excursions to enables the farmer to accept and adopt the new farm practices shown	17	200	3.7	3.26	.58	.67	A
18	ADP use firms/cinemas to teach new technology.	17	200	1.88	2.09	.33	.33	D
19	ADP use videos to explain new technology	17	200	2.94	3.39	.42	.49	A
20	ADP use what-app to explain new technology	17	200	2.46	2.13	.98	.51	D
21	ADP use YouTube to teach rural farmers to adopt new technology	17	200	2.42	2.07	1.09	.58	D
	Pooled			**3.22**	**3.23**	.54	.53	

Keys: N_1- Number of agricultural extension agents, N_2-mean of contact farmers, X_1- mean of agricultural extension agents X_2- mean of contact farmers, S_1,-standard deviation of agricultural extension agents, S_2-standard deviation of contact farmers, D-disagree, A-agree

The result of the data presented in Table 1 revealed that all the items except items 18, 20 and 21 had their mean scores ranging from 2.52 to 3.88 for agricultural extension agents and 3.3 to 3.54 for farmers, which are above the cut off mean of 2.50. This means that those items are the training methods used by ADP extension agents for effective training of farm technologies to enhance the living standard of the rural farmers. Meanwhile, items 18, 20 and 21 for both agricultural extension agents and farmers had their mean scores below the cut off mean. This means that the respondents disagreed that the items are not the training methods used by ADP extension agents for effective teaching of farm technologies to enhance the living standard of the rural farmers.

4.1.2 Hypothesis 1: There is no significant difference in the mean rating of the response of rural contact farmers and agricultural extension agents on the Teaching methods used by ADPs for effective teaching of improved farm technologies to impact the living standard of the rural farmers.

Table 2: t-Test result of the respondents on the Training methods used by ADPs for effective teaching of improved farm technologies that impact the living standard of the rural farmers

Occupation	N	Mean	Std	Std. Error Mean	Df	Sig	t-cal	Alpha value	Remark
Ext. agents	17	3.22461	.540006	.60168	215	.671	.425	.05	NS
Farmers	200	3.230714	.536436	.22147					

Keys: N= Number of respondents, Std = Standard deviation, df = degree of freedom, Sig. = P-value; t-cal = t-calculated value; P <.05, NS = Not Significant. t-critical-1.96
Source: *Field survey, 2022*

Table 2 presents the result of the t-test analyses on the training methods used by ADPs for effective teaching of improved farm technologies to impact the living standard of the rural farmers. The result shows that the t-cal is 0.425, which is less than the critical value of 1.96 at 215 degree of freedom, implying that the null hypothesis is accepted. This means that there is no significant different between the mean response of contact farmers and agricultural extension agents on the training methods used by ADPs for effective teaching of improved farm technologies to have impact on the living standard of the rural farmers

4.1.3 Research question 2: To what extent do rural farmers' adoptions of improved farm technologies have impact on their living standard?

Table 3: **Mean Rating and Standard Deviation of the Respondents on the Impact of ADPs on the Living Standard of farmers**
N-217

S/N	Items	N_1	N_2	X_1	X_2	S_1	S_2	RMK
1	Advent of ADP has created access roads for sales of crops.	17	200	3.29	3.44	.46	.49	A
2	ADP extension staff provide training to rural farmers	17	200	3.64	3.43	.49	.49	A
3	ADP creates agricultural job opportunities for youths in the rural areas	17	200	3.35	3.44	.49	.49	A
4	Rural farmers adoption of modern farming technologies has increased supply of food crops for sale to generate more income	17	200	3.41	3.40	.50	.62	A
5	Use of improved crop varieties leads to high yield and more income to farmers.	17	200	3.17	3.42	.39	.49	A
6	The adoption of improved crops production technology has increased farmers purchasing power.	17	200	2.76	3.19	.75	.69	A
7	Fertilizer use has enabled me to increase my output	17	200	3.29	3.29	.46	.49	A
8	ADP has created awareness of high productivity of food crops	17	200	3.52	3.45	.62	.55	A
9	ADP has raised educational awareness among farmers to send their children to school.	17	200	3.58	3.46	.50	.57	A
10	ADP has enabled use of feeds and balanced diet.	17	200	3.41	3.46	.50	.50	A
11	ADP has raised the awareness and access to good water supply	17	200	3.11	3.29	.99	.75	A
12	ADP has increased the purchasing power of farmers in terms of house hold goods.	17	200	3.35	3.15	.49	.66	A

13	ADP provides Training to rural farmers on modern storage technology of farm inputs,	17	200	3.70	3.58	.57	.58	A
14	Farmers building their own houses from farming business, was an index of quality of life	17	200	3.47	3.53	.55	.52	A
15	ADP provides Training on techniques of making farm manure/compost to improve rural farm crop yields.	17	200	3.17	3.26	.63	.51	A
16	ADP provides Training on techniques of land preparation for improved crop production.	17	200	3.41	3.47	.50	.50	A
17	ADP provides training on mechanized farming for improved crop production of the rural farmers	17	200	3.47	3.38	.51	.63	A
18	ADP provide training for its personnel to improve farm work and job satisfaction	17	200	3.29	3.42	.46	.48	A
19	New farm practices made available to me by extensions workers has been adopted	17	200	3.17	3.35	.52	.53	A
20	Training on tractor use has improved crop production.	17	200	3.29	3.31	.46	.46	A
21	Training on the use of improved crop seeds have improved crop production	17	200	3.52	3.48	.51	.53	A
22	ADP training on yam mini-setts technology has improved yam crop production	17	200	3.35	3.35	.49	.66	A
23	The expenditure on goods (radios, TV, vehicles, furniture) was an indicator of improved standard of living	17	200	3.35	3.41	.49	.50	A
24	Training on application of fertilizers was done with farmers participating	17	200	2.58	3.19	.61	.70	A
25	Utilization of insecticides by farmers has controlled insect-pest	17	200	3.35	3.43	.60	.54	A
26	Rural farmers are trained on how to spray herbicides to control Weeds on their farms to improve crop yield	17	200	3.64	3.54	.49	.54	A
27	Fertilizer usage by farmers increased output of farm crops	17	200	3.17	3.36	.39	.56	A
28	Assorted agrochemicals were sold to the farmers	17	200	3.29	3.36	.46	.49	A
	Pooled			**3.32**	**3.39**	**.53**	**.55**	A

Keys: N_1- Number of agricultural extension agents, N_2-mean of contact farmers, X_1- mean of agricultural extension agents X_2- mean of number of contact farmers, S_1,-standard deviation of agricultural extension agents, S_2-standard deviation of contact farmers, D-disagree, A-agree

The result of the data presented in Table 3 shows that all the items had their calculated value ranging from 2.58 to 3.70 for agricultural extension agents and 3.15 to 3.58 which are all above the cut off mean of 2.50. This implies that all the items are the ways ADPs have impact on the living standard of rural farmers. The result also shows that all the items had their standard deviation ranging from 0.39 to 0.99, implying that the responses of the respondents are not far from each other.

4.1.4 Hypothesis : There is no significant difference between the mean ratings of rural contact farmers and agricultural extension agents on the influence of ADPs on farmers' standard of living

Table 4 t-Test Result of the Respondents on the Influence of ADPs on the Living Standard of farmers

Occupation	N	Mean	Std	Std. Error Mean	Df	Sig	t-cal	Alpha value	Remark
Ext. agents	17	3.329829	.536032	1.97322	215	.245	-1.167	.05	NS
Farmers	200	3.390179	.55932	.38846					

Keys: N= Number of respondents, Std = Standard deviation, df = degree of freedom, Sig. = P-value; t-cal = t-calculated value; P <.05, NS = Not Significant.
Source: *Field survey, 2022*

Table 4 presents the result of the t-test analyses on the influence of ADPs on the living standards of rural farmers. The result shows that the t-cal is -1.167, which is less than the critical value of 1.96 at 215 degree of freedom, implying that the null hypothesis is accepted. This means that there is no significant different between the mean response of contact farmers and agricultural extension agents on the impact of ADP on the rural farmers living standard.

4.2 Discussion of Findings

The findings of the study in research question 1 revealed that there are 18 training methods used by ADP extension agents to impact the living standard of rural farmers. The finding is in line with Okpogo (2019) who found that extension delivery techniques adopted to communicate innovation to farmers include on-farm visit, small plot adoption technique, field trip, excursion, demonstration, individual delivery, group discussion and others. The findings of the study is also in agreement with Enwelu, *et al* (2017) who found that extension agents means of communicating the farmers include farm visit, SPAT, individual meeting, group discussion and other. More so, the findings of the study in hypothesis 1 is in line with Okpogo (2019) who found no significant difference in the response of farmers and extension agents on the training methods used by agricultural extension agents in communicating innovation to rural farmers in Cross State Nigeria.

The findings of the study in research question 2 revealed that there are 28 ways ADP have impact on the living standard of rural farmers. The finding is in agreement with Adamu and Mohammed (2016) who found that ADP has impacted Adamawa State rural farmers on their productivity,

income, access to credit, and general standard of living using assets ownership criterion. In line with the findings of this study also, Dare ,*et al* (2016) found that Agricultural Development Projects have significantly increased food production in the locality through increased provision of pesticides and improved seeds to farmers, establishment of new infrastructure and provision of fertilizers. More so, the findings of the study in hypothesis 2 is in In line with Ugwu (2014) who found that there is no significant difference in the mean response of the respondents on the hypothesis tested on the contributions of ADPs to rural livelihood and food security in Nigeria.

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The study concludes that the ADPs has helped to improve the living standards of the rural farmers through increased food production in the locality through increased provision of pesticides and improved seeds to farmers, establishment of new infrastructure and provision of fertilizers

5.2 Recommendations

Based on the result of the data analyzed and the findings of the study, the following were recommended among others.

1 Farmers should seek more services of the extension agents through the teaching methods revealed from this study as they have been found to influence their standard of living

2 All farmers should endeavor to participate in ADP programmes in order to enhance their living standard.

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