INFLUENCE OF INFORMATION LITERACY ON AGRICULTURAL RESEARCH INNOVATION AMONG EXTENSION WORKERS IN KADUNA STATE AND FCT ABUJA, NIGERIA

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Abstract
The study investigated the influence of Information Literacy variables on Agricultural research innovation among extension workers in Kaduna State and Federal Capital Territory (FCT) Abuja. Innovation is the discovery of new ideas after the acquisition of information literacy and its skills. Though low productivity on the part of farmers is as a result of inadequate acquisition of information literacy skills on the part of extension workers in the studied areas. The research questions were formulated such as demographic variables of the respondents and sectional mean scores of information literacy constructs and agricultural research innovation. Two null hypotheses were formulated, i.e. significant contribution of information literacy variables to agricultural research innovation as well as interactive effect of gender and educational qualification on agricultural research innovation among extension workers. Mean and standard deviation were used to answer research questions and calculate data on them. Regression model and two-way ANOVA were the statistical tools used to test the null hypotheses at 0.05 level of significance. The target population of the study consisted of all extension workers in Kaduna State and FCT Abuja. Purposive and random sampling techniques were used to select 240 extension workers. Structured questionnaire (with four point rating scale was used) and administered on the respondents. Results showed that 156 completed copies of questionnaire were retrieved. Major findings showed that male counterpart outnumbered female counterparts while HND holders top the list among respondents. It was discovered that synthesis/identification of information has the highest mean score among information literacy constructs. There was significant contribution of synthesis, sources, location, accessibility, evaluation and use of information to agricultural research innovation. The association of gender and educational qualification does not have significant effect on agricultural research innovation. The study recommended among others that the concerned authority should give priority to information literacy constructs so that extension workers would be kept abreast of development in agricultural sector, while they should be encouraged to acquire additional qualification.
Keywords: Information Literacy, Agricultural Innovation, Extension Workers, Nigeria, FCT Abuja, Kaduna State.

Background

Agriculture worldwide since the time immemorial has being in existence for over thousand years back and that man initially learned to cultivate crops, rear animals, hunting animal for subsistence purpose. Nigeria, a small fraction of the world is not isolated in this regard as agriculture has been in existence even before the discovery of oil which according to Atsumbe (2017) maintained that only 1% of Nigeria's export was contributed by oil sector in 1958. One cannot dispute the fact that agriculture sub-sector of the Nigerian economy was instrumental to the development of the oil industry, hence the ten-year development plan in Nigeria (1946-1956) according to Ibiyemi (2014) as cited in Ayo (1988.1) maintained that emphasis was laid on limited commercial agriculture although Saka (1997) reported that general agriculture top the list in the compilation of index entries to Nigerian agriculture as contained in New Nigeria Newspaper (1993-1995).

Successive government in Nigeria introduced a number of agricultural programmes and projects aimed at National development which is to spread among social, cultural, economic, political, scientific and cultural spheres of Nigeria. The concept of "National Development" can be viewed as achievement or progress attained/made in the above dimension or aspects in any nation and the key indicators to National Development include; GDP, literacy life expectancy, human development indicies. (Okebukola, 2012). One of the areas which development should easily touched is the economic and to be specific, in the agricultural development. Hence various agricultural programme such as Operation Feed the Nation, River-Bain Development Authority, Green Revolution Programme, Nigerian Agricultural Cooperative and Rural Development, e.t.c were initiated by Nigerian Government (Ugwu and Kanu 2012). For agricultural development to take place, it is very important for agricultural innovations (being a product of agricultural research(es)) to exist or recorded and disseminated.

Innovation as a concept is the discovery of new ideas of knowledge which is a product of the result of researches being conducted. Development in the field of science and technology was brought about partly from agricultural innovations in the areas of food processing, storage, marketing and transportation technologies, annual breeding and health. (Okebukola, 2012).

Quality agricultural research(es) means quality innovations, i.e. a systematic ways of investigating, inquiry into existing phenomenon through scientific/laboratory research. Results obtain from research and the implementation of the result is a function of innovation although certain factors can contribute to deficit in research innovation which according to Adeolu (2016) include: attitudinal constraint, poor interaction between industries and universities, funding of Research and Development (R & D), lack of adequate incentives and poor government support for industry R & D.

Agricultural development vis-à-vis research innovation can only be achieved if stakeholders (especially the extension workers) are adequately equip with knowledge and skills in the areas of sources, access to agricultural information, evaluation, synthesis and use of information. The ability to achieve these constructs or skills is a function of literacy, thus literacy is considered as one of the indicators of National Development and Okebukola (2012) posited that;

> *literacy is defined as the ability to read for knowledge and write coherently and think critically about the written word. In a knowledge economy, literacy becomes a very important attribute of development of a nation...*

Literacies are of various types and includes: basic, adult, computer, information literacies e.t.c. Information literacy is way of learning about sources of information, access to information, synthesis evaluation and use of information. However, Abubakar and Bala (2014) enumerated 15 components of

information literacy as adopted from Bilawar and Pujar, information literacy models correlation and conceptual models for higher education CALIBER 2011. The 15 components include: library, media, visual, ICT, tools, revenue, social structure, computer, basic, research, publishing, emerging technology resources, scientific, network and digital literacy.

Agricultural extension workers by their nature are the trained agricultural personnel that have undergone training programme leading to the award of Diploma, Higher Diploma, Degree or Higher Degree in the field of agriculture with specialization of training in the aspect of extension services. By this, they are charged with the responsibility of interacting with farmers, educating them on the government policies and actions, distribution of leaflets, provision of information on inputs and use of radio and television as well as modern methods of agriculture (Ozioko, 2015). They also document farmers' complain and problems and take them back to government for further necessary action. They act as intermediary or coordinator between the extension station (government) and farmers. For extension workers to be current and competent in the discharge of their duties, they need to possess information literacy by way of synthesizing, sourcing, accessing, evaluating and use so as to attain high research innovation.

However, not all extension workers take note of this vital aspect of agriculture. Low productivity in agricultural sector of economy discovered from farmers and government might be attributed to insufficient agricultural innovation (information literacy) provision by extension workers. (Kingsley and Otubelu, 2017).

Statement of the Problem

Agriculture sector of the economy is expected to contribute greatly to the Gross Domestic Product (GDP) of any country. This can be achieved through researches being conducted by agricultural specialists which can further be achieved through information literacy (sourcing, identifying, accessibility, evaluation and use).

Unfortunately, researchers' encountered with both parties showed agricultural productivity is low which is further attributed to low level or absent of information literacy on the part of the extension workers based on gender and education qualification. Study conducted by Kingsley and Otubelu (2017) revealed information gap about farmers and workers can access farming input and improve way of farming.

In order to resolve the unfortunate situation, there is the need for aggressive research into the influence of information literacy on agricultural research innovation among extension workers in Kaduna State and FCT Abuja, Nigeria.

Aim and Objectives

The aim of the study is to determine the influence of information literacy on agricultural research innovations among extension workers in Kaduna state and FCT Abuja, Nigeria. However, the specific objectives of the study are to:

1. Determine the demographic issues affecting extension workers in Kaduna state and FCT Abuja, Nigeria.
2. Identify the individual/sectional mean scores of information literacy constructs?

Research Questions

In order to effectively conduct the study, the following questions were formulated and posed:

1. What ae the demographic issues affecting extension workers in Kaduna State and FCT Abuja?
2. What are the individual / sectional mean scores of information literacy constructs?

Both research questions and hypothesis goes together in one research, hence the former lead to descriptive statistical analysis (Percentages, mean and standard deviation, frequency counts bar graph, bar chart, pie chart etc. On the other hand, the latter (hypothesis leads to influential statistics (T-test, ANOVA, Regression Analysis, Pearson products, moment correlation, etc.)

Research Hypotheses

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

HO_1: There is no significant contribution if information literacy constructs to Agricultural research innovations

HO_2: There is no significant interactive effect of gender and educational qualification on agricultural research innovation

Literature Review

Considering the theoretical framework, (Egbuchu, 2017) posits that "diffusion of innovation theory" was propounded by a geologist called Paul Lazarsfield *et al* in 1944 when the theory was first introduce. According to the theory, the passage of ideas is expected to go through mass media to opinion leaders and later to people in community. The theory maintained that opinion leaders tend to influence their followers to change in behaviour very quickly than mass media print (newspaper) or (electronic media) radio, television or video. This theory is relevant to the present study in the sense whenever extension worker access, locate, synthesize, evaluate and use information, there is tendency for extension workers to influence or persuade farmers to improve on latest method of agriculture thereby increasing higher productivity. In this case, extension workers are the opinion leaders and they are capable of influencing change in the minds of farmers through the innovations they discover.

Adedoyin, Abayomi and Oladapo (2009) conducted a study to determine ICT literacy of Health workers in Igbinedion University Teaching Hospital. Survey method was used to elicit response from 200 copies from questionnaire. Simple average and percentage calculations were used in the analysis of data. Results revealed that majority of respondents were aware of the use of ICT equipment in health institutions and that non-availability of ICT equipment has hindered health workers from having interest in the use of ICT facilities.

Effective access to information by blind and visually impaired students through information literacy skills was embarked upon as a research. The research questions contained: amount of research skills, method if acquiring information literacy skills, challenges and strategies to enhance information literacy skills acquisition by visually impaired students.

Case study design was adopted and the population consisted of 95 visually impaired students of University of Nigeria, Nsukka. The entire population was adopted. Questionnaire and internal schedule were data collection instrument used. Results showed that visually impaired students possessed adequate information literacy skills that will enable them attain academic performance. (Chigbu & Michael, 2017).

Kingsley and Otubelu (2017) examined the dissemination of agricultural information and reducing poverty among farmers in Azza North Local Government Area of Ebonyi State. Effective ways of

disseminating agricultural information to rural farmers include: public libraries, face-to-face communication, social/political meetings, market places and churches, lectures, seminars, and workshops.

In a collaborative research by Nkechi and Osadebe (2016), identify information literacy programme benefits, challenge, and ways of overcoming the challenge, the information literacy among youth. Using descriptive survey research design, 50copies of questionnaire were administered to youth in each in the universities in six geopolitical zones in Nigeria. Results revealed the availability of the following information literacy programmes library tours and guides, library week, study skills use of the library and information retrieval skills. Result revealed further that 12 benefits were available to information literacy challenges to the information literacy programme include; attitude of students, short duration printing to use of the library, non functioning of computer interactions, etc. Eight issues were considered as ways to solve the problems of information literacy programme and they include; organization of library workshops, use of sources based quizzes, inclusion of information literacy programme among the courses of each faculty were among the solutions.

Uzuegbu and Naga (2016) used pilot study to determine the effectiveness information communication sources and channels by which village farmers in 68 villages in Abia State get information, level of awareness and use in cassava farming. The study found that awareness, access and use of cassava farming input is poor despite the fact that farmers' success to 13 information communication sources and channels which include; friends, relatives, mobile phones, newspapers, agricultural workshops/seminars/conferences, extension workers, radio, churches, television, internet, education and research institutes, posters, etc.

Saka (2016) investigated the effect of motivation, job satisfaction, gender and educational qualification on job performance of male and female in the 17 functional university libraries in North Central Nigeria. The entire population of 301 personnel were studied in relation to the levels and effects of gender and educational qualification on job performance using research questions and hypotheses. Two set of questionnaire was used and two wayANOVA was also used. The results showed that there was no significant difference in the job performance with regards to gender and educational qualification among personnel in university libraries in the geopolitical zone. On the job performance for both sexes, the results showed that the mean scores of HND holders for both sexes was higher than other educational qualifications of respondents.

Saka (2016) studied relationships among motivation, job satisfaction and job performance of library personnel in universities in North Central geopolitical zone. Multiple correlation and regression model were used in testing the two null hypotheses, of the contribution and interaction among variables. Results showed strong relationship between extrinsic motivation and job performance. There was no significant contribution among intrinsic, extrinsic motivation and job satisfaction to job performance of library personnel in Universities in North Central Nigeria.

Babalola (2013) conducted a study to determine job motivation, demographic and environment factors as indices to librarians' productivity in Colleges of Education in Nigeria. The entre population of 356 librarians was used for the study while questionnaire was used in data collection. Part of the study was related to the present study i.e. gender and educational qualification of extension workers in Kaduna State and FCT Abuja. Based on this one aspect of the study, the descriptive analysis showed that there was more number of males than female librarians and that Bachelor of Library Science (BLS) holders top the list in terms of educational qualifications.

Coming to agricultural field with specific research on cassava production, Ogunleye (2016) investigated "farmers accessibility to the cassava elements in the central geopolitical zone of Nigeria using 190 farmers through conducting interview schedule to collect data. Results showed that majority of respondent have access to initiative element including training and extension services. Other findings

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include no significant relationship between access to extension services, agro-input and change in production activities.

Methodology

The study employed descriptive research design with particular emphasis on correlational study. Correlational research was used to test the relationships among variables of the study, study the opinions of the respondents and their demographic variables thereby using questionnaire to collect data. Kaduna state and FCT Abuja were the two selected study areas. The choice for adopting these two areas for the study was due to the fact the 2016 Kaduna state was confirmed to be the largest producer of rice in the federation. On the other hand FCT Abuja – being the centre for excellence own various parastatals, agencies and allied agricultural establishment under department of agriculture (FCDA) and Federal Ministry of Agriculture within FCT Abuja. The population of the study consisted of Agricultural Extension workers in Kaduna State and FCT Abuja. The number of extension workers was indeterminant. The information literacy constructs used for the study include:- synthesis/identification, Access/location, sources, evaluation and use of information as used by Ojedokun (2007).

Purposive and random sampling techniques were used to select 240 extension workers from the two study areas. Independent variable of the study was the information literacy while the dependent variable was the agricultural research innovation. Structured questionnaire with four-point rating scale (Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1)). Respondents were requested to indicate by taking the appropriate options as contained in the structured questionnaire.

Descriptive statistics (frequency counts and percentages as well as mean, standard deviation) were used to test and answer the two research questions on the demographic variables of the respondents as well as the mean score of the information literacy constructs.

Decision Rule: Mean range 3.50 – 4.00=Strongly Agreed

Mean range 2.50 – 3.49=Agreed

Mean range 1.50 – 2.49=Disagreed

Mean range 1.00 – 1.49= Strongly Disagreed

Inferential statistics (regression analysis and two-way ANOVA) were used to test the two null hypotheses on significant contribution of independent variables to dependent variable (agricultural research innovation) as well as interactive effect of gender and education qualification of extension workers on agricultural research innovation) respectively.

Results And Discussion

Out of 240 copies of structured questionnaires that were administered on extension workers in the two study areas, 156 completed copies representing 65% were retrieved. Table one provide answer to research question number one on the demographic information of the respondent. Table two provide answer to research question number two on the mean and sectional mean scores of information literacy construct and research innovation. Table three and four provides results of two null hypotheses being tested in respect of the contribution and interactive effect of independent variables to/ on dependent variable.

Presentation of Results

Table1: Demographic information of respondents

Gender	Frequency	Percentage (%)
Male	115	74
Female	41	26%
Total	156	100%
Educational Qualification		
Certificate	4	3
ND	13	8
HND	165	67
B.Sc	20	13
M.Sc	14	9
Total	156	100

The table clearly showed that male has the highest frequency of 115 (74%) responses while female extension workers has the fewer number of 41 (26%) responses respectively. HND holders has the highest frequency with 165 (67%) which is a reflection that they are products of polytechnics and agricultural colleges that run agricultural courses.

Table 2: Individual/sectional mean scores of information literacy and agricultural research innovation

S/N	VARIABLES	MEAN $\bar{X}$	STDEV
1.	Synthesis of Information	3.59	0.58
2.	Sources of Information	3.13	0.68
3.	Accessibility/Location of Information	3.02	0.73
4.	Evaluation of Information	3.42	0.58
5.	Use of Information	3.08	0.73
6.	Agricultural Research Innovation	3.12	0.75

From Table 3, the analysis of the information literacy constructs and Agricultural research innovation were clearly shown with the highest mean score of 3.59 (synthesis/identification of information as well as sectional mean scores of 3.42, 3.13, 3.02, 3.42, 3.08 and 3.12). The latter sectional mean score was from the dependent variable (Agricultural research innovation). Synthesis/Identification of information has the highest sectional mean score with strongly agreed while the other four variables has decision of "Agreed". This signifies that information most not only be identified but also be arranged and organized in logical order just as the case of chapterization at undergraduate and postgraduate research works among library schools in Nigeria.

Note: Decision Rule: Mean Range for Strongly Agree (3.50 – 4.00)

Mean Range for Agree (2.50 – 3.49)

Mean Range for Disagree (1.50 – 2.49)

Mean Range for Strongly Disagree (1.00 – 1.49)

From the table, the sectional mean response for synthesis of Information falls under strongly agree, while that of sources, access, location, evaluation and use of information fall under agree.

Table 3: Regression Analysis of the Contribution of Synthesis, Sources, Accessibility, Location, Evaluation and Use of Information to Agricultural Research Innovation

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	113.915	5	22.783	13.656	0.000
	Residual	250.259	150	1.668		
	Total	364.173	155			

a. Dependent Variable: Agricultural research innovation

b. Predictors: (Constant), Information Use, Information Sources, Information Evaluation, Information Accessibility/Location, Identification Information

From the regression analysis presented on table 3, it can be seen that there is significant contribution of Identification, Sources, Location, Evaluation and Use of Information to Agricultural Research Innovation among extension workers (F_{Cal} = 13.656 > F_{Crit} = 2.29; p = 0.000 < 0.05). The F-critical value is higher thsn the 2.29, thus 0.000 is less than 0.05 level of significance. Therefore hypothesis 1 was rejected. Hence, there is significant contribution of the identification, sources, location, evaluation and use of information to Agricultural research innovation.

Hypothesis 2: **There is no significant interactive effect of gender and educational qualification on Agricultural research innovation.**

Table 4. **Two Way ANOVA Result on Interactive effect of Gender and Educational Qualification on Agricultural Research Innovation.**

Dependent Variable: Agricultural research innovation

Source	Type III Sum of Squares	df	Mean Square	F	Sig. (p)
Corrected Model	12.070[a]	9	1.341	.556	.831
Intercept	3909.837	1	3909.837	1621.220	.000
Gender	.020	1	.020	.008	.928
Qualification	4.691	4	1.173	.486	.746
Gender * Qualification	7.095	4	1.774	.736	.569
Error	352.103	146	2.412		
Total	14047.000	156			
Corrected Total	364.173	155			

From the result of two way ANOVA presented on table 4, it can be seen that there was no evidence of significant interactive effect between gender and educational qualification on agricultural research innovation ($F_{cal} = 0.736 < F_{Crit} = 2.42$; $p = 0.569 > 0.05$). i.e critical F-value of 0.736 is less than 2.42 and that P-value 0.569 is greater than 0.05 level of significance. Therefore, hypothesis 2 is accepted. Hence, there is no significant interactive effect of gender and educational qualification on Agricultural research innovation among extension workers in the study areas.

Discussion of Results

Discussions were based on the results from the two research questions and two null hypotheses respectively.

In answering research question one (demographic information of respondents), it was discovered that the number of male extension workers is far more than that of female counterparts. It is not surprising the job of extension services is more or less field work which can in most cases be carried out by men. On the other hand, majority of extension workers obtained HND, which showed that they are product of polytechnics, colleges of agriculture, and other monotechnics that award Diploma and higher diploma. The result of demographic variables of the respondents in the present result corroborates that of Saka (2016) but disagree with Ogunleye (2012) respectively. Corroborate the findings of Saka (2016) revealed that male outnumbered the female library personnel and that the job performance in terms of mean scores for HND holders for both gender was higher than other qualifications being obtained by both gender. This present research finding on gender corroborates and disagree with that of Balalola (2013) respectively. The researcher reported that the number of male librarians was higher than that of female counterpart while the number of BLS holders was higher than other qualification holders in colleges of education in Nigeria. In disagreement with the finding of the present study, Ogunleye (2016) discovered that age was a determinant factor to farmer's access to initiatives element.

Individual and sectional mean scores of information literacy construct and that of agricultural research innovations were investigated. The results showed higher sectional mean score of 3.59 from the "synthesis of information and that 3.12 mean score was obtained from the dependent variable of agricultural research innovation among extension workers in the two study areas. Breaking down the entire research into various parts and arranging them in a logical order help greatly in arriving at innovative areas, thus Haruna (2010) and Ibrahim (2013) respectively highlighted the chapterization of undergraduate and postgraduate researches in various library schools in Nigeria. This showed that higher mean score from synthesis of information has resulted to agricultural research innovations. This findings does not conform to the collaborative study conducted by Nkechi and Osadube (2016) but disagree with Ogunleye (2016) respectively. Nkechi and Osadube (2016) reported the availability of information literacy programmes such as library tours and guides, library week, study skills, use of library and information retrieval skills. Ogunleye (2016) found that extension services (training) were in ranked order 1,2,3 and that there was no significant relationship between extension services and access to initiative elements among cassava farmers in central agricultural zone in Nigeria.

In an attempt to test the null hypotheses, it was discovered that there was no significant contribution of the information literacy variables to research innovation. However, sources, synthesis, accessibility, location, evaluation and use of information collectively contributed to agricultural research innovation. This findings disagree with that of Saka (2016) who reported that there was no significant contribution among intrinsic, extrinsic motivation and job satisfaction to job performance among library personnel in universities in North central Nigeria.

The second hypothesis was tested and revealed that the association of gender and educational qualification of extension workers does not contribute to agricultural research innovation. This finding corroborates that of Saka (2016) as the study found that there was no significant difference in the job

performance of library personnel in terms of gender and educational qualification in universities in North Central Nigeria.

Conclusion

Based on the major findings derived from the discussion, the implication is that there was no gender sensitive since extension work seems to vigorously and so strictly reserved for male counterparts in extension field. HND is regarded as the minimum qualification for one to be agricultural extension worker. A problem is averagely solved if the causes are identified and as such identifying a problem will consequently lead to embark on research and finally lead to innovative practices.

On the contribution of information literacy variables to research innovation, the implication is that absence of one variable (synthesis) may lead to inadequate agricultural innovation. Without the association of male and females as well as educational qualifications, agricultural research innovations can be attained by agricultural extension workers in the two study areas.

Recommendations

Based on the major findings, discussion and conclusion reached, the study recommended that;

1. Ministry of Agriculture and Agricultural Extension Services should give priority to information literacy.
2. Female Agriculturist should be given employment opportunities.
3. Agricultural Extension workers should be encouraged to attend workshops, conferences, seminars and formal education.
4. Agricultural Extension workers should be encouraged to visit and use library collections.

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