Infrastructure and Linkage Challenges in the Execution of Agricultural Programmes in Cross River State, Nigeria

Eno Joseph Mbang [1], **Michael Chukwuneke Madukwe** [1], **Irenonsen Oyaimare Uddin** [1]

[1] *University of Nigeria, Nsukka*
Nsukka Road, 410001, Nsukka, Enugu State, Nigeria

DOI: 10.22178/pos.52-4

LCC Subject Category: S1-(972)

Received 28.10.2019
Accepted 25.11.2019
Published online 30.11.2019

Corresponding Author:
Irenonsen Oyaimare Uddin

Abstract. The study ascertained the infrastructure and linkage challenges in the execution of agricultural programs in Cross River State, Nigeria. The proportionate sampling technique was used to select one hundred and thirteen (113) staff. Percentage, mean statistic and standard deviation were used in the analysis and presentation of data. Results showed that among all infrastructures in the ministry, building(s) for offices was available and functional at 71.8 % and 62.7 % respectively. The ministry had inadequate equipment to execute agricultural programs (M=2.54), weak linkage with universities (M=1.31) and research institutes (M=1.37) and very poor feedback mechanisms between research institutes and the state ministry (M=1.98). The study recommends that the ministry of agriculture should intensify its linkage with other agencies and research institutes through inter-agency collaboration, mobility of linkage experts and proper training of staff on linkage matters. Needed equipment and facilities should be purchased for various departments by the state government to improve productivity.

Keywords: agricultural infrastructure; agricultural programmes; linkage challenges.

INTRODUCTION

The Cross River State Ministry of agriculture was established primarily to administer agricultural policies, services, pricing, support programs and schemes, drought management and business strategy for its products as well as to enhance the quality of life of the people [7]. Others include; prioritizing agricultural research, food inspection, export and import policymaking, and distribution of food in rural and urban areas of the country during crisis periods like drought, flood, erosion or natural calamity [12].

To achieve the ministry's set objectives, successive administrations developed agricultural programs and projects such as; Cross River Commercial Agriculture Credit Scheme, Cross Rivers State Agricultural and Rural Empowerment Scheme, Oil palm production project and the pineapple production project under the Cross River Agricultural Development Programme, Root and Tuber Expansion Programme, Fadama development program, Songhai Cross River Initiative, Cross River Commercial Agriculture Development Programme. A huge success was recorded in program implementation, food security strategy improved productivity, technological innovations, etc. as a result of proper administration. There were effective follow-up and evaluation of extension units in the ministry, farmers were properly assisted by the state government, donor agencies and private organizations to ensure a better standard of living and food security for the populace through agriculture. However, most of these programs experienced persistent failure and untimed implementation, revealing the basic weakness of these agricultural policies. The inability of successive administrations to solve these brought setbacks in agricultural development and program implementation. The failures came in different measures of which poor agricultural infrastructure development and linkage formation among agricultural stakeholders in the state were key.

Adequate infrastructure and strong linkage formation are major determinants of agricultural

growth and productivity. In addition to other factors such as human capital, credit markets, extension services, and technological research, the presence of reliable infrastructure increases both output per capita and output per unit of land [2]. It is, therefore, a key contributor to the productivity, mainly by reducing transaction costs in input and output markets, as well as better integrating markets within sub-regions. No doubt that there is a well-established relationship between infrastructure and agricultural productivity. Given the criticality of financing constraints, it is also of necessity that there be a clear understanding of an emerging source of funding for infrastructure in the agricultural sector.

According to [19], two main reasons have been advanced for the poor responsiveness of private investments in African agriculture. The first is poor agriculture infrastructure (roads, research, extension, level of farmer awareness, access to agricultural services, etc.). Poor infrastructure is a major reason for the high costs of doing business and a factor in the lack of competitiveness. The second factor is weak institutions (including law and order, land management) in this respect [11], have argued that getting prices does matter, but so does getting institutions right. The argument here is that markets cannot work if coordination is weak and institutions are missing. Addressing these two constraints, namely weak infrastructure and poor linkage formation between institutions, clearly requires the active role of the government and all stakeholders in the agriculture sector.

In light of all the aforementioned, there is a need to critically x-ray these challenges facing Cross River State Ministry of Agriculture of Nigeria, proffer possible solutions to these challenges to pave way for a better future in the ministry. The purpose of the study was to ascertain the infrastructure and linkage challenges in the execution of agricultural programs in Cross River State, Nigeria. Specifically, the study sought to:

- examine infrastructure challenges in the administration of the state ministry of agriculture;

- examine the challenges of linkage formation in the execution of agricultural programs of the ministry;

- identify strategies for addressing these challenges.

METHODOLOGY

The population of the study constituted all the staff (administrative and technical) within the eleven (11) departments of the ministry of agriculture in Cross River State, Nigeria. The eleven departments have a total of 568 staff as at July, 2014. To properly represent staff in each department, a proportionate sampling technique was used in selecting respondents; twenty percent of the total number of staff in each department was selected as shown in Table 1 giving a total sample size of one hundred and thirteen (113) respondents.

Table 1 – Population and sampling procedure

No	Departments in the state ministry of agriculture	Population of staff*	Sample (20% of staff)
1	Livestock	60	12
2	Veterinary	95	19
3	Produce Services	103	21
4	Fisheries	32	6
5	Agricultural Finances	14	3
6	Agricultural Services	92	18
7	CARES	14	3
8	Administration	62	12
9	Finance and Supplies	32	6
10	Planning, Research and Statistics	11	2
11	Agricultural Development Programme	53	11
	Total	568	113

Notes: *Staff strength as at July, 2014

Data were collected using a questionnaire, comprising closed and open-ended questions. To ascertain infrastructural challenges in the ministry, questions on the availability and functionality of some infrastructure (building(s) for offices, internet services, computers and accessories, tractors, project vehicles, etc.) in the ministry were raised. Furthermore, respondents were asked to indicate their rating on the maintenance of equipment and facilities, office space, power supply, etc. on a four-point Likert-type scale of good (3), fair (2), poor (1), and very poor (0). The values were summed up to get 6, which was divided by 4 to obtain a mean score value of 1.5. Variables with mean values of 1.5 and above were regarded as infrastructure factors affecting

the state ministry of agriculture, while those with mean values less than 1.5 were not regarded as infrastructure factors affecting the state ministry of agriculture.

Objective 2 ascertained linkage formation challenges in the execution of the agricultural program of the ministry. Respondents were asked to tick against each stakeholder the ministry had linkage with and the strength of linkage was rated on a four-point Likert-type scale of very weak (0), weak (1), strong (2) and very strong (3). Values were summed up to get 6, divided by 4 to obtain the mean score of 1.5. Stakeholders with mean values of 1.5 and above were considered as having linkage with the ministry, while those with mean values of less than 1.5 were not regarded thus.

Furthermore, a four-point Likert-type scale of good (3), fair (2) poor (1) and very poor (0) was used to ascertain how factors namely; policy issues between the state ministry of agriculture and other agencies, ICT skills of staff of the ministry, organizational rigidness and others pose challenges to linkage in the ministry. The values were summed up to get 6, which was divided by 4 to obtain a mean score value of 1.5. Variables with mean values of 1.5 and above were regarded as linkage factors affecting the ministry, while those with mean values less than 1.5 were not regarded thus.

Respondents were requested to indicate strategies to address the challenges faced by the ministry (objective 3) in the areas of infrastructure and linkage. Percentage, mean statistic and standard deviation were used in the analysis and presentation of data.

RESULTS AND DISCUSSION

Infrastructural challenges in the ministry

Availability and functionality of infrastructure in the ministry. Results in Table 2 show that among all infrastructures in the ministry, building(s) for offices was available and functional at 71.8% and 62.7% respectively. From the interaction, most of the buildings need renovation and proper maintenance to sustain them (E. Effiwatt, personal communication, May 20, 2014). Furthermore, the ministry needed basic ICT gadgets such as projectors, cameras, and internet access. ICTs enhance easy communication between staff and farmers for enhanced productivity [26]. Insufficient or unavailability of ICT facilities reduces staff functionality and agricultural productivity [26]. Author [19] noted that poor agricultural infrastructure hinders access to agricultural services, mostly in the rural populace where development is aimed to boost agricultural productivity [2]. It is axiomatic that poor conditions of work, low salaries or official rewards are key problems that have eroded the professionalism of the Nigerian public service [27].

Table 2 – Percentage distribution on the availability and functionality of infrastructure in the ministry

Infrastructure	Available (%)**	Functional (%)**
Building(s) for offices	71.8*	62.7*
Chairs and tables	66.4*	49.1
Power generating sets	61.8*	49.1
Printers	58.2*	48.2
Computer and its accessories	56.4*	40.0
Project vehicles	54.5*	47.3
Tractors	42.7	28.2
Internet services	40.0	9.1
Photocopiers	37.3	33.6
Television set	36.4	34.5
Storage facilities	30.9	21.8
Projectors	29.1	22.7
Deep freezers / Refrigerator	27.3	14.5
Cameras	19.1	10.9
Satellite connections	14.5	8.2
Video players	10.0	10.0

Notes: *Available and functional infrastructure; **Multiple response

Perceived level of infrastructure challenges in the ministry of agriculture. The ministry had inadequate equipment to execute agricultural programs (M=2.54). Agricultural programs are developmental and geared towards increased productivity, poverty reduction, and income generation for rural farmers [6]. When equipment needed by the ministry for executing programs are insufficient, limited or unavailable, there is bound to be a setback in the implementation of planned programs.

As indicated in Table 3, the ministry experiences inadequate power supply (M=2.49). Electricity or

power supply remains the most critical element needed for any organization to perform its activities whether production, administrative or storage activities. Authors [18] assert that poor infrastructure including epileptic power supply negatively affects the performance of enterprises in agriculture. It is a widely acknowledged fact that the erratic power supply in Nigeria is the bane of economic and industrial development in the country [20]. With erratic power supply in the ministry, it implies that extra cost is incurred in purchasing and running generating sets.

Table 3 – Mean distribution of perceived level of infrastructure that poses a challenge in the State ministry of agriculture

Infrastructure challenges	Mean	S.D.
Inadequate equipment to execute agricultural programmes	2.54*	0.65
Insufficient electricity supply	2.49*	0.75
Inadequate pre and post-harvest storage facilities	2.44*	0.70
Inadequate maintenance of equipment and facilities	2.35*	0.74
Poor internet service	2.32*	0.81
Inadequate telecommunication facilities (Telephone)	2.30*	0.76
Inadequate conveniences (restroom and bath)	2.02*	0.81
Insufficient office space	1.85*	0.90

Notes: *Infrastructure challenges

Results in Table 3 further show the ministry had inadequate pre and post-harvest storage facilities (M=2.44) and inadequate maintenance of equipment and facilities (M=2.35). Researchers [10] stated that harvest and postharvest technologies save labor, reduce grain losses and improve product quality. Facilities that are not well maintained become devalued and dysfunctional. Poor maintenance incurs a great loss to the ministry and attracts additional costs to purchase new facilities. African Development Bank [2] stated that where facilities are inefficient and not properly maintained, there is a huge pre and post-harvest loss on the total attainable agricultural products.

Likewise, poor internet service (M=2.32), inadequate telecommunication facilities (telephone) (M=2.30), inadequate conveniences (restroom and bath) (M=2.02) and insufficient office space (M=1.85) were other infrastructural challenges in the ministry. The Internet has great potentials of bringing agriculture closer to its clientele anywhere and enabling staff to communicate easily in the ministry [25]. It enhances knowledge building, information receiving, and dissemination towards efficient service delivery and improved productivity of staff in the ministry. Lack of internet service and other ICT facilities generates less access to information and low support of knowledge [13]. By implication, the staff of the ministry does not have a proper and effective communication channel. Knowledge enhancement without ICT facilities slows down efficient service delivery.

The telephone is the commonest telecommunication facility used between farmers and extension agents. Serious limitations of access to reliable telephones make intra- and inter-organizational networking for information exchange a frustrating experience [5]. Limited telecommunication channels in the ministry influence monitoring and follow up on the adoption of farm families. Insufficient telecommunication facilities between farmers and agriculture officers increase transaction costs since communication is more an agricultural practice which leads to increased productivity [22]. Implying that the means of reaching farm families on program adoption is difficult because telecommunication facilities are not provided for staff of the ministry.

Challenges to linkage formation of the ministry with stakeholders

Perceived linkage strength between the State ministry and other agencies. The ministry had strong link with the federal ministry of agriculture (M=2.36) and state ministry of finance (M=2.29). Federal ministry of agriculture is a ministry of the Nigerian government that regulates agricultural research, agriculture and natural resources, forestry and veterinary research throughout Nigeria. They work alongside the state ministry of agriculture towards achieving agricultural development [21].

The International Fund for Agricultural Development supports the Nigerian Government in poverty reduction programme in rural areas. It targets large numbers of smallholder farmers and is essentially people-centred through the various state ministry of agriculture. Author [1] stated that in Cross River State, IFAD is already

executing agricultural development programme (IFAD/FGN/NDDC Community Based Natural Resources Management Programme – CBNRMP) aimed at improving the livelihoods and living conditions of rural poor through institutional Strengthening and Community Development Fund interventions. Cross River State Government has in the last six years accessed four hundred and forty seven thousand dollars ($447,000) from the International Fund for Agriculture Development for projects [28].

Table 4 – Mean distribution perceived linkage strength between the State ministry of agriculture and other agencies

Agencies	Mean (M)	S.D.
Federal ministry of agriculture	2.36*	0.83
Ministry of finance	2.29*	0.83
International fund for Agricultural development	2.20*	0.86
Farmer groups	2.15*	0.86
World Bank	2.05*	0.94
Agricultural bank	1.72*	0.83
Ministry of Land	1.69*	1.08
African Development Bank	1.64*	1.00
Ministry of information	1.63*	0.87
Ministry of housing and environment	1.44	1.02
Non-Governmental Organizations	1.40	0.85
Microfinance banks	1.38	0.94
Research institutes	1.37	1.00
Universities	1.31	1.04
Private agricultural extension outfits	1.31	0.98
National Food Reserve Agency	1.29	1.06
Ministry of Education	1.17	0.86
Engineering firms	1.16	0.87
Regulatory agencies (NAFDAC / SON)	0.85	0.94
Nigerian National Petroleum Corporation	0.32	0.59
Shell Petroleum Development company	0.30	0.58

Notes: *Agencies the ministry has strong links with

World Bank partners with the state ministry to implement and execute some agricultural programmes such as Fadama. Farmer groups most times suffer from poor leadership, poor managerial skills, weak financial base and poor access to resources and services [30], that is the reason the state ministry works through the extension agents to educate and train the group for improved skills and coordinate them to access resources for their farm productivity. African Development Bank collaborates with the ministry to execute some projects that benefit grass root farmers. The implementation of the Rural Access Mobility Project was possible because it was funded by the bank [8].

Furthermore, the ministry had a weak linkage with universities (M=1.31) and research institutes (M=1.37). Public universities in Nigeria are under the ministry of education, while the agricultural research institutes are under a different ministry. In practice, there is no formal linkage existing between the universities and agricultural research institutes. What exists is antagonism. Similarly, there are no provisions for any linkages between the Ministry of Agriculture (federal and state) with universities. The study of the linkages between the ADP, an arm of the ministry of agriculture and the universities in Nigeria reported limited linkage and interactions.

Research institutes help to improve the productivity level of farmers with the aid of the ministry of agriculture transmitting innovative ideas through extension officers. Therefore, the absence of an effective linkage between agricultural research institutes and agricultural ministry or systems has repeatedly been reported as one of the major reasons for the low productivity experienced in the agricultural sector [16].

Issues affecting linkage between the ministry of agriculture and other agencies. Table 5 shows that issues affecting the ministry informing linkage with stakeholders are poor funding (M=2.54), insufficient research materials (M=2.45), weak mobility of experts or professionals (M=2.21), low ICT skills of staff (M=2.17), lack of training of staff on linkage knowledge (M=2.15). The interrelationship between the ministry and other agencies can be achieved through the collaboration of programs and attendance of staff of the ministry of agriculture to programs organized by other agencies such as the research institutes. Agricultural research is one of the driving forces behind the development of the agricultural sector. The effectiveness of agricultural research depends to a large extent on the ways in which the knowledge generated is transferred to farmers.

Table 5 – Mean distribution of indicators on linkage challenges between the State ministry of agriculture and other agencies

Indicators of Linkage challenges	Mean (M)	S.D.
Funding of ministry interrelationship activities	2.54*	0.67
Absence of research materials	2.45*	0.71
Mobility of experts/professionals	2.21*	0.79
ICT skills of staff of the ministry	2.17*	0.91
Training of staff on linkage knowledge	2.15*	0.83
Agricultural Policies in the state ministry of agriculture and other agencies	2.08*	0.78
Qualified human resources for linkage leadership	2.01*	0.86
Feedback mechanisms between research institutes and the state ministry	1.98*	0.93
Organizational rigidness by the ministry	1.90*	0.79
Personnel exchange between ministry and agencies	1.86*	0.90
Collaboration of programme by ministry	1.86*	0.87
Poor communication between the ministry of agriculture and other ministry in the implementation and execution of programme	1.80*	0.86

Notes: *Linkage challenges

Generally, lack of research poses constraints to the agricultural sector [30], these constraints constitute serious limitations to the research capacity and research capability of the ministry [6, 14, 24]. Linkage knowledge of the staff of the ministry can only be improved through training on its importance. But where such training is lacking staff knowledge on linkage is low. According to [23], upgrades of training and skills in linkage management issues are very paramount for staff involvement in the linkage.

Other indicators of linkage challenge in the ministry (Table 5) are very poor feedback mechanism between research institutes and the state ministry (M=1.98), agricultural policy issues in program execution (M=2.08). Feedback is said to be what makes communication complete, so where the findings made by research institutes are not brought back to the ministry for proper implementation and adoption, feedback is said to be absent or poor which in turn affects both the research institute and the development of the state ministry of agriculture. According to [3] feedback between research institutes, state ministry and farmers can be improved by developing strong linkage, but most times this is not the case. In addition, [4] noted that the research system in place for agriculture faces a number of problems like lack of strong research-extension-farmer linkages and inadequate funding. Feedback should be specific, timely and be against the predetermined performance expectations and should be provided on a continuous basis – daily, weekly or monthly reviews [17]. Lack of feedback in the ministry could be because of the inadequate fund to acquire the needed information or lack of mobility to reach the farmers and low exposure to the understanding of the need for feedback.

Organizational rigidness is when there's no flexibility in performing some of the policies that govern an organization towards achieving its set goals and objectives. When the ministry of agriculture has organizational rigidness, it influences developmental changes. According to [9], organizational rigidity is rather an ambiguous explanation for a firm's failure to capitalize on new opportunities and, consequently, perform better, despite its impediments to organizational change.

Communication between the ministry and other agencies towards implementing and executing an agricultural program is distorted when there is no sense of connectivity or interrelationship or information dissemination between both partners sometimes occasioned by rigidity. Author [23] indicated that private-public interaction on agricultural research, priority-setting methods in research organizations, the introduction of management solutions to improve the morale of personnel, communication within and between agricultural organizations and modernization efforts to improve client focus can pose a challenge to agricultural development.

Strategies for addressing the infrastructure challenges of the ministry. Entries in Table 6 shows that providing good office accommodation and renovating old ones was suggested (24.5%) as a measure to reduce infrastructural challenges, others include providing ICT equipment (20.0%), provision of constant electricity (18.2%) making funds available for maintenance of infrastructure (16.4%). These are in line with suggestions made

by [2] and [13] who made reference to the maintenance of equipment, provision of facilities and availability of funds as very vital for effective personnel performance in the ministry of agriculture

Table 6 – Percentage distribution of respondents on strategies for addressing infrastructure challenges of the State ministry

Infrastructure strategies suggestion	Percentage (%)
Upgrade office furniture and equipment	13.6
Provide good office accommodation and renovate old ones	24.5
Provision of ICTs equipment	20.0
Generator/power plant or constant power	18.2
Provision of storage facilities for some departments	17.3
Make funds available for maintenance	16.4
Prompt provision of needed infrastructure	11.8
Network with media/communication agencies	6.4
Improved security for infrastructure	2.7
Good roads for easy transportation of agricultural produce	1.8
Provide infrastructure at local government areas	0.9

Notes: *Multiple responses

Suggested strategies to address the linkage challenges of the ministry. Entries in Table 7 show that respondents suggested that funding for research work and facilities (32.1%) would help reduce some linkage issues, also, training staff on linkage issues (31.7%) and intensification of linkage between MOA and research institutes (25.5%). Author [3], after taking note of the constraints which hinder linkage between the ministry of agriculture and research institute, suggested regular contact to promote a better understanding of how best to serve the needs of overall agricultural development. The importance of training and development is obvious given the growing complexity of the work environment, the rapid change in organizations and advancement in technology. Therefore, training organizational members to possess the knowledge and skills needed to perform their job effectively, take new responsibilities and adapt to ever-changing conditions is important [15].

Table 7 – Percentage distribution of respondents suggested strategies to address linkage challenges of the State ministry

Linkage strategy suggestion	Percentage (%)
Funding for research materials	32.7
Train staff on linkage knowledge	31.8
Intensifying linkage between MOA and research institutes	25.5
Interagency collaboration	21.8
Increased mobility of experts and professionals	9.1
Proper execution of feedback information	6.4
Appointment of liaison officers to strengthen existing linkages	5.5
Up to date publication of MOA's linkage activities	5.5
Improved partnership between the three tiers of government	0.9

Notes: *Multiple responses

CONCLUSION AND RECOMMENDATIONS

There is gross inadequacy in infrastructure and linkage formation between the Cross River State Ministry of Agriculture and key stakeholders. This should be properly checked to avoid further deterioration and failure in agricultural program implementation in the state. Hence efforts should be made by the state government and the ministry in the following areas to help ameliorate the situation:

Offices should be renovated especially by replacing some leaking roofs, repainting the walls, demolishing and rebuilding the old non-spacious offices to accommodate the expected staff strength.

The ministry of agriculture should intensify its linkage with other agencies and research institutes through inter-agency collaboration, mobility of linkage experts and proper training of staff on the linkage.

Needed equipment and facilities should be purchased for various departments to improve productivity.

REFERENCES

1. Abang, M. (2013, May 15). Cross River spends N350m on IFAD, FGN, NDDC programmes. *BusinessDay*. Retrieved from https://businessday.ng/agriculture/article/cross-river-spends-n350m-on-ifad-fgn-nddc-programmes/
2. African Development Bank. (2011). *Infrastructure and Agricultural Productivity in Africa*. Retrieved from https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/Infrastructure%20and%20Agricultural%20Productivity%20in%20Africa%20FINAL.pdf
3. Agbamu, J. U. (2000). Agricultural research–extension linkage systems: an international perspective. *Agricultural Research and Extension Network, 106a*. Retrieved from https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/8202.pdf
4. Alila, P. O., & Atieno, R. (2006). *Agricultural policy in Kenya: issues and processes*. Retrieved from https://www.researchgate.net/publication/228375704_Agricultural_policy_in_Kenya_Issues_and_processes
5. Arokoyo, T. (2011). ICTs application in agricultural extension service delivery. In M. C. Madukwe, *Agricultural extension in Nigeria* (p. 324).Ilorin: Agricultural Extension Society of Nigeria.
6. Chapman, R., & Slaymaker, T. (2002). *ICTs and Rural Development: Review of the Literature, Current Interventions and Opportunities for Action*. Retrieved from https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/2670.pdf
7. Cross River State Ministry of Agriculture. (2012). *Service charter for agriculture in Cross River State*.
8. Daily Times, (2013, January 15). African Development Bank commends Cross River for implementing RAMP project. *Daily Times NG*. Retrieved from http://www.dailytimes.com.ng/article/african-development-bank-commends-cross-river-implementing-ramp-project
9. De Figueiredo, R. J. P., Rawley, E., & Rider, C. I. (2013). Why are Firms Rigid? A Study of Firm Age and Scope in Hedge Funds. *SSRN Electronic Journal*. doi: 10.2139/ssrn.2271655
10. Dobberman, A., & Nelson, R. (2013). *Opportunities and solutions for sustainable food production*. Retrieved from https://www.post2020hlp.org/wp-content/uploads/docs/Doberman-Nelson_Solutions-for-Sustainable-Food-Production.pdf
11. Dorward, A., Fan, S., Kydd, J., Lofgren, H., Morrison, J., Poulton, C., … Wobst, P. (2004). Institutions and Policies for Pro-poor Agricultural Growth. *Development Policy Review, 22*(6), 611–622. doi: 10.1111/j.1467-7679.2004.00268.x
12. Federal Ministry of Agriculture and Rural Development. (2001). *The New Nigerian Agricultural Policy Thrust*. Abuja: FMARD.
13. Glendenning, C. J., & Ficarelli, P. P. (2012). The relevance of Content in ICT Initiatives in Indian Agriculture. Retrieved from http://ebrary.ifpri.org/utils/getfile/collection/p15738coll2/id/126906/filename/127117.pdf
14. Heeks, R. (2002). Information Systems and Developing Countries: Failure, Success, and Local Improvisations. *The Information Society, 18*(2), 101–112. doi: 10.1080/01972240290075039
15. Iwuoha, C. C. (2009). Impact of training and development programmes on secretaries' productivity in selected business organizations in Owerri, Imo state, Nigeria. *Journal of School of Business and Management and Technology, 1*(1), 106-110.
16. Kassa, B. (2009) *Agricultural research and extension linkages in Ethiopia: A historical survey*. Retrieved from https://studylib.net/doc/7845526/agricultural-research-and-extension-linkage-in-ethiopia
17. Lee, C. D. (2005). Rethinking the goals of your performance-management system. *Employment Relations Today, 32*(3), 53–60. doi: 10.1002/ert.20075

18. Manyong, V. M., Ikpi, A., Olayemi, J. K., Yusuf, S. A., Omonona, B. T., Okoruwa, V., Idachaba, F. S. (2005). *Agriculture in Nigeria: identifying opportunities for increased commercialization and investment*. Retrieved from https://pdfs.semanticscholar.org/5207/e6eb792dac5fae019a5b4e172dc1526ad4cf.pdf

19. Odhiambo, W. (2007). *Financing African agriculture: issues and challenges*. Retrieved from https://www.afdb.org/fileadmin/uploads/afdb/Documents/Knowledge/25120395-FR-ISSUES-AND-CHALLENGES-IN-FINANCIN-FINAL.PDF

20. Ohajianya, A. C., Abumere, O. E., Owate, I. O., & Osarolube, V. (2014). Erratic Power Supply in Nigeria: Causes and Solutions. *International Journal of Engineering Science Invention, 3*(7), 51–55.

21. Ohen, S. B., Abang, S. O. (2011). Evaluation of price linkages within the supply chain of rice markets in Cross River State, Nigeria. *Journal of Agriculture and Social Research, 11*(1), 151–155.

22. Payne, J., McCarthy, S. (2010). *African agriculture and ICT: an overview*. Retrieved from https://www.marketlinks.org/sites/marketlinks.org/files/resource/files/FACETProgramOverview.pdf

23. Raina, R. (2003). Institutions and organizations: enabling reforms in Indian agricultural research and policy. *International Journal of Technology Management and Sustainable Development, 2*(2), 97–116.

24. Rao, N. H. (2007). A framework for implementing information and communication technologies in agricultural development in India. *Technological Forecasting and Social Change, 74*(4), 491–518. doi: 10.1016/j.techfore.2006.02.002

25. Richardson, D. (2006). *ICTs – Transforming Agricultural Extension?* Retrieved from https://cgspace.cgiar.org/bitstream/handle/10568/63626/WD8034.pdf?sequence=1

26. Saravanan, R. (Ed.). (2010). *ICTs for agricultural extension. Global experiments, innovations and experiences*. New Delhi: New India Publishing Agency.

27. Sorkaa, A. P. (2003). *Development as Ethics and Accountability in Governance: The way forward for Nigeria*. Benue state University Inaugural lecture series No. 1.

28. The Punch newspaper. (2019). *News*. Retrieved from https://punchng.com/topics/news/

29. Uzuegbunam, C. O., & Madukwe, M. C. (2007). Characteristics of linkages between the agricultural development programmes (ADPs) an universities of south eastern Nigeria. *Agro-Science, 4*(1). doi: 10.4314/as.v4i1.1514

30. Yusuf, K. A. (2012). An appraisal of Research in Nigeria's University Sector. *Journal of Research in National Development, 10*(2), 321–330.