ISSN 2705-3407
GJAM Vol. 3 No. 2
October, 2020




# GOMBE JOURNAL OF ADMINISTRATION AND MANAGEMENT (GJAM)




A Peer Reviewed Journal Published by the
Department of Public Administration
Faculty of Arts and Social Sciences
Gombe State University, P.M.B 127,
Gombe. Nigeria.

# EFFECT OF KADAWA IRRIGATION PROJECT ON EMPLOYMENT OPPORTUNITY AMONG FARMERS IN KURA AND GARUN-MALAM LOCAL GOVERNMENT AREAS OF KANO STATE (2000-2015)

**Bashir Yusuf[1], Musa Idris[2] & Hamza A. Yusuf[3]**
[u&3]Department of Public Administration
Ahmadu Bello University,
Zaria, Kaduna State. Nigeria
bashiryusif86@gmail.com[1]
musaidrisaa@gmail.com[2]
hamzapad66@gmail.com[B]

**Abstract**
*This study examined the effect o/Kadawa Irrigation Project on the creation of employment opportunities among beneficiaries in Kura and Garun-Malam Local Government Areas ofKano State from 2000-2015. The study adopted survey research approach, where data was generated from both primary and secondary sources. Primary data were sourced through the administration of questionnaires and conduct of interviews. Secondary data, on the other hand, were derived from reports and official documents. Ten Registered Farmers Associations (RFAs) was selected from 58 registered irrigation farmers in the study area. The RFAs have a population of 2000 members from which a sample of 322 was selected. Data were analyzed using descriptive statistical tools. Regression analysis was employed to test the hypothesis. It was revealed that Kadawa Irrigation project has a significant effect on providing employment opportunities among farmers in Kura and Garun-Malam Local Government Areas ofKano State. It was recommended among other things that, HJRBDA should intensify its effort towards increasing the land coverage for irrigation by increasing to 22,000 hectares as was originally designed to cover, this will increase the opportunities for more employment to the youth. More so, credit schemes on agriculture provided by the current administration should be extended to irrigation farmers in the area to establish small, medium, and large processing and agrochemical industries in the area which is hoped to increase employment opportunities and the income levels of irrigation farmers*

**KeyWords:** Kadawa Irrigation Project, Agro-Allied Industries, Irrigation Farming, Rice Processing Industries, Employment Opportunities, River Basin Development Authority.

## Introduction

Since the early seventies, demand for agricultural commodities in Nigeria has risen considerably which could not be met by the production system. Worse still, the unprecedented emergence of the oil sector among others brought more neglect in the agricultural sector of the national economy. Consequently therefore, the rise in the prices of agricultural products and high food bills (Sangari, 1996) in Nigeria coupled with the intensity of drought faced in the Sahel Savannah around 1972-1974 necessitated the increase in government expenditure at the federal and state levels to enhance irrigation cultivation during the 1975-1980's Third National Development Plan to provide food security and provide alternative means for agricultural production to narrow down the unfortunate circumstance of food shortage resulting from the effect of drought. In 1975, the Federal Government established the Ministry of Water Resource, and in 1976 eleven (11) River Basin Development Authorities were created by Decree 25 and 37 of 1976. The authorities were charged with the responsibility for the development of irrigation and public water resources, each tagged with a specific irrigation project. Among these irrigation projects were: the Sokoto –Rima River Basin Development Authority; the Hadejia Jama'are River Basin Development Authority; the Chad Basin Development Authority; the Upper Benue River Basin Development Authority; the Lower Benue River Basin Development Authority; and the Cross River Basin Development Authority. Others include the Anambra River Basin Development Authority; the River Niger Basin Development Authority; the Ogun-Osun River Basin Development Authority; the Benin-Owena River Basin Development Authority; and the Niger Delta Basin Development Authority;

(RBDA Decree 87, 1979). The Kano River Project and three other projects including the Hadejia Valley project in Jigawa State, Wudil Pilot Farm in Kano, and Jama'are Valley project in Bauchi were put under the responsibility of Hadejia Jama'are River Basin Development Authority (HJRBDA).

The creation of the RBDAS was motivated by the desire on the part of the Nigerian Federal Government to facilitate and accelerate the production of food crops and mobilize the rural agricultural population throughout the country toward increased food production and improved living standard of the rural dwellers. Thus, the RBRDAs were specifically designed and saddled with the responsibility of first, increase in production of food and other raw materials to meet the country's growing population and expanding industries and to attain self-sufficiency in food production, and the expansion of employment opportunities at the rural levels and the need to develop underground water domestic use (FRN, Gazette, 1976 cited in Akindele, & Adebo, 2004).

To achieve the above objectives the RBDAs were saddled with the power to undertake comprehensive development of both surface and underground water resources for multi-purpose use; provide water from reservoirs and lakes under the control of the Authority for irrigation purposes to farmers and recognized association as well as for urban water supply Authority concerned. It also includes the control of pollution in rivers, lakes, lagoons, and creeks in Authority's area under the nationally laid standards; resettlement of persons affected by the works and schemes specified under special resettlement schemes; development of fishes and improve navigation on the rivers, lakes, reservoirs, lagoons, and creeks in the authority's area; undertake the mechanical clearing and cultivation of land for the production of crops and livestock, etc. and undertake large-scale multiplication of improved seeds, livestock and tree seedlings for distribution to farmers and afforestation schemes. Others are to; process crops, livestock products, and fish produced by farmers in the authority's area in partnership with state agencies and any other person; assist the state and local governments in the implementation of rural development works (construction of small dams, provision of power for rural electrification schemes, the establishment of grazing reserves and training of staff in the Authority's areas (RBDAs, 1979).

The Kano River project (KIP) which comprises 62,000 hectares of irrigable land, is planned to be implemented in two phases. The first centred on the KIP. The project began in 1965 as a pilot project, was one of the three original modern irrigation projects in the country, the others being; the Bakolori Irrigation Project in Zamfara State and the South-Chad Irrigation Project in Borno State. KIP which forms the study area covers an area of 22,000 hectares of irrigable land and the second phase based on the Hadejia Valley and Jama'are projects cover an area of 40,000 hectares of irrigable land (Sangari, 2006).

KIP is phase 1 of the Kano River Project originally started by the Kano State Government, and it is the largest irrigation project in West Africa. Phase I of the project commenced operation in 1976 after it was formally taken over by the Hadejia-Jama'are River Basin Development Authority (HJRBDA). It was expected, according to the original design, to be completed by the end of 1982. At its inception, it was estimated with a total capacity of 22,000 hectares of land and it achieved 14,000 hectares with Kura and Garun Malam Local Government Areas as the major parts that were integrated at the earlier stage. However, by 1978 about 4,000 hectares were completed and only 2,000 hectares of these were irrigated. Currently, a total of 15,000 hectares have been developed for irrigation (HJRBDA, 1985, Sangari, 2006; HJRBDA, 2015).

**Research Problem, Objective and Hypothesis Statement**

The condition of most rural areas in Nigeria is appalling. Rural areas have lower standard of living, high poverty rate, high rate of unemployment and lack basic infrastructure such as accessible roads, electricity, potable water source, good health care, schools, etc. due to government neglect either as a result of sheer negligence or dwindling resources in the face of growing demands by the citizenry. The neglect of the rural areas has not only resulted in a mass exodus of rural dwellers to the urban centres, but has made the rural areas less attractive for socio-economic investment.

The main objective of the KIP was to utilize the available water resources in Tiga Dam and modernize the traditional irrigation cultivation system to provide jobs, enhance higher agricultural

productivity, improve socio-economic activities as well as enhance the general living standard of the rural communities. Under these, the HJRBDA undertake some activities such as recruitment of personnel (extension workers), construction of water supply channels (direct and irrigation channels), provision of the water reservoir (largest reservoir at Tiga Dam, one semi largest reservoir located at Yar'kanya and the four medium volumes located at Dorawar-Sallau, Daka-Soye, Kura and Imawa respectively), provision of Siphons (used by farmers to irrigate their plots) and the construction of drainage ditches as well as provision of accommodation for extension workers located close to various farming communities. Others include the introduction of new product strategy such as planting methods, the introduction of new seeds and seedlings; water regulation; control of credits; hiring of agricultural types of machinery such as tractors, combine harvesters, etc; review water charges; and extension services such as organizing film show and other demonstration programs at villages, wards, and local government levels. This is primarily captured on finding better ways of executing the project toward ensuring socio-economic development of the communities creating more opportunities for employment both at agricultural farm production level as well as agro-allied businesses in the study areas.

Despite the efforts by HJRBDA in implementing the KIP, there are still numerous challenges facing the communities which directly affect the general wellbeing of the communities. Among these challenges is lack of access to credit schemes on agriculture provided by the current administration to irrigation farmers in the area to increase the economic base of the irrigation farmers as well as give the farmers opportunities to establish agricultural processing industries both small, medium, and large processing industries and agrochemical industries in the area to increase the employment opportunities in the area. The central question to ask is to what extent has KIP affected the employment opportunities of farmers in Kura and Garun-Malam local government areas? This paper is set to assess the effect of KIP on employment generation among farmers in Kura and Garun-Malam Local Government areas for the period of 2000-2015. The hypothesis postulated states that: Ho: Kadawa irrigation project has no significant effect on the provision of employment opportunities to farmers in Kura and Garun-Malam Local Government Areas.

## Literature Review and Theoretical Framework

### Irrigation Project

According to Yahaya (2002), Irrigation has been defined as the application of water to the soil to supply moisture essential for plant growth. It is also undertaken to provide insurance against droughts, for cooling the soil and atmosphere. It equally provides a more favourable environment for plant growth. Irrigation washes out or dilutes salts in the soil and reduces the hazards of piping and softening tillage pans. Irrigation will not be necessary if the distribution of rainfall were ideal for the growing of crops. It is clear from the above that, Irrigation is the application of controlled amounts of water to plants at needed intervals which helps grow crops, maintain landscapes, and re-vegetate disturbed soils in dry areas and during periods of inadequate rainfall. Irrigation also has other uses in crop production, including frost protection, suppressing weed growth in grain fields, and preventing soil consolidation. In contrast, agriculture that relies only on direct rainfall is referred to as rain-fed or dryland farming (Chukwuma, & Uju, 2013)

Furthermore, Irrigation is a farming system in which water is artificially supplied to the soil for raising crops. The practice is more common in areas where the total rainfall is found to have been insufficient for plant growth. The circumstance may have resulted from the drought of one kind to another. In this regard, therefore, irrigation is seen as artificial watering of crops. Most of the areas which are identified suitable for irrigation cultivation are in most cases faced with drought which occurred as a result of insufficient supply of moisture either from precipitation or from the soil to meet the moisture content needed for the growth of crops and plants.

The earliest method of irrigation was the impounding of natural floodwater on the flat land bordering rivers. In the same way, rainfall can be impounded by blundering, but the modern methods of irrigation commonly practised in different scales in Nigeria include, first, the *Sprinkler Irrigation* through which water can be supplied by overhead irrigation through a rotating sprinkler head, or a series

of holes in a pipe. Second, *the Tube wells irrigation:* In Nigeria, an increasing area is irrigated with water from a tube well. These are an investment made on the large holdings. This method is only profitable if surplus labour was available and with help of a pump. Third *Underground irrigation,* this is the water supplied by surface irrigation; 20-30% is lost by evaporation. Consequently, such losses are eliminated by an underground system where the water is placed directly in the root zone of a plant, using perforated plastic tubes through which water is pumped under pressure; and the *Trickle or drip irrigation:* This is the method of irrigating higher value crops where water is scarce. The system moves the water in plastic piping through main laterals, sub-laterals, and eventually through a very fine tube to each plant. It releases a continuous drip of water when irrigation is needed (Yahaya, 2002).

In a bid to tackle the effect of drought on agricultural activities many scholars have attempted to develop ideas toward this direction. Major among these ideas are: Undertaking of water control/management project to develop the available water and ensure its proper utilization; Undertaking of proper land use planning to ensure the use of land only for what it is best tested; and adoption of the modern system of farming which involves conservation of available public water (Muhammad, 2010).

Irrigation project gives farmers the ability to improve production, individuals and groups are more likely to be influential, and this no doubt allows one's operation at higher socio-economic status. More material returns in terms of oxen owned by the farmers, dry season farming utilizing motorized pumps and wash boles or tube wells, motor vehicles becoming common means to transport goods to nearby and far-away markets. Also, cash crop earnings are some of the envisaged indicators or boost to farmers' socio-economic status. Irrigation may also enable governments to exercise greater control over farmers cropping decisions through extension services and possibly, make it easier to regulate agricultural taxation. (Yahaya, 2002). To increase employment opportunities there is a need for all year-round cultivation, this could only be ensured through irrigation cultivation.

**The Concept of Employment Opportunities**

Employment could simply refer to a situation in which people have work (Amupitan, 2011). This definition clearly states that when a person has work doing, he/she is employed, but it fails to specify if the person is being paid for the work or not. Operationally, therefore, employment could be referred to as the act of labour force being temporarily or fully occupied on either wage's basis for self-occupied work. This definition added a new dimension, in that employment could be work based on wages or mere self-interest, either way, one is employed provided he/she is working. Furthermore, Frank and Bernard (2001) from their line of thought defined employment in terms of being employed. To them, a person is employed if he or she worked full-time or part-time (even for a few hours) during the past week or is on vacation or sick leave from a regular job.

Achegbolu, (2008) avers that there are two domains of employment namely: The Public Sector Employment and the Private Sector Employment. Public sector employment could be summarized as comprising employees/workers who are paid with public funds. They include workers at federal, state, and local government levels in ministries, extra-ministerial departments or parastatals, agencies, commissions, boards, armed forces, and paramilitary organizations, etc. On the other hand, the private sector equally consists of two variants; the organized private sectors and the non-organized private sectors. The organized private sectors are usually big/large business organizations and are incorporated as legal and corporate entities. The non-organized private sectors are usually like the one-man business or sole proprietorship and partnership businesses which are relatively small in terms of size paid-up capital and workers employed. It is worthy of note that all the aforementioned domains of employment are all employers of labour. From the authors' point of view, the non-organized private sectors or sole proprietorship type of employment is mostly what is obtainable under irrigation farming in the study area. Therefore, in a nutshell, an employed individual could be defined as a person who is currently working for wages or self-interest.

There are differing views about a nation's employment status. These views are the Classical view and the Keynesian view. The classical economists believed in the existence of full employment in the

economy. Full employment to them was a normal situation and any deviation from this was regarded as abnormal. To the classical economists; Unemployment resulted from the rigidity in the wage structure and interference in the working of the free market system. This comes in the form of trade union legislation, minimum wage legislation, etc. On the other hand, Full employment exists "when everybody who at the running rate of wages wishes to be employed. According to Amupitan (2011) those who are not prepared to work at the existing wage rate are not unemployed because they are voluntarily unemployed. To them, there should be no possibility of involuntary unemployment in the sense that, people are prepared to work but they do not find work. According to the classical economists, the above view only operates in an ideal economy.

The second view i.e. the Keynesian view was championed by Keynes (1936). He asserts that full employment means the absence of involuntary unemployment, that is, full employment is a situation in which everybody who wants to work gets work. He assumes that *"with a given organization, equipment and technique, real wages and the volume of output are uniquely correlated so that, in general, an increase in employment can only occur to the accompaniment of a decline in the rate of wages"*. To achieve full employment, Keynes advocates increases in effective demand to bring about a reduction in real wages (Keynes, 1975).

It can be deduced from the above that, the situation of full employment in the current global economic trends is unattainable due to the interdependency nature of the world economy most especially that of developing countries like Nigeria. However, to ensure opportunities for employment, government may initiate economic diversification in agriculture through the intensification of all year-round farming through irrigation projects like that of KIP. Therefore, employment opportunity in KIP is a state in which all capable and willing individuals are engaged in either all year round personal work on the farm (wet season farming), dry season farming (irrigation farming); on a paid work either daily, weekly or monthly wage; engage in buying and selling of agricultural product and; or processing and transportation of agricultural product either permanently or temporarily.

**Theoretical Framework**

The study adopted the Suchman (1963) performance evaluation model as a theoretical framework. Suchman (1963) developed five criteria for performance evaluation which include efforts, performance, and adequacy of performance, efficiency, and process. To him, the five categories of evaluation refer to: (1) effort (the quantity and quality of activity that takes place), (2) performance (effect criteria that measure the results of effort), (3) adequacy of performance (degree to which performance is adequate to the total amount of need), (4) efficiency (examination of alternative paths or methods in terms of human and monetary costs), and (5) process (how and why a program works or does not work).

In a sense, the Efforts criteria refer to measures taken to attain a goal, entailing objectives and appropriate institutional framework. Performance criteria mean the quantity and the quality of input as a result of the effort made to attain a goal. Its components entail quantum of the effect (impact) made; the degree of change obtained concerning goal setting. Adequacy of performance criteria measures success with the total amount of needs. Efficiency measures the correlation between the worth or cost of the input (effort) put into the system and the worth or amount of output produced or generated. It is often defined as the capacity of an individual, organization, facility, operation, or activity to produce results in proportion to the effort expended. The process examines the attribute or nature of the program or policy, the peculiarity of the program, a context that makes it successful or fails as well as analysis of operational attitude that negate the effect (impact) of the program (Suchman 1963 cited in Yusuf, Yusuf & Idris, 2019). However, one of the criticisms of the performance evaluation theory is that, it fails to indicate the possible types and amount of impact created by various kinds of programmes or project and that, it fails to give differences between long term and short-term effects of a project.

The study used the model criteria to measure the effort, performance, and adequacy of performance, efficiency, and the process of the Kadawa irrigation project. The effort measurement in this respect is that the Government had put in all necessarily needed effort by constructing Tiga Dam

which has a storage capacity of over 1974 million cubic meters with an annual average flow of 1300 million cubic meters with a catchment area of 6600 square kilometres. The project was carried out by the water resource division under the Kano state ministry of works and survey which was later changed to Kano State Water Resource and Engineering Construction Agency (WRECA) through direct labour. Considering the importance of the project the state government handed over the project to the federal government in 1976 under the supervision of the Hadejia Jama'are River Basin Authority (HJRBA). The authority was charged with the responsibility of full development of surface and underground water reserves for multipurpose use with special attention on the provision of infrastructures and control of flood and erosion for watershed control; construction operation and maintenance of dam, dykes, wells, boreholes, irrigation and drainage system; supply of water to the public for uses from the completed storage schemes at the government authorized fee among others. All these are efforts from both the state and the federal government aimed at improving the socio-economic development of the rural communities.

Measuring performance is concerned with the effect criteria that measure the result of effort on the improvement in the socio-economic well-being of the rural community farmers through improved agricultural productivity facilitated though all season (cool dry season, hot dry season, and warm rainy season) irrigation cultivation which provides all-year-round employment opportunities to communities. It may not be an overstatement to conclude that, the government's performance was adequate.

The next criterion was the measurement of "efficiency". To this study, therefore, we may need to ask what are the cost involved in the establishment and maintenance of the Kadawa irrigation scheme and how are they compared to the actual benefits produced? i.e. improved well-being of the rural farmer through the provision of employment opportunities and ensuring food security not only to the rural farmers but to the State in particular and the country in general. With the current improvement in the agricultural output in the area as a result of an increase in local consumption of our local product as a result of a change in government policy on the self-sufficiency in food production and the banning of importation of some crops like rice by the Buhari Administration, the project is contributing enormously to the advancement of the socio-economic status of the communities. This cannot be disputed, because as a result of the irrigation cultivation undertaken by household farmers within the project area, the food supply has tremendously improved where the supply covers not only Kano State but the entire country most especially with the increase in the number of Rice Processing Industries in the study area which provides more access to jobs in Kura and Garun Malam local government areas.

Measurement of the process helps managers of the project and the policymakers to redirect project activities to achieve desired goals. This is concerned with the efficient use of resources such as personnel (extension workers), water supply channels (direct and irrigation channels), water reservoir (largest reservoir at Tiga Dam, one semi largest reservoir located at Yar'kanya and the four medium volumes located at Dorawar-Sallau, Daka-Soye, Kura and Imawa respectively), siphons (used by farmers to irrigate their plots) and the drainage ditches, as well as the construction of accommodation for extension workers, located close to various farming communities. introduction of new product strategy such as planting methods, the introduction of new seeds and seedlings; water regulation; control of credits; hiring of agricultural machinery such as tractors, combine harvesters, etc.; review water charges; and extension services such as organizing film show and other demonstration programs at villages, wards, and local government levels. This is primarily captured on finding better ways of executing the project toward ensuring socio-economic development of the communities creating more opportunities for employment both at agricultural farm production level as well as agro-allied businesses in the study areas.

**Methodology**

The study adopted a cross-sectional survey research design method to allow the study to collect data once from respondents upon which the analysis is based. The Source of data for the study was from primary and secondary sources. The primary source entails the administration of questionnaire and the conduct of interview. The questionnaire and interview were justified on the facts that, interview

information was used to complement the questionnaire information. This was evidenced from the data presentation and analysis. The secondary tool was reports obtained from HJRBDA and other documented sources. The population consists of Irrigation Farmers Associations in Kura and Garun-Malam local government areas. There was 58 Farmers' Association (HJRBDA, 2018) out of which 10 were randomly selected. The Farmers Associations selected had a population of 2000 and a sample of 322 respondents was selected (Krejcie & Morgan 1970) through a multi-stage sampling procedure. The first stage was the random selection of two local government areas of Kura and Garun-Malam from the existing four major Local Governments covered by the KIP in Kano State. The second stage involved the purposive selection of irrigation farmers associations covering the two selected local government areas. Registered farmers associations were purposively selected for the administration of questionnaires and ten (10) farmers and staff of HJRBDA were purposively selected for the conduct of interview. A total of ten respondents were sampled. Data were collected with the aid of an adopted structured questionnaire and interview schedule designed to elicit information on the impact of the Kadawa irrigation project on the provision of employment opportunities to farmers in Kura and Garun Malam Local Governments. Data were analyzed using descriptive statistics and the hypotheses were tested using linear regression analysis.

**Discussions and Summary of Findings**

This section deals with the analysis of data collated from the field, secondary data derived from HJRBDA as information generated through interviews were used in discussing employment generation of the KIP in the study area. Data generated through questionnaires were used to test our formulated hypothesis using regression analysis at a 5% level of significance. Out of 322 administered questionnaires, 302 were successfully filled and returned which give a 94% rate of return and formed the basis of our analysis.

To ascertain whether KIP has significantly provided employment opportunities in the area of study, respondents were asked to rate their opinion on whether KIP has provided them with employment opportunities within the period under review. Their responses were presented in table 1

**Table 1 : Kadawa Irrigation Project Provides Employment Opportunities**

| | | Frequency | Per cent | cent | Cumulative Per cent |
|---|---|---|---|---|---|
| Valid | SA | 137 | 45.4 | 45.4 | 45.4 |
| | A | 140 | 46.4 | 46.4 | 91.7 |
| | UN | 7 | 2.3 | 2.3 | 94.0 |
| | DA | 10 | 3.3 | 3.3 | 97.4 |
| | SD | 8 | 2.6 | 2.6 | 100.0 |
| | **Total** | **302** | **100.0** | **100.0** | |

**Source**: Field Survey, (2018)

Responses in table 1 show that 137 (45.4%) respondents do strongly agreed that, Kadawa irrigation project provided employment opportunities in Kura and Garun Malam local government areas. also, 140 respondents representing 46.4% of the entire response agreed to the statement. While 7 respondents representing 2.3% were undecided, also 10 (3.3%) disagreed with the statement, and 8 respondents representing 2.6 % strongly disagreed with the statement. Findings revealed that the majority of respondents 277 (91.7%) agreed that, with the introduction of the Kadawa irrigation project there was a significant increase in the employment opportunities in the study area.

To complement the questionnaire responses an interview result on the question whether KIP has provided opportunities for employment in the study area, their responses about the number of labourers required for cultivating per acre concerning various crops were presented in table 2 below:

**Table 2: Labour Requirement in Irrigation Cultivation Per Acre**

| Labour required/acre | Rice | Tomato | Wheat | Maize | Onions | Pepper |
|---|---|---|---|---|---|---|
| Land preparation | 5 | 5 | 5 | 5 | 5 | 5 |
| Planting/broadcasting | 1 | 5 | 1 | 5 | 5 | 5 |
| Weeding | 5 | 5 | 5 | 5 | 5 | 5 |
| Chemical application | 2 | 1 | 2 | 1 | 1 | 1 |
| Watering | 10 | 10 | 5 | 5 | 8 | 10 |
| Harvesting | 10 | 20 | 10 | 13 | 10 | 5 |
| **Total** | **33** | **46** | **28** | **34** | **34** | **31** |

**Source**: Field Survey, (2018)

Based on table 2, irrigation and rain-fed agriculture require a diverse labour force both in quantity and technical quality. For various purposes such as land preparation, weeding, adding of chemicals, watering, and harvesting of the products somewhere in different seasons, most of the irrigating farmers in the study area employed different labourers at different levels of wages. As the result shows, though the employment is seasonal ranging from January to March and from May to September, irrigators employed on average three to five daily local labourers for different agricultural activities in different seasons. For instance, from land preparation to the harvesting of rice per acre may need the services of not less than 33 labourers, a farmer needs the services of not less than 82.5 labourers to cultivate one hectare of rice. This is applied to other crops like wheat. But for tomatoes, pepper, and onions to cultivate a hectare of land require the services of not less than 115, 70, 85, 85, and 77.5 labourers respectively who are to be paid different wages within the prevailing season. Table 3 below presents the total irrigated land covered and the labour required within the years under review.

**Table 3: Irrigated Land Covered and the Labour Required from 2000-2013**

| Year | Irrigated Land (HA) | Labour Required |
|---|---|---|
| 2000 | 13,652.00 | 1,250,353 |
| 2001 | 13,057.5 | 1,200,188 |
| 2002 | 12,738.00 | 1,162,805 |
| 2003 | 14,380.00 | 1,322,314 |
| 2004 | 13,600.00 | 1,220,800 |
| 2005 | 13,171.16 | 1,250,716 |
| 2006 | 13,114.00 | 1,184,051 |
| 2007 | 12,750.00 | 1,032,925 |
| 2008 | 12,525.00 | 1,175,625 |
| 2009 | 13,143.59 | 1,223,791 |
| 2010 | 13,500.00 | 1,200,965 |
| 2011 | 12,070.00 | 965,853 |
| 2012 | 13,127.00 | 989,714 |
| 2013 | 12,720.00 | 1,143,374 |

**Source**: Adapted from HJRBDA, (2015:1-8).

Looking into the total land covered in the irrigation cultivation in table 3 (dry season cultivation) which is the concern of the study from the previous seasons will provide details of the opportunities created by the dry season farming in the study area. For instance, rice, wheat, maize, tomato, onion,

cowpea, pepper, cucumber, and cabbage cultivations for the years under review. A look into the interview response above will reveal that 83 number of labour is required in cultivating a hectare of rice in dry seasons; 115 is required to cultivate a hectare of tomato, 70 for wheat, 85 for maize, and onions and pepper required 78 labourers. Multiplying the labour requirement for cultivating a hectare by the number of hectares cultivated will give a total labour requirement of 1,250,353 for the year 2000 alone. This implies that the irrigation farming in Kura and Garun Malam local government areas has the potential of creating daily employment opportunities of not less than 1.25 million opportunities among irrigation farmers. This applies to all years under review with a differing number of opportunities obtainable based on the number of hectares of land under cultivation. Therefore, it is safe to say that irrigation project creates job opportunities for a large segment of farmers in the study areas. For more detail, the secondary data obtained from HJRBDA on the number of hectares cultivated within the years under review is provided which is computed by the labour required for cultivating the various crops for each year by the researcher and presented to complement the questionnaire and interview information presented in the table above.

Furthermore, interview responses have shown that, with the irrigation project, there was a proliferation of small, medium, and large-scale rice processing mills. According to the responses of the majority of those interviewed indicates that there are over 100 rice processing mills in Kura, over 20 in Imawa, over 30 in Danhassan and environs, over 20 in Dakasoye, 30 in Daka Tsalle, and over 40 rice mills in Garun Malam town and Chiromawa with over 30 rice processing mills. Also, interview responses indicate that with the availability of these rice mills more youths, as well as housewives, are engaged in the buying, milling, and selling activities of agricultural products in the study area. in essence, rice milling has employed over 20,000 people.

**Test of hypothesis**

**Table 4: Regression Model Summary Between Kadawa Irrigation Project and Provision of Employment Opportunities**

| Model | R | R Square | Adjusted R Square | Standard. Error of the Estimate |
|---|---|---|---|---|
| 1 | .751[a] | .564 | .563 | .58000 |

a. Predictors: (Constant), Kadawa Irrigation Project

**Source**: Field Survey, (2018)

Table 4 provides the R and R2 values. The R-value represents the simple correlation and is 0.751 or 75.1% which indicates a high degree of correlation, the R2 value indicates how much total variation in the dependent variable (employment opportunities) could be explained by the independent variable (Kadawa irrigation project). In this case, 0.564 or 56.4% is statistically significant, the adjusted R2 =0.56.3 indicates the likely hood of 56.3% of IV to cause a change in the DV (employment opportunities)

**Table 5: Regression ANOVA Between Kadawa Irrigation Project and Provision of Employment Opportunities**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | .616 | .065 | | 9.477 | .000 |
| | Kadawa Irrigation Project | .462 | .023 | .751 | 19.703 | .000 |

a. Dependent Variable: Kadawa Irrigation Project

**Source**: Field Survey, (2018)

Table 6 indicates that the regression model predicts the DV significantly well. For the predictor (kadawa irrigation project), Y=0. .616+0. .462X for the standardized Beta coefficient, the result shows that KIP can cause a 75.1% change in the provision of employment opportunities of Kura and Garun Malam Local Government Areas. With P-value =0.000 which is less than 0.05.

Based on the data presented and hypotheses tested the followings are the major findings of the study:

a. The study revealed that KIP has significantly improved the opportunities for employment in the study area within the years under review. For instance, with annual cultivation of 13,652.00 hectares of land in the year 2000 and 13,057.5 hectares of land for the year 2001 has provided employment opportunities to 1,250,353 and 1,200,188 labourers respectively covering dry season farming as evidenced in Table 3.

b. The study also revealed that KIP has facilitated the emergence of small, medium, and large-scale rice processing industries located in different places within the study area as shown in the interview analysis which increased the employment opportunities and generated over 20,000 employments people.

c. It was also discovered that KIP has provided opportunities for the youth, children of school age, and women by engaging in various businesses ranging from local processing of irrigation output, engaging in harvesting, sale, and marketing of agricultural output.

**Conclusion and Recommendations**

The study concludes that KIP has significantly impacted the Irrigation farmers more especially in the area of increased access to land and employment opportunities which helps in reducing poverty the irrigation farmers. Sequel to the forgone discussions and findings and conclusion reached, the following recommendations were offered:

a. It is recommended that HJRBDA should intensify its effort towards increasing the land coverage for irrigation by increasing to 22,000 hectares as it was originally designed to cover. This will increase the opportunities for more employment for the youth.

b. Furthermore, there is a need for government intervention to create more and adequate market with the increased production of some crops like wheat where poor price as a result of the lack of interlinkage between agro-allied industries and the farmers has de-motivated most of the farmers in producing the crop which has affected the opportunities for more employment. Linking the farmers with those industries will boost the production of the crops, reduce the reliance of the industries on the imported product which will lead to the provision of more employments on farms and industries this will raise the country's GDP.

c. More so, Government should make necessary efforts in fostering the general market distribution of primary commodity markets through improvement in transportation networks, marketing and storage infrastructure as well as irrigation infrastructure.

d. Finally, more credit schemes on agriculture provided by the current Buhari administration should be extended to irrigation farmers in the area to establish small, medium, and large processing industries and agrochemical industries in the area which is hoped to increase the employment opportunities for irrigation farmers in the area.

**References**

Achegbulu, J. O. (2008). "The Effects of Unemployment on Socio-Economic Development in Nigeria." Being A Seminar Paper Presented to The Department of Public Administration, A.B.U., Zaria (Unpublished).

Adamu S. (2013). Constraints on Sustainability of Ward Development Project Policy in Niger State, Nigeria. *ABU Journal of Public Administration.*

Amupitan, O. (2011). "An Assessment of the Role of The National Directorate of Employment (NDE) in Reducing Graduate Unemployment in Kaduna State (2005-2009)" An M.Sc. Dissertation, Ahmadu Bello University, Zaria (Unpublished)

Aigbokha, B. (2001). *Resuscitating Agricultural Production (Cocoa, Cotton, Groundnut, Palm Oil, Rubber Etc.) For Exports. CBN Proceedings of the 10th Annual Conference of the Zonal Research Unit, Ibadan, April 13-16.*

Akindele, S. T. & Adebo, A. (2004). The Political Economy of River Basin and Rural Development Authority in Nigeria: A Retrospective Case Study of Owena-River Basin and Rural Development Authority (ORBRDA). *Journal of Humanity and Ecology* 16(1): 55-62 (2004)

Awoyemi, T. (2011) *Rural Non-Farm Incomes and Poverty Reduction in Nigeria. African Economic Research Consortium Research Paper 224. Nairobi, Kenya: African Economics Research Consortium.*

Ayodele, O. S., Obafemi, F. N., & Ebong, F. S. (2013). Challenges Facing the Achievement of The Nigeria Vision. *Global Advanced Research Journal of Social Sciences, 27, 143-157.*

Baba, M. K. (1993). *Irrigation Development Strategies in Sub-Saharan Africa: A Comparative Study of a Traditional and Modern Irrigation System in Bauchi State, Nigeria.* Ecosystem and Environment in Yahaya, M. K. (2002) Development and Challenges of Bakolori Irrigation Project in Sokoto State, Nigeria *Nordic Journal of African Studies 11(3): 411-430 (2002)*

Chukwuma, D. & Uju, E. (2013). Does Agriculture Matter for Economic Development? Empirical Evidence from Nigeria *Journal of Finance & Economics* Volume 1, Issue 1

Dauda, T. O, Asiribo, O. E. Akinbode, S. O., Saka, J. O. 1. & Salahu, B. F. (2009). An Assessment of The Roles of Irrigation Farming in the Millennium Development Goals *African Journal of Agricultural Research* Vol. 4 (5) Pp. 445-450.

Federal Republic of Nigeria (1976). Official Gazette Decree 25 Of 16th June 1976 Federal Ministry of Information, Lagos.

Frank & Bernard, (2001). "An Assessment of The Role of the National Directorate of Employment in Reducing Graduate Unemployment in Kaduna State".

Hadejia-Jama'are River Basin Development Authority (1985). A Brief on the Kano River Project, Phase I.

Hadejia Jama'are River Basin Development Authority (2004). The Achievement of Hadejia Jama'are River Basin Development Authority, Kano. Paper Presented to The Distinguished Senate Committee on Water Resources, H.J.R.B.D.A. Kano

Hadejia Jama'are River Basin Development Authority (2015). Kano River Irrigation Project Crop Production and Value 2000-2013. Annual Reports

International Labour Organization Publication. (2005). Youth: Pathway to Decent Work (Defining Youth). 1450-2275. Issue 11.

Kano State Ministry of Agriculture 1980). Cited in Muhammad, S.S. (2010) The Impact of Kadawa Irrigation Project on Socio-Economic Development of Kura And Garun-Malam Local Government Areas Kano State. PGDPA Project, Ahmadu Bello University, Zaria (Unpublished).

Keynes, M. (1975). *Essays on John Maynard Keynes.* Britain: Cambridge University Press.

Krejcie, R. V. & Morgan, D. W. (1970). Determining Sample Size for A Finite Population. Retrieved From www.kenpro.org/sample-size-determining On 30th July, 2015.

Margaret, A. & George, M. (2016). Youth Employment, Agricultural Transformation and Rural Labour Dynamics In Nigeria. *The International Food Policy Research Institute (IFPRI) And Programme Leader of IFPRI's Nigeria Strategy Support Programme.* Abuja, Nigeria. Newcastle University, Newcastle, UK Available At https://creativecommons.org/licenses/By/4.0/.

Muhammad, S. S. (2010). The Impact of Kadawa Irrigation Project on Socio-Economic Development of Kura And Garun-Malam Local Government Areas Kano State. Unpublished PGDPA Project, Ahmadu Bello University, Zaria.

National Bureau of Statistics. (2015). Statistical News: Labour Force Statistics No. 476. Abuja: The NBS Publication.

NBS & the World Bank. (2013). *Nigeria's Living Standard Measurement Study–Integrated Survey on Agriculture*, 2012-2013. Washington, DC: World Bank.

Solow, R. M. (1980). Theory of Unemployment, London: Macmillan Cited in Amupitan, O. (2011) An Assessment of The Role of The National Directorate of Employment (NDE) In Reducing Graduate Unemployment in Kaduna State (2005-2009). An M.Sc. Dissertation, Ahmadu Bello University, Zaria (Unpublished)

Rahji, M. & Rahji, F. R. (2008). The Implication of Household Health Status on Farm Income, Food Insecurity and Poverty in Nigeria. *Agric. J.* 3 (3): 241-247.

Reynolds, N. & Diamantopoulos, A. (1998). The Effect of Pretest Method on Error Detection Rates: Experimental Evidence. *Euro. J. Mkt.* 32(5/6): 480 - 498

River Basin Development Authorities Decree (No. 87) P. A683 (1979).

Sangari, D U (2006). An Evaluation of Water and Land Uses in The Kano River Project, Phase I, Kano State.*JASEM* ISSN 1119-8362 Vol. 11 (2) 105 - 111 Available Online At www.bioline.org.br

Sangari, D. U. (1996). Characteristics and Problems of Sustainable Fadama Development in Northern Nigeria. *Journal of Social and Management Studies*. Vol. 3. 114-127

Suchman, E. (1963). *Evaluative Research Principles in Public Service and Societal Action Programmes*. Russel Sage Foundation, New York.

Vlachos, E. (1972) Socio-Economic Aspects of Irrigated Agriculture Presented at L'Institut De Recherches Agronomiques Tropicales Et Des Cultures Vivrieres, And The International Institute Of Tropical Agriculture, Ibadan, Nigeria, October 23-27, 1972. Sponsored by The Ford Foundation.

Yahaya, M. K. (2002) Development and Challenges of Bakolori Irrigation Project in Sokoto State, Nigeria. *Nordic Journal of African Studies* 11(3): 411-430 (2002)

Yusuf, B., Yusuf, H. A. & Idris, M. (2019). Effect of Kadawa Irrigation Project on Agricultural Productivity in Kura And Garun Malam Local Government Areas of Kano State (2000-2015). *Gombe Journal of Administration and Management (GJAM) Volume 2 (2).*