Article

Rural Transformation and Labor Market Outcomes among Rural Youths in Nigeria

Adedoyin Mistura Rufai [1] **, Adebayo Isaiah Ogunniyi** [2] **, Kabir Kayode Salman** [3] **, Mutiat Bukola Salawu** [4] **and Abiodun Olusola Omotayo** [5,*]

1   World Bank Group, Abuja 900231, Nigeria; dmisty28@yahoo.co.uk
2   International Fund for Agricultural Development (IFAD), Abuja 900101, Nigeria; a.ogunniyi@ifad.org
3   Department of Agricultural Economics, University of Ibadan, Ibadan 200213, Nigeria; kksalmann@gmail.com
4   Federal College of Animal Health and Production Technology, Ibadan 930103, Nigeria; salawumutiat@gmail.com
5   Food Security and Safety Niche Area, Faculty of Natural and Agricultural Sciences, North West University, Private Bag X2046, Mmabatho 2745, South Africa
*   Correspondence: 25301284@nwu.ac.za; Tel.: +27-611649252

Abstract: In Nigeria, unemployment in rural areas translates to economic problems, such as high levels of rural–urban migration. Interventions aimed at promoting rural transformation and development are designed to generate employment by promoting the growth of sectors such as manufacturing and services in rural areas. In this study, the General Household Survey (GHS) panel data for the post-planting and post-harvest periods of the 2011/2012 and 2015/2016 cropping seasons for Nigeria was used to investigate developments in rural areas in Nigeria between 2011 and 2015, and identified how these developments influenced labor market outcomes among rural youths. Fixed effect models were employed to control for unobserved heterogeneity that may exist because of the different years in the data used. Key levers of sustainable social and economic development, such as access to finance, health services, markets, and infrastructure such as electricity, were considered. The empirical results from the study revealed that being educated as well as having access to infrastructure and information had positive effects on the number of youths that took up wage/salary employment in the rural areas. The study concluded that the diversification of youths into other sectors would have higher growth effects on the development of rural areas, as they can invest more in agriculture, while also reducing the level of dependence on the sector. The study recommends an increase in budgetary allocations for education and rural development projects, with a special focus on electricity and financial institutions, while increasing access to information on available job opportunities.

Keywords: binary outcome models; off-farm; rural development; principal component analysis; wage employment

1. Introduction

Agriculture persists as the main employer of labor in the rural areas in Sub-Saharan Africa (SSA). In Nigeria, about 70% of the youth-dominated labor force lives in rural areas and only very few of them work in the non-farm sector as well as in small and medium-scale enterprises that depend directly or indirectly on agriculture [1–4]. While their employment status may be seasonal or casual, the majority of the rural youths earn very low income/wages while they work under unfavorable and unsafe working conditions [5,6]. This has persisted even though rural development projects which address increasing access to economic resources such as electricity, school infrastructure, health services, employment opportunities, and portable water have been put in place by successive governments to improve the living and working conditions among rural dwellers. Additionally, while there has been some focus on economic development, other key drivers of sustainable

development, which promote a balance between economic prosperity, human capital development and a healthy environment, receive little attention [7].

While a rise in non-farm income is an expected outcome of structural transformation, the World Bank and International Fund for Agricultural Development (IFAD) [8] explained that most of the non-farm activities in rural areas are often related to agriculture and the overall food system, hence economies that were successful in rural diversification were those that had strong and continuously growing agricultural sectors. Therefore, to increase the level of rural youth engagement in both farm and non-farm activities in rural areas, there is a need to put in place policies and interventions that would facilitate the need (demand) for rural labor and also improve the quality (supply) of labor in those areas [8–11], while addressing other economic and social issues characteristic of rural areas so people can fulfill their potential in dignity, equality, and a healthy environment (The 2021 Nigeria Sustainability Outlook by PwC) [7]. With the quest to develop the agricultural sector and to reduce the level of unemployment in Nigeria, drivers of sustainable development, such as access to infrastructure including electricity and markets, information, finance, and other welfare indicators, were assessed in terms of their influence on the involvement of youths in both on-farm and non-farm employment over the years remains germane [12,13]. In this regard, the General Household Survey (GHS) panel data covering the post-planting and post-harvest periods of the 2011/2012, 2013/2014 and 2015/2016 cropping seasons for Nigeria was used to assess the relationship between rural transformation and employment choices among youths in this study. In analyzing the data, fixed effect models were employed to control for unobserved heterogeneity that may exist because of the different years.

A growing number of studies have examined the relationship between government investment and policies in rural areas and youth employment using various indicators. This study differentiates itself from studies such as [7,14,15], that have assessed how access to economic resources influenced the engagement of youths in paid off-farm work in Nigeria in several ways. Unlike these studies that used cross-sectional data and focused on specific states within Nigeria, this study used panel data and gave a broader outlook by looking at various types of off-farm employment in rural areas at the national level. Compared to cross-sectional data, the use of panel data allowed the authors to minimize estimation biases, increase efficiency, and account for variability across groups in the analyses. Though Adeoye, et al. [16], used the 2013 GHS data and Van den Broek and Tilip used both 2013 and 2015 GHS data to analyze the extent of off-farm diversification at the national level, this study differentiates itself by using three waves (2011, 2013, and 2015) of the GHS data for Nigeria. Additionally, this study also differentiates itself from both studies by considering youths that might be in dual employment positions and including more indicators of rural transformation, such as access to health facilities, information, and basic needs (housing).

The main objective of the paper was to examine how key levers of sustainable social and economic development, such as access to finance, health services, markets, and infrastructure such as electricity, have influenced labor market outcomes among rural youths. The labor market outcomes among youths were specified by wage/salaried employment, self-employment, and dual employment (i.e., being employed in both wage/salaried employment and self-employment) in the study. The goal of the study is to provide critical policy insights into how interventions aimed at promoting rural transformation and development have influenced employment choices made by rural youths and to provide recommendations on how such interventions can be more effective to promote economic, environment, and community sustainability.

2. Background

2.1. Nigerian Youth Employment and Sustainable Development Policies

In 2017, the ERGP (2017–2020) was designed to restore Nigeria's economic growth in reaction to the negative growth recorded by the country in 2016. The broad objectives of ERGP were to restore growth through macroeconomic stability and economic diversifi-

cation; to build a globally competitive economy through investment in infrastructure; to improve the business environment and promotion of digital-led growth; and to facilitate investment in the Nigerian people through programs on social inclusion, job creation, youth empowerment, and improved human capital. To achieve these objectives, one of the strategies under the ERGP was to invest in Nigerian citizens by improving the health and education system as well as by addressing severe land degradation and desertification while eliminating gas flaring by 2020. Key components to achieving these objectives were implementing social safety net programs targeted at the vulnerable; boosting job creation and stressing an emphasis on made-in-Nigerian goods; improving the quality of teachers; and expanding the coverage of the NHIS.

Though the country improved in segments, such as in terms of economic diversification and the ease of doing business under the ERGP, the country still needs to improve in terms of job creation and infrastructural development to improve revenue generation by the government. In 2020, the Nigeria Economic Sustainability Plan (NESP) was developed as a successor plan to the ERGP. The NESP is a 12-month NGN 2.3 trillion 'Transit' plan designed to promote local production and the use of local materials; economic stimulation to ensure liquidity and prevent business collapse; and job preservation and both the creation and provision of social protection to vulnerable groups, including women and persons living with disabilities. The NESP includes a plan to reduce annual fuel subsidies and a commitment from the federal government to promote the use of green energy by delivering and maintaining about five million new solar connections under a solar power strategy.

However, several factors influence the decision of youths to engage in off-farm employment and to determine the type of jobs they engage in. References [4,17–19] revealed that due to restricted opportunities in rural areas, desperate youths going into off-farm work choose low-paying, unskilled off-farm wage employment to earn a living [4,18–20]. The low employment opportunities for youths in rural areas have been related to the underdevelopment and poor access to economic resources [21]. References [22,23] explained that the unfavorable conditions in the rural areas encourage youths to migrate to urban areas in search of jobs, thus reducing the availability of labor in rural areas while also widening the informal sectors in urban areas as well as making sub-optimal contributions to economic development.

Bezu and Holden [24] explained that if the non-farm sector in rural areas is strong and viable, most youths would most likely remain in the rural areas and diversify into other sectors while also engaging in activities in the agricultural sector. This is evident as the availability of key infrastructures, such as electricity, markets, and pipe-borne water, have been identified as major drivers of diversification in rural areas in Nigeria [7,16]. Other characteristics such as the level of education [7] and ownership of productive assets such as land [16] have also been identified to influence participation in off-farm jobs. Access to sound education also influences the capacity of youths to take up jobs outside the agricultural sector. Poorly educated youths, without the right skills have slimmer chances of being employed in decent and well-paying jobs. Even when they are engaged in other sectors such as manufacturing and construction work, low-income levels and underemployment remain as common features among them [20,25]. In addressing the challenges of poor development and its economic implications in rural areas, Timmer and Timmer and Akkus [1] opined that effective policies and interventions that promote rural transformation can increase the relative contribution of sectors, such as industries and services, while reducing the contribution from agriculture. Such policies also reduce the level of subsistence farming among agricultural households as it promotes increases in agricultural productivity and raises the quantity of marketable surplus [2]. This is evident as studies such as [7], revealed that off-farm income has positive and significant effects on-farm output and the demand for purchased inputs.

2.2. Theoretical Framework and Econometric Model Specification

Theoretical Perspective

Diversification under the sustainable livelihood framework is considered as one of the options taken by people to reduce poverty and vulnerability, and to cope with and recover from stresses and shocks while maintaining or enhancing their capabilities [26,27]. However, diversification is strongly related to whether or not (and to which extent) people have access to the five forms of capital assets, depicted as human capital, social capital, natural capital, physical capital, and financial capital. Applying this to off-farm employment among youth implies that access to capital assets and the extent of their access influences the choice of youths to diversify into employment outside the agricultural sector. In rural areas, youths struggle in terms of access to natural assets such as land. Rural areas are also disadvantaged in terms of physical infrastructure, such as good roads, potable water, and shelter, while access to health and financial services may be very difficult. The poor level of development in rural areas translates to a low level of investments in rural areas, which keeps job prospects for youths very low. Based on these theoretical perspectives, we construct our first hypothesis in line with the argument that access to capital assets increases the probability of youth participation in off-farm employment opportunities in rural Nigeria.

Hypothesis 1 (H1). *Access to capital assets increases the probability of youth participation in off-farm employment opportunities in rural Nigeria.*

Buchenrieder and Mollers [27], also used the demand-pull/distress-push concept to explain labor shifts from the agricultural sector to the rural non-farm sector in diversification. The demand-pull concept describes situations where agricultural labor engages in more lucrative employment in the rural non-farm economy. Agricultural workers that take up lucrative jobs in rural areas often have characteristics that enable them to do so as demand-pull factors, including education level, skills, and access to social networks. The distress-push concept describes a situation where agricultural workers are pushed into poorly paid jobs because of inadequate agricultural income. Factors that promote distress in push situations include low farm productivity, low financial capacity, small farm size, and low land productivity. Both demand-pull and distress-push factors are constrained by a lack of infrastructure. While distress push factors have benefits of improving the livelihood of the poor by increasing income, they are also constrained by inefficient institutions, high unemployment rates, poor access to markets, and legal and cultural barriers. Thus, this line of argument indicates that when making choices about off-farm engagements, different factors influence decisions regarding which type of off-farm employment to engage in, and this is captured in the second hypothesis.

Hypothesis 2 (H2). *Demand-push factors (level of education) and distress-pull factors (farm productivity) influence the type of off-farm employment opportunities youths engage in, in rural Nigeria.*

In addition to the factor which influences employment choices, the large dependence on agricultural work in rural areas reduces the demand for human capital development particularly in terms of education and skill acquisition [18,23]. Consequently, rural youths are often the most disadvantaged with little experience and low chances of obtaining capital and other production assets [5].

3. Materials and Methods

The General Household Survey (GHS) data for Nigeria was used. The panel data was collected from 5000 agricultural households in the post-planting and post-harvest periods in 2011, 2013, and 2015. In collecting the data, a two-stage sampling procedure was utilized. In the first stage, enumeration areas (EA) were identified and selected using the Probability Proportional to Size (PPS) criteria. The PPS was based on the number

of households in each in EA and the number of EAs in each state. In the second stage, ten households were randomly selected from each EA. The data is representative at the national level and has information about the household, women, youths, and children in agricultural households. It contains information about the socio-economic characteristics of each household member, employment type, and sector of employment agricultural activities and productivity, among other factors. The data covers both rural and urban areas in the country. In order to create the study sample, the respondents selected were restricted to youths that lived in rural areas and were within the age group of 18 to 35 years between 2011 and 2015. A balanced panel data set containing 1575 youths across the three years (2011, 2013, and 2015) was used. While there is the probability of rural youths engaging in on-farm work as agricultural labor, this study specifically focuses on the engagement of youths in income earning activities outside the farm. The two labor market outcomes considered in this study were (1) employment in wage/salaried job and (2) self-employment/engagement in a household enterprise.

Model Specification

We estimated the effect of rural transformation on labor market outcomes using the fixed effect (FE) model. This model allows for the consideration of the individuality of time (year) groups available in the model [28]. In this study, the FE was used to consider the differences in labor market outcomes that may occur as a result of transformation in rural areas over time. This model helps to control for unobserved heterogeneity that may exist as a result of the different years. Such time-invariant unobserved factors may correlate with independent variables in the model and, as such, produce biased results. We estimated different models to understand the relationship between rural transformation and labor market outcomes.

First, we modeled the explanatory variables against labor outcomes in the context of the wage/salaried employment model (Models 1–3). Second, we used self-employment in the household model (Models 4–6). Finally, we estimated the role of rural transformation on engaging in dual employment (both wage/salaried employment and self-employment, Models 7–9). For each model, we estimated the likelihood of labor market outcomes, specified as 1 if a youth is engaged in the type of employment and 0 otherwise. The model is specified below:

$$LMO_{it} = \gamma_l SEC_{it} + \gamma_x RTI_{it} + \gamma_x X_{it} + \gamma_x I_{it} + \gamma_x F_{it} + \nu_{it} + \varepsilon_{it} \tag{1}$$

where LMO_{it} denotes the labor outcome indicators (wage/salaried employment, self-employment/employment, and dual employment) for individual youth i at time t. SEC_{it} denotes the socioeconomic characteristics (such as age, sex, and level of education) for individual youth i at time t. RTI_{it} is a vector of indicators for rural transformation, X_{it} denotes the access to infrastructure (such as access to the market, banks, electricity, and health facility), I_i represents the institutional related variables such as access to extension services and credit facilities, F_{it} constitutes the vector of the cluster/district level, and ν_i are household fixed effects.

Following previous studies [29,30] the main drivers of rural transformation are: (1) diversification from complete reliance on agriculture, (2) progressive globalization of agri-food systems, and (3) urbanization of rural areas through increased access to public services. The authors also identified the development of roads and telecommunication services as additional factors essential to the three main factors mentioned, as there can be no diversification or globalization of food systems without adequate infrastructure for transportation. Raising the productivity of the agricultural sector in rural areas through technology, better inputs, and access to credit, amongst other avenues, is also recognized as central to rural development as it promotes the spillover to non-farm and non-agricultural sectors (United Nations-Department of Economic and Social Affairs, New York City, NY, USA, 2021). The rural transformation process generally involves a reorganization process in rural areas, which results in a decline in economic, social, and cultural differences between such areas

and urban areas (Wang et al., 2013). These differences are often seen in terms of access to education, health services, information, infrastructure, and productivity, amongst others.

In this study, we focused on the extent of development in rural areas by considering the availability of public services and infrastructure in rural communities among youths in such areas to generate the rural transformation index (RTI) in this study. The indicators for rural transformation are specified as: infrastructure access to markets; access to banks; access to electricity; access to health facilities; access to information, radio, and mobile phones (all dummy variables, yes = 1.0 otherwise); and access to basic needs, e.g., number of rooms in households (continuous).

The RTI was generated using principal component analysis (PCA). Though we acknowledge that dummy variables are problematic for factor analysis (generation of dimensions), the approach is acceptable for our needs in this study. The PCA linearly transforms data into a substantially smaller set of uncorrelated variables called principal components such that it contains most of the information in the original data. The principal components are found by calculating the eigenvectors and eigenvalues of the covariance matrix. The principal components (PC_J) of variable $X_1, \ldots, X_n$ are linear combinations $\alpha_{i1}, \ldots, \alpha_{in}$ such that the dimensions of $a_n < x_n$. The principal component (PC_J) is given as:

$$PC_J = a_j x \tag{2}$$

where $j = 1, \ldots, n$.

The first principal component accounts for the largest variance among the variables and the variance decreases from PC_1 to PC_n. The index is generated as a weighted average of the variable scores with weights equal to the loadings of the first principal component.

$$c_i = \sum_{i=1}^{n} w_1 \, x_1 \tag{3}$$

where C = composite index, w = weight attributed, and n = number of variables.

4. Descriptive Statistics

4.1. Socio-Economic Characteristics

About 51.24% of the respondents were males and 52.32% lived in the northern geopolitical zones of the country. As expected, the average age of youths increased across the years. In 2011, the average age of youths was 23.76 ± 4.30 and this rose to an average of 28.00 ± 4.23 in 2015. The level of education among youths also increased across the years. There was a drop in the proportion of youths with no education and primary education, while there was an increase in the proportion of youths with higher degrees across the years. This is consistent with the findings of [22], which revealed that there has been a continuous increase in school enrollment in both rural and urban areas of Nigeria over the years (see Table 1).

4.2. Labour Market Outcomes

About 10.16% of rural youths were employed in wage/salaried jobs in 2011. This dropped slightly to 9.77% in 2013 and then rose to about 11.68% in 2015. This implies that only a small proportion of youths were engaged in wage/salaried employment over the years. The obvious variation across the years was in the sectors in which youths took up wage/salaried jobs (see Tables A5 and A6). In 2011, about 33.44% of the employed youths earned wages/salaries from jobs in the agricultural sector. However, this dropped to 21.59% in 2013 and 7.64% in 2015. About 11% of youths were employed in construction in 2013 compared to 3.75% in 2011. In 2015, more youths were employed in education (20.14%), financial and personal services (14.58%), health (10.42%), and public administration (17.36%) sectors.

Table 1. Descriptive statistics.

	2011		2013		2015	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**
Age	23.75	4.30	25.65	4.35	28.00	4.22
Female	0.49	0.50	0.49	0.50	0.49	0.50
Education						
None	0.10	0.30	0.09	0.28	0.09	0.29
Primary	0.24	0.43	0.17	0.37	0.16	0.37
Secondary	0.55	0.49	0.59	0.49	0.53	0.49
Higher	0.09	0.29	0.15	0.35	0.20	0.40
Employment						
Wage/salaried job (yes)	0.10	0.30	0.09	0.29	0.11	0.32
Self-employment (yes)	0.26	0.44	0.25	0.43	0.32	0.46
Dual (wage and self-employment)	0.03	0.16	0.01	0.11	0.10	0.10
Access to rural infrastructure						
Electricity (yes)	0.60	0.49	0.61	0.49	0.63	0.48
Market (yes)	0.59	0.49	0.66	0.47	0.76	0.43
Health facility (yes)	0.72	0.45	0.72	0.49	0.85	0.36
Financial services (yes)	0.28	0.45	0.28	0.45	0.31	0.46
Access to information						
Mobile phone (yes)	0.85	0.36	0.91	0.29	0.96	0.19
Radio (yes)	1.00	0.00	1.00	0.00	0.67	0.47
Internet (yes)	0.09	0.29	0.14	0.35	0.33	0.47
Agricultural production						
Value of output	5030.96	20,515.75	7282.47	42,647.86	9013.31	0
Basic needs						
Number of rooms	4.09	2.86	4.18	2.69	4.18	2.74

The proportion of youths engaged in self-employment/household enterprises increased to 31.60% in 2015 compared to 25.17% in 2013 and 25.90% in 2011. The results indicate that more youths were more likely to be self-employed or work in the household enterprise compared to working for a wage/salary in rural areas. The majority of the self-employed youths were employed in three sectors, namely buying and selling, manufacturing, and services, over the years.

4.3. Indicators of Rural Transformation

About 60% of youths lived in households that had access to electricity in 2011. The proportion of youths with access to electricity grew narrowly to about 61% in 2013 and 63.11% in 2016. More youths had access to markets in 2013 (66%) and 2015 (75%) compared to 2011 (59%). Regarding health facilities, about 71% of youths had at least a healthcare center in their community in both 2011 and 2013, while in 2015, the proportion of youths with access to health infrastructure increased to about 85%. Less than 15% of youths had communities with banks and other financial institutions in 2011. However, in 2013 (42%) and 2015 (44%), more youths had at least one financial institution in their community.

The majority of the youth could assess information through mobile phones as over 85% had access to mobile phones across the years. Additionally, most of the rural youths also had access to radio as in 2011, about 88% had access to radios. In 2013, the proportion of youths with access to radios rose to about 92%; however, in 2015 it dropped to about

67%. This could be associated with the increased availability of radio applications on most mobile phones. Sambira [31] explained that youths in Africa use their mobile phones for most activities, which include communicating, shopping, listening to the radio, and interacting on social media.

In terms of agricultural productivity, over 80% of youths did not have any agricultural output. However, about a quarter of youths worked as household laborers on plots owned by family members across the years (see Appendix A Table A2). This implies that while a significant proportion of youths in rural areas participated in agricultural/farming activities, few of them had their own personal farms/plots. For youths that had agricultural output, the level of their productivity increased across the years as the average value of output rose from NGN 35,060.92 in 2011 to NGN 47,667.68 in 2015. Regarding basic needs, the average number of rooms remained at four.

5. Results and Discussion

5.1. Distribution of Labor Market Outcomes across Socio-Economic Characteristics of Rural Youths and Zones

A higher proportion of males were employed in wage/salaried employment while more females engaged in self-employment or worked in the household enterprise across the years, as shown in Table 2. Adesugba and Mavrotas [3] revealed that the proportion of females in the youth labor force in Nigeria is on the rise and more are earning jobs in the informal sector than the formal sector. Older youths were more likely to be employed in either type of employment as youths aged between 25 and 35 years were more likely to be employed compared to those aged less than 25 across the years. This is consistent with the findings of [32] which revealed that youths aged between 25 and 35 were more likely to work in non-farm enterprises compared to those who were older. The proportion of employed youths varied across the level of education. The proportion of youths without any education and those with primary education that engaged in wage/salary jobs dropped across the years, while the proportion of those with higher education (26.93%) increased in 2015.

For self-employment/engagement in household enterprises, those without any education had the highest proportion of youths engaged across the years. However, while the proportion of those with primary and secondary education engaged in self-employment/household enterprises increased over the years, the proportion of those with higher education dropped in 2015. In the northern zones, the proportion of youths employed in wage/salary employment positions dropped from 11.65% in 2011 to 10.57% in 2013. However, in the southern zones, it increased from 8.52% in 2011 to 12.88% in 2013. For self-employment/employment in household enterprises, the proportion of youths engaged in the northern zones dropped from 29.49% in 2011 to 25.51% in 2013 and rose to 33.78% in 2015. In the southern zones, there was an increase from 21.97% in 2011 to 29.22% in 2015. The drop in the engagement of youths in the northern zones in off-farm work in 2013 could be associated with the occurrence of insurgencies, particularly in the north-east zone. According to Awojobi [33], the peak of the fatalities of the dreaded Boko Haram attacks occurred between 2012 and 2014 after the initial attack in 2009. Commercial activities in the north-east reduced as financial institutions and businesses did not operate regularly, and investors and human capital continued to leave the area due to unprecedented attacks [34]. The F-test shows that there was a significant difference in the proportion of rural youths employed in wage/salaried employment positions and those that were self-employed/employed in household enterprises across sex, age, level of education, and zone of residence across the years.

Table 2. Distribution of labor market outcomes across socio-economic characteristics and zones.

	Employment in Wage/Salaried Jobs			F-Rest	Self-Employment/Employment in Household Enterprises			F-Test
	2011	**2013**	**2015**		**2011**	**2013**	**2015**	
	Yes (%)	Yes (%)	Yes (%)		Yes (%)	Yes (%)	Yes (%)	
Male	12.14	10.85	13.04	11.07 *	18.71	20.35	25.95	88.27 *
Female	8.07	8.62	10.22		33.46	30.29	37.61	
Age								
18–24	6.06	5.56	5.40	81.28 *	15.60	14.59	18.51	238.89 *
25–35	15.50	12.83	13.73		39.33	32.89	35.89	
Education								
None	6.67	4.55	1.30		37.58	30.30	46.10	
Primary	5.71	4.40	3.89	77.86 *	32.99	33.60	42.02	43.08 *
Secondary	10.23	8.72	10.10		22.87	24.38	32.66	
Higher	24.52	25.00	26.93		12.90	14.09	13.62	
Zones								
Northern zones	11.65	9.07	10.57	3.77 *	29.49	25.51	33.78	21.58 *
Southern zones	8.52	10.53	12.88		21.97	24.80	29.22	

Source: Author's computation of GHS 2011, 2013, and 2015; level of significance at * 1%.

5.2. Empirical Results

The effect of rural transformation on labor market outcomes among youths was examined using three different models. For each outcome, the first model examined only the effects of rural transformation (using the transformation index-Appendix A) on the type of employment. The second model included controls for the socio-economic characteristics of youths and their region of residence, while in the third model, the indicators of rural transformation were controlled for individually with the socio-economic and regional variables (see Table 3).

Table 3. Control variables in each model for labor market outcomes.

Variables Controlled for in Each Model	Employment in Wage/Salaried Job Models	Self-Employment/Employment in Household Enterprise Models	Dual Employment Models
Index only	1	4	7
Socio-economic characteristics	2	5	8
Individual indicators of rural transformation with controls for socio-economic characteristics	3	6	9

The selected independent variables were subjected to a variance inflation factor (VIF) test to check for multicollinearity among the variables. For the employment in the wage/salary employment model, the mean VIF was 1.09, while in the self-employment model, the mean VIF was 1.10. This indicates the absence of any significant multicollinearity in any of the models, as it was less than 10 (see Appendix A Tables A3 and A4).

5.2.1. Socio-Economic Characteristics

For the socio-economic characteristics of youths, despite the controls for rural transformation in Models 2 and 3 for self-employment and Models 5 and 6 for wage employment, the results revealed that compared to females, males were more likely to be engaged

in wage/salaried employment and less likely to engage in self-employment across time. This is consistent with the findings of [35], which revealed that more men participate in wage and self-employment opportunities compared to women, though the participation of women in off-farm employment opportunities was more common in Nigeria. Age had a positive significant relationship with the employment of youths in wage/salaried employment and self-employment positions. This implies that over time, older youths in rural areas were more likely to engage in diversification strategies, such as engaging in off-farm employment positions in rural areas. This also confirms the distribution of employment across age in Table 4, wherein those aged between 25 and 35 years were found to have a higher proportion of those employed compared to those who were younger. These results are consistent with the findings of [36], which revealed that unemployment is particularly common among younger youths (aged between 15 and 24 years) and young females. Adesugba and Mavrotas [3] associated the high level of underemployment among youths aged between 15 and 24 years to the fact that such youths are usually still in school or receiving some form of education.

The coefficients for the levels of education show that secondary and higher levels of education have a positive and significant relationship with wage/salaried employment over time. The results indicate that educated youths are more likely to engage in off-farm employment compared to those with little or no form of education over time. This result is consistent with the findings of [37], and [38] which found that the length of formal education is positively associated with participation in off-farm employment positions. In assessing the pattern of youth employment in Namibia, the Namibia Statistics Agency [39] revealed that having high school education or higher, being married, or being between the ages of 30 and 34 increases the probability of youth employment.

The results, however, also indicate that having tertiary education has a significant negative relationship with being self-employed among youths. This implies that youths with higher levels of education are less likely to start a business of their own. The result indicates that highly educated youths are more likely to depend on blue collared jobs rather than engage in self-employment. Yeboah, Jayne, Muyanga and Chamberlin [38], explained that increased educational attainment enhances the prospects of youths to secure off-farm employment opportunities and raises their career aspirations beyond agriculture; as farming is associated with lower social status, young people are socialized to have career aspirations beyond farming. These result leads us to accept the hypothesis that demand pull factors, such as being highly educated and skilled, allows youths to engage in well paying off-farm jobs compared to those that are less educated.

The coefficient of the northern zones had significant and negative effects on the engagement of youths in wage/salaried employment over time. This implies that compared to the southern zones, less youths are likely to be employed in wage/salaried employment positions in the northern zones. The low likelihood of northern youths in wage/salary employment could be associated with the poor acquisition of skills and low education level attainment in the region. According to the World Bank [40], there is a large geographic divide in Nigeria as the northern part of the country has a higher proportion of uneducated and underemployed youths compared to the southern part.

Only the coefficient of the south-south region had a positive and significant relationship with dual employment over time. However, the coefficients of all the zones had a positive and significant relationship with self-employment over time. This implies that there has been growth in the proportion of youths that engage in self-employment all over Nigeria, irrespective of their location. This may be associated with the low availability of formal jobs, which has forced many youths to start their own business. Self-employment remains the main form of employment in Nigeria as, according to the World Bank Development indicators (WDI), self-employment as a proportion of the total employment in Nigeria is about 80% compared to the Sub-Saharan African average of 75% and world average of 46% in 2019.

Table 4. Rural transformation and labor market outcomes.

	Labor Market Outcomes								
	Wage Employment			**Self-Employment**			**Dual Employment**		
	−1	−2	−3	−4	−5	−6	−7	−8	−9
VARIABLES									
RTI	0.0217 **	0.0112 *		0.0292 ***	0.0125 **		0.144 ***	0.111 ***	
	−0.00372	−0.00321		−0.00502	−0.00128		−0.00201	−0.00146	
Sex (male)		0.0339 *	0.0362 **		−0.0698 **	−0.0607 *		0.000607	0.000548
		−0.00825	−0.0082		−0.0137	−0.0151		−0.00323	−0.00285
Age (years)		0.0136	0.0121		0.0543 **	0.0580 ***		0.00412	0.00397
		−0.0126	−0.0126		−0.00776	−0.00434		−0.00524	−0.00522
Age (squared)		-5.04×10^{-5}	-3.44×10^{-5}		−0.000541 *	−0.000641 **		-4.71×10^{-5}	-4.52×10^{-5}
		−0.000248	−0.000243		−0.000179	−0.000122		9.74×10^{-5}	9.58×10^{-5}
Primary		−0.00254	−0.00615		0.0102	0.000899		0.00949	0.0086
		−0.00628	−0.00636		−0.0215	−0.0239		−0.00445	−0.00344
Secondary		0.0492 *	0.0376		0.0496 *	0.0621 **		0.0127	0.0105
		−0.0157	−0.0162		−0.012	−0.0119		−0.00689	−0.00549
Tertiary		0.186 **	0.169 **		−0.243 **	−0.243 **		0.0223	0.0191
		−0.0258	−0.0272		−0.0361	−0.0382		−0.00835	−0.011
Radio access			0.131 ***			0.0433 **			0.0145 ***
			−0.00469			−0.00476			−0.00296
Phone access			0.283 ***			0.0522			0.108 ***
			−0.0143			−0.0324			−0.00544
Internet access			0.0685 **			0.0874 **			0.0308 ***
			−0.0111			−0.0129			−0.002
Bank			0.196 ***			0.000532			0.0142 ***
			−0.0189			−0.0256			−0.00384
Health			0.0114			0.0217 **			0.0217 ***
			−0.0148			−0.00348			−0.00184
Market			0.006			0.672 ***			0.0329 ***
			−0.0142			−0.0177			−0.00769
Electricity			0.0446 **			0.0913 ***			0.0618 ***
			−0.00573			−0.00723			−0.00444
Rooms			−0.00380 **			−0.00584			7.16×10^{-5}
			−0.000427			−0.00325			−0.00112
ln_ag_pdvty		−0.00733	−0.449 ***		0.0137	0.0910 ***		0.000456	0.00104
		−0.00474	−0.00505		−0.00933	−0.00917		−0.000601	−0.000604

Table 4. *Cont.*

	Wage Employment			Self-Employment			Dual Employment		
	−1	**−2**	**−3**	**−4**	**−5**	**−6**	**−7**	**−8**	**−9**
VARIABLES									
North-central		−0.0258 **	−0.0383 **		0.142 **	0.118 ***		−0.00351	−0.00469
		−0.0051	−0.00596		−0.0165	−0.0116		−0.00593	−0.00523
North-east		−0.00306	−0.0117		0.0197 **	0.0368 ***		−0.00989	−0.0112
		−0.00912	−0.0104		−0.0021	−0.00306		−0.00622	−0.00679
North-west		−0.0296 **	−0.0357 **		0.0730 *	0.0782 *		−0.00834	−0.00840
		−0.0059	−0.00465		−0.0176	−0.0218		−0.00551	−0.00546
South-east		−0.0150	−0.0175		0.0712 *	0.0588		0.0228	0.0227
		−0.0275	−0.0307		−0.0192	−0.0296		−0.0124	−0.0132
South-south		0.0011	0.00562		0.0972 *	0.109 **		0.00967 **	0.0107 **
		−0.0274	−0.024		−0.0286	−0.0254		−0.00183	−0.00221
Constant	0.105 ***	0.267 ***	0.277 ***	0.276 ***	−0.676 **	−0.696 **	0.0154 ***	−0.0733	−0.0825
	0	−0.054	−0.072	−0.009	−0.099	−0.0911	0	−0.0731	−0.0774
Control	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Observations	4728	4728	4728	4728	4728	4728	4728	4728	4728
R-squared	0.009	0.374	0.479	0.04	0.124	0.438	0.04	0.112	0.414
Number of waves	3	3	3	3	3	3	3	3	3

Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$.

5.2.2. Agricultural Productivity

The coefficient of the value of output from agriculture had positive growth effects on the engagement of youths in self-employment over time. This implies that youths that produce more agricultural output are more likely to own their own business outside the farm in rural areas of Nigeria. This is consistent with the findings of [24], which found that agricultural productivity growth had a significant positive effect on the growth of informal (small-scale) manufacturing.

The results also revealed that agricultural productivity had a negative effect on wage/salary employment in the model across time. This indicates that youths that have high output from agriculture are less likely to leave the sector to take up jobs in order to earn wage/salary. Adesugba and Mavrotas [3,41,42] explained that the increased use of mechanization and adoption of technology can increase agricultural productivity and make the sector look more attractive to youths. Shilpi and Emran [21] explained that agricultural productivity growth often leads to structural transformation within the services sector. These results lead us to accept the hypothesis that distress push factors, such as low agricultural productivity and income, can force youths to engage in off-farm jobs to raise additional income.

5.2.3. Rural Transformation and Employment among Youths

The coefficient of the transformation index revealed that having access to infrastructure in rural areas had positive growth effects on the engagement of youths in all forms of employment in rural areas. The coefficient of the transformation index was highest in the dual employment model. This indicates that more youths were likely to engage in both wage/salary employment and self-employment with increased access to economic resources. The results of each indicator of rural transformation in Models 3, 6, and 9 provides more insight on the positive influence of increased access to economic resources on labor market outcomes among youths.

Having access to information through mobile phones, radio, and the internet had a significant positive relationship with youth employment. This indicates that youths with access to information are more likely to be engaged in the labor market. According to the World Bank [43], the difficulty youths face in terms of finding employment and gaining access to inputs such as capital and land is usually augmented by the fact that they have less access to information compared to adults. Sibisi [43] explained that even though more youths are aspiring to become entrepreneurs, the challenges regarding a lack of access to information, networking, mentoring, and finances remain barriers to their efforts of creating employment opportunities for themselves.

Increased access to banks, health institutions, and markets had positive effects on the engagement of youths in self and dual employment. Access to electricity had significant and increasing growth effects on the number of youths engaged in all three forms of employment considered in the study. This implies that improving access to electricity in rural areas would also translate into an increased engagement of youths in the off-farm labor market. Klutsey and Ankomah [36] recommended that the development of infrastructure, particularly electricity, will promote growth in the industrial sector and consequently create employment for millions of job seekers, especially Nigerian youths [44,45]. These results lead us to accept the hypothesis that access to capital assets increases the probability of youth participation in off-farm employment opportunities in rural Nigeria.

6. Conclusions

In this study, the relationship between different indicators of rural transformation and labor market outcomes among rural youths was examined. Panel data covering three periods, including 2011, 2013, and 2015, for 1575 youths was examined using a binary outcome model (fixed effect regression) for panel data. Rural transformation was captured using access to infrastructure, access to information, agricultural productivity, and access to basic needs.

The results from the study revealed that despite the growth in the number of educated rural youths across the years, the majority of youths that were educated had only secondary education. Female youths and the uneducated were more likely to start their own businesses or be engaged in the household enterprise. However, more males and the educated were more likely to work for wages/salary. Youth employment in off-farm work positions is influenced by the level of development in rural areas and, across the years, more rural youths took up off-farm jobs outside the agricultural sector. Youths in the rural areas of the northern zones are less likely to work in wage/salary employment positions compared to their counterparts in the southern zones. Most of the youths that were self-employed/employed in household enterprises were engaged in buying and selling, service delivery, and manufacturing activities. There has been very little improvement in the access to electricity among rural households and both access to financial institutions and services also remains low. Having access to information plays a significant role in the engagement of youths in off-farm work.

From the results, it can be concluded that more rural youths are likely to take up off-farm jobs and diversify into other sectors if rural areas are continuously developed. The diversification of youths into other sectors would subsequently have a higher growth effect on the development of rural areas as they can invest more in agriculture while also reducing the level of dependence on the sector.

7. Recommendations

The findings from this study offer important insights for policy direction.

- Firstly, more educated youths are likely to seek wage employment and are less likely to be self-employed. The Federal Government of Nigeria needs to provide more incentives to encourage investment and business creation among young Nigerians. To increase economic growth, rural youths should be encouraged to acquire skills by strengthening policies and interventions such as the Nigerian Industrial Skills Development Program (NISDP) and the Nigerian Enterprise Development Program (NEDP) to ensure they have the necessary skills to start their own businesses. Rural youth empowerment can also translate to environment and community sustainability.
- Secondly, a significant proportion of youths drop out of school after secondary education. The Federal Government should increase budgetary allocations to the education sector to improve the quality of learning and to establish more tertiary institutions. More rural youths should be encouraged to further their education after attending secondary school through scholarships and bursaries. Such policies will promote economic prosperity and address social differences that exist in communities.
- Thirdly, there has been very little improvement in the access to electricity among rural households and both access to financial institutions and health services remains low. The Federal Ministry of Works and Housing needs to ensure that rural development projects, with a special focus on electricity, financial institutions, and basic needs such as portable water, are initiated. The rural electrification project should be strengthened to ensure that more households in rural areas gain access to electricity. Incentives and policies that would encourage the establishment of financial institutions in rural areas should be designed by the ministry of finance. The solar power strategy under the NESP should be expanded to reduce carbon emissions, contribute to a healthy environment, and ultimately promote environmental sustainability.
- The Federal Ministry of Health needs to ensure that more healthcare facilities are made available and accessible in rural areas. The Federal Government should also ensure that infrastructure such as roads and markets are available in rural areas. These policies will facilitate access to the key levers of sustainable social and economic development, and encourage business startups and investments that would improve job prospects for youths.
- Region-specific interventions should be designed and put in place particularly in the northern zones to increase employment among rural youths and address the

regional differences in terms of youth employment. Such interventions will bridge the developmental gap between regions and facilitate community sustainability especially in less developed areas.

- The Central Bank of Nigeria should also implement policies and incentives that would encourage the establishment of financial institutions in rural areas should be designed by the Ministry of Finance. Increased access to finance resources among rural youths will also translate into increased investments and job creation in rural areas, ultimately promoting economic sustainability.

Appendix A

Principal Component Analysis

The eigenvalues of the PCA for the healthcare indicators show that the first component has a variance of 1.79 and the second component has a variance of 1.02. The variance of the first and second component represents 44.82% and 25.44% of the total variance regarding the access to infrastructure among youths. Electricity had a negative and reducing effect on the infrastructure index in the first component, while access to banks, markets, and healthcare had reducing effects in the second, third, and fourth components, respectively.

Table A1. Variance of principal components.

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	1.79276	0.775214	0.4482	0.4482
Comp2	1.01755	0.138234	0.2544	0.7026
Comp3	0.63519	0.080706	0.1588	0.8614
Comp4	0.55449		0.1386	1.0000

Table A2. Principal components (eigenvectors).

Variable	Comp1	Comp2	Comp3	Comp4
Electricity	−0.0003	0.9777	0.1894	0.0910
Bank	0.5732	−0.1631	0.5713	0.5643
Health	0.5976	0.0376	0.1816	−0.7801
Market	0.5607	0.1271	−0.7776	0.2546

Table A3. Youth participation in the agricultural sector.

	2011		2013		2015	
	Freq.	**%**	**Freq.**	**%**	**Freq.**	**%**
Household agricultural labor						
Yes	472	29.97	454	28.82	364	23.11
No	1103	70.03	1121	71.18	1211	76.89

Source: Authors computation of GHS 2011, 2013, and 2015.

Table A4. Variance inflation factor (VIF) test.

	Employment in Wage/Salaried Job Model			Self-Employment/Employment in Household Enterprise Model		
	VIF	**Tolerance**	**R-Squared**	**VIF**	**Tolerance**	**R-Squared**
Employment variable	1.07	0.94	0.06	1.12	0.89	0.10
North	1.09	0.92	0.08	1.09	0.92	0.08
Sex	1.08	0.93	0.07	1.08	0.92	0.07
Age	1.15	0.87	0.13	1.18	0.85	0.15
Infrastructure index	1.12	0.89	0.11	1.12	0.89	0.11
Radio	1.05	0.95	0.05	1.05	0.94	0.05
Phone	1.07	0.94	0.06	1.07	0.93	0.07
Education	1.24	0.81	0.19	1,23	0.81	0.19
Value of output	1.09	0.92	0.08	1.09	0.92	0.08
Land size	1.11	0.91	0.09	1.11	0.90	0.09
No. of rooms	1.04	0.96	0.04	1.04	0.96	0.04
Distance to water source	1.01	0.99	0.01	1.01	0.99	0.01
Mean VIF	1.09			1.10		

Table A5. Sector of youth engagement in wage/salaried employment positions.

Sectors	2011	2013	2015
	%	%	%
Education	12.64	18.06	20.14
Finance and personal services	6.48	9.69	14.58
Health	6.48	2.64	10.42
Public administration	12.97	14.53	17.36
Construction	3.75	10.57	7.64
Manufacturing	2.04	6.60	2.78
Transportation	4.45	5.72	6.94
Buying and selling	4.79	3.52	3.47
Agriculture	33.44	21.59	7.64
Professional/scientific/technical	4.09	1.76	4.17
Others	8.87	5.32	4.86

Table A6. Sectors of engagement for youths in self-employment/employment positions in household enterprises.

Sectors	2011	2013	2015
	%	%	%
Agriculture	1.96	1.76	1.61
Services	11.27	13.85	11.45
Buying and selling	61.27	52.14	53.21
Construction	1.96	0.76	4.02
Manufacturing	13.48	19.46	19.08
Transportation	6.13	6.80	7.83
Professional/scientific/technical	0.74	1.51	0.80
Others	3.19	3.54	2.01

References

1. Timmer, C.P.; Akkus, S. The structural transformation as a pathway out of poverty: Analytics, empirics and politics. *Cent. Glob. Dev. Work. Pap.* 2008, pp. 1–60. Available online: https://www.files.ethz.ch/isn/91306/wp150.pdf (accessed on 18 October 2021).
2. Robinson, S.; Petrick, M. *Trade-Offs among Sustainability Goals in the Central Asian Livestock Sector: A Research Review*; Justus-Liebig Universitat: Giessen, Germany, 2021; pp. 1–149.
3. Adesugba, M.; Mavrotas, G. *Youth Employment, Agricultural Transformation and Rural Labour Dynamics*; International Food Policy Research Institute (IFPRI): Washington, DC, USA, 2016; Available online: https://www.ifpri.org/publication/youth-employment-agricultural-transformation-and-rural-labor-dynamics-nigeria (accessed on 15 July 2021).
4. Ogunniyi, A.; Babu, S.C.; Balana, B.; Andam, K.S. *National Extension Policy and State-Level Implementation: The Case of Cross River State, Nigeria*; International Food Policy Research Institute: Washington, DC, USA, 2020; Volume 1951, Available online: https://www.ifpri.org/publication/national-extension-policy-and-state-level-implementation-case-cross-river-state-nigeria (accessed on 5 July 2021).
5. Food and Agriculture Organization (FAO); UNICEF. *Impact Evaluation of Africa's Child Grants Programme (CGP) and Sustainable Poverty Reduction through Income, Nutrition and access to Government Services (SPRINGS)*; FAO: Rome, Italy, 2019.
6. Omotayo, A.O. Farming households' environment, nutrition and health interplay in Southwest, Nigeria. *Int. J. Sci. Res. Agric. Sci.* **2016**, *3*, 84–98. [CrossRef]
7. Adelekan, Y.A.; Omotayo, A.O. Linkage between rural non-farm income and agricultural productivity in Nigeria: A tobit-two-stage least square regression approach. *J. Dev. Areas* **2017**, *51*, 317–333. [CrossRef]
8. Ogunniyi, A.; Oluseyi, O.K.; Adeyemi, O.; Kabir, S.K.; Philips, F. Scaling Up Agricultural Innovation for Inclusive Livelihood and Productivity Outcomes in Sub-Saharan Africa: The Case of Nigeria. *Afr. Dev. Rev.* **2017**, *29*, 121–134. [CrossRef]
9. King'au, J.M.; Ngâ, C.; Chacha, B.K. Self-Reliance Projects; The Future Core Driver of Rural Youth Livelihood Development Outcomes. *Kabarak J. Res. Innov.* **2017**, *5*, 39–47. Available online: https://africaneditors.org/journal/KJRI/abstract/05889-58558 (accessed on 5 July 2021).
10. Adeniyi, A.B.; Daud, A.S.; Amao, O.; Omotayo, A.O. Determinants of rural women's livelihood in Ibarapa North local government area of Oyo State, Nigeria. *J. Hum. Ecol.* **2016**, *56*, 84–90. [CrossRef]
11. Daud, S.A.; Omotayo, A.O.; Aremu, A.O.; Omotoso, A.B. Rural infrastructure and profitability of food crop production in Oyo state, Nigeria. *Appl. Ecol. Environ. Res.* **2018**, *16*, 4655–4665. [CrossRef]
12. Omotayo, A.O.; Omotoso, A.B.; Daud, S.A.; Tshwene, S.; Nkonki-Mandleni, B. Analysis of Household's Environment and Willingness To Pay For Waste Disposal In South Africa. *Int. J. Sci. Res.* **2020**, *76*, 132–140.
13. Ciburiene, J. Youth employment changes in rural areas of Lithuania. In Proceedings of the International Scientific Conference "Economic Science for Rural Development", Jelgava, Latvia, 21–22 April 2016; pp. 38–44. Available online: https://agris.fao.org/agris-search/search.do?recordID=LV2016000654 (accessed on 5 July 2021).
14. Babatunde, R.O.; Olagunju, F.I.; Fakayode, S.B.; Adejobi, A.O. Determinants of participation in off-farm employment among small-holder farming households in Kwara State, Nigeria. *Prod. Agric. Technol.* **2010**, *6*, 1–14.
15. Bingen, J.; Serrano, A.; Howard, J. Linking farmers to markets: Different approaches to human capital development. *Food Policy* **2003**, *28*, 405–419. [CrossRef]
16. Adeoye, I.D.; Seini, W.; Sarpong, D.B.; Amegashie, D. Off-farm income diversification among rural farm households in Nigeria. *Agric. Trop. ET Subtrop.* **2019**, *52*, 149–156. Available online: https://sciendo.com/pdf/10.2478/ats-2019-0017 (accessed on 5 July 2021). [CrossRef]
17. Mece, M. Youth Employment in Rural Albania: A Theoretical Approach. *Eur. Sci. J.* **2016**, *12*, 340–351. [CrossRef]

18. Pels, J.; Sheth, J.N. Designing Solutions for the Low Income Consumer Markets: Four Schools of Thought. In *Bottom of the Pyramid Marketing: Making, Shaping and Developing BoP Markets*; Emerald Publishing Limited: Bingley, UK, 2018; pp. 89–109.

19. Ghebru, H.; Amare, M.; Mavrotas, G.; Ogunniyi, A. *Role of Land Access in Youth Migration and Youth Employment Decisions: Empirical Evidence from Rural Nigeria*; International Food Policy Research Institute: Washington, DC, USA, 2018; Volume 58.

20. Olagunju, K.O.; Ogunniyi, A.; Oguntegbe, K.F.; Oyetunde-Usman, Z.A.; Adenuga, A.H.; Andam, K.S. *The Impact of Quality Foundational Skills on Youth Employment in Africa: Does Institutional Quality Matter?* International Food Policy Research Institute: Washington, DC, USA, 2020; Volume 1963.

21. Shilpi, F.; Emran, S. *Agricultural Productivity and Non-Farm Employment: Evidence from Bangladesh*; Policy Research Working Paper; No. 7685; World Bank: Washington, DC, USA, 2016.

22. Olaniyan, O. The determinants of child schooling in Nigeria. *Afr. Econ. Res. Consort.* **2011**, *217*, 1–49.

23. Omotayo, A.O.; Ogunniyi, A.I; Tchereni, B.H.; Nkonki-Mandleni, B. Understanding the link between households' poverty and food security in South West Nigeria. *J. Dev. Areas* **2018**, *52*, 27–38. [CrossRef]

24. Bezu, S.; Holden, S. Are rural youth in Ethiopia abandoning agriculture? *World Dev.* **2014**, *64*, 259–272. [CrossRef]

25. Osadebe, N. *Socio-Cultural Factors Affecting the Performance of Micro and Small Scale Enterprises in Anambra and Abia States, Nigeria*; University of Nigeria: Nigeria, Nsukka, 2017; Available online: https://freeresearchproject.com.ng/research/socio-cultural-factors-affecting-the-performance-of-micro-and-small-scale-enterprises-in-anambra-and-abia-states-nigeria/ (accessed on 5 July 2021).

26. Serrat, O. The sustainable livelihoods approach. In *Knowledge Solutions*; Springer: Singapore, 2017; pp. 21–26.

27. Buchenrieder, G.; Mollers, J. A synthesis of theoretical concepts for analysing non-farm rural employment. In Proceedings of the International Association of Agricultural Economists (IAAE)—2006 Annual Meeting, Queensland, Australia, 12–18 August 2006; pp. 1–12.

28. Ogunniyi, A.I.; Mavrotas, G.; Olagunju, K.O.; Fadare, O.; Adedoyin, R. Governance quality, remittances and their implications for food and nutrition security in Sub-Saharan Africa. *World Dev.* **2020**, *127*, 104752. [CrossRef]

29. Currie-Alder, B.; Kanbur, R.; Malone, D.M.; Medhora, R. *International Development: Ideas, Experience, and Prospects*; OUP Oxford: Oxford, UK, 2014.

30. Wang, L.; Khan, Q.U.; Zhang, D. Rural transformation index: Measuring rural–urban disparities. In *Skills Development for Inclusive and Sustainable Growth in Developing Asia-Pacific*; Springer: Dordrecht, The Netherlands, 2013; pp. 213–240.

31. Sambira, J. Africa's mobile youth drive change. *Afr. Renew.* **2013**, *27*, 19. [CrossRef]

32. Schmidt, E.; Bekele, F. *Rural Youth Employment in Rural Ethiopia*; Ethiopian Development Research Institute (EDRI); International Food Policy Research Institute Ethiopia: Addis Ababa, Ethiopia, 2016.

33. Awojobi, O.N. The socio-economic implications of Boko Haram insurgency in the north-east of Nigeria. *Int. J. Innov. Sci. Res.* **2014**, *11*, 144–150.

34. Okereocha, C. Heartache for the Economy. *Tell* **2012**, *14*, 46–47.

35. Van den Broeck, G.; Kilic, T. Dynamics of Off-Farm Employment in Sub-Saharan Africa. *Dev. Econ.* **2018**, 1–38. Available online: https://openknowledge.worldbank.org/handle/10986/30230 (accessed on 18 October 2021).

36. Klutsey, E.E.; Ankomah, A. Factors associated with induced abortion at selected hospitals in the Volta Region, Ghana. *Int. J. Women's Health* **2014**, *6*, 809. Available online: https://pubmed.ncbi.nlm.nih.gov/25187740/ (accessed on 5 July 2021).

37. Anang, B.T. *Effect of Non-Farm Work on Agricultural Productivity: Empirical Evidence from Northern Ghana*; 9292562622; The United Nations University World Institute for Development Economics Research (UNU-WIDER): Helsinki, Finland, 2017.

38. Yeboah, F.K.; Jayne, T.; Muyanga, M.; Chamberlin, J. Youth access to land, migration and employment opportunities: Evidence from sub-Saharan Africa. *IFAD Res. Ser.* **2019**, *53*, 50.

39. Namibia Statistics Agency. *Analysis of Youth Employment and Unemployment in Namibia 2012–2013*; Namibia Statistics Agency: Windhoeck, Namibia, 2015.

40. World Bank. Nigeria's Booming Population Requires More and Better Jobs. Available online: https://www.worldbank.org/en/news/press-release/2016/03/15/nigerias-booming-population-requires-more-and-better-jobs (accessed on 15 July 2021).

41. Miller, D.C.; Muñoz-Mora, J.C.; Christiaensen, L. Prevalence, economic contribution, and determinants of trees on farms across Sub-Saharan Africa. *For. Policy Econ.* **2017**, *84*, 47–61. [CrossRef]

42. Christiaensen, L.; Demery, L. Agriculture in Africa: Telling myths from facts. *Food Policy* **2017**, *67*, 1–11. [CrossRef] [PubMed]

43. Sibisi, S. Africa: Youth Employment Critical for Africa's Economic Growth. Available online: https://allafrica.com/stories/201810180532.html (accessed on 18 October 2021).

44. Ogunniyi, A.I; Omotoso, S.O.; Salman, K.K.; Omotayo, A.O.; Olagunju, K.O.; Aremu, A.O. Socio-economic Drivers of Food Security among Rural Households in Nigeria: Evidence from Smallholder Maize Farmers. *Soc. Indic. Res.* **2021**, *155*, 583–599. Available online: https://link.springer.com/article/10.1007/s11205-020-02590-7 (accessed on 18 October 2021). [CrossRef]

45. Omotayo, A.O.; Ijatuyi, E.J.; Olorunfemi, O.D.; Agboola, P.T. Food security situation among South African urban agricultural households: Evidence from Limpopo Province. *Acta Univ. Danubius. Acon.* **2017**, *14*, 60–74.