Full Length Research Paper

Effect of population growth on land resource development in Makurdi Metropolis, Benue State, Nigeria

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Abstract

This study examined the effect of population growth on land resource development in the Makurdi Metropolis, Benue State, Nigeria. A survey research design was used for this study. A sample of 431 respondents was used for the study. Primary data was obtained by the use of a structured questionnaire. The data collected was analyzed using multiple regression analysis. Also, the hypotheses of the study were tested using the probability value of the regression estimates. The result indicates that birth rate has a negative and significant effect on land resource development in Makurdi Metropolis in line with a priori expectations. Immigration has a positive and significant effect on land resource development in Makurdi Metropolis against a priori expectations. It was concluded that optimal indices of population growth are necessary for efficient land resource development. It was recommended, among others, that the government should designate layouts and provide allocation papers for members of the communities in the study area to expand building into areas that were hitherto not inhabitable. This will help to control population growth as a result of the increased birth rate in the study area.

Keywords: Population, Growth, Land, Resources, Development, Birth rate, Immigration.

INTRODUCTION

Background to the study

Due to the high birth rate, the human population is constantly growing. 2.6 million people are born every second. As a result of this rapid birth rate, the human population exceeded seven billion people in 2011.

Humanity has not always had such a large population. Around 10,000 years ago, prior to the invention of agriculture, the global human population was estimated to be only a few million people. Following the invention of agriculture, the human population began to grow slowly until the early 1900s, when it began to grow rapidly. The human population reached three (3) billion in the 1960s as a result of technological advancements and medical

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advances. The population has more than doubled and continues to grow since that time. Human population growth brought about dramatic changes in how people interact with natural and largely publicly administered forested environments as a result of immigration. These changes are primarily the result of large-scale spatial shifts in the human population.

According to the most recent United Nations estimates elaborated by Worldometer, the world population is 7.9 billion. According to UN data, Nigeria's population was estimated to be 206,139,589 people at the midpoint of the year. Nigeria's population is equivalent to 2.64 percent of the total world population. Nigeria ranks at number 7 in the list of countries (and dependencies) by population (United Nations Population Division, 2020). The population density in Nigeria is 226 per km2 (586 people per m^2). Benue State is one of the North Central states of Nigeria. According to the 2006 population census, it has a population of 4,253,641 and a land area of 32,518 square kilometers. According to the 1963 population census, the population of Makurdi (Benue state capital) was 16,716. In 1973, the figure rose to 53,973 and in 2006, it rose to 300,377 people (National Population Census (NPC), 2006). The town's population increase has resulted in a huge demand for land resources development, especially housing and other services that go along with it.

Human behavior demonstrates a powerful desire to survive, reproduce, and attain some measure of prosperity and quality of life. Individuals and societies, however, have divergent views on what constitutes a satisfactory lifestyle. The majority of countries, including Nigeria, reveal numerous disparities in lifestyles, which are frequently determined by the quantity and quality of natural resources available to each individual. This is because population has a significant impact on these countries' economic, social, and physical development, most notably in Makurdi metropolis, Benue state, Nigeria. As a result, it is certain that the population factor can significantly influence whether a state's primary development objective is achieved or not (Yaser and Muna, 2016). Additionally, the majority of these fundamental resources (land, water, energy, and biota) do not have an infinite supply and many are finite. As the world's population increases, prosperity and quality of life are expected to deteriorate as resources must be shared with an increasing number of people (UNFPA, 1991).

Land resources are the resources available from the land, thus the agricultural land, which contains natural fertilizer for growth of the products sown, underground water, various minerals like coal, bauxite, gold, and other raw materials for human use. While population growth is frequently used as a proxy for land resource development, at smaller scales, a complex set of drivers

is also significant. Increased food demand as a result of population growth has put additional strain on land resources (Gorit, 2017). Worldwide, food and fiber crops are grown on 12 percent of the earth's total land area. Another 24% of the land is used for grazing livestock, which provides meat and milk products, and the remaining 31% is forested. In developed countries, land resource development is motivated by economic factors such as large-scale agriculture or urbanization, as well as an increasing need to conserve biodiversity and environmental quality for current and future generations, whereas in developing countries, rapid population growth, poverty, and economic conditions are the primary motivating factors (Uchendu, 2017).

Because the availability of all essential resources is rapidly diminishing due to population growth, the options for substitution are also diminishing. Africa's rapid population growth has resulted in the growth of urban centers, which has led to encroachment into forests. This underlines the importance of conservation and the development of alternative land resource management practices. Natural resources (land) are under severe strain as a result of population growth. Land is the most valuable natural resource. Agriculture, animal husbandry, and forestry all rely on land productivity. The entire land ecosystem, which includes soil, water, plants, and soil biodiversity, is used to meet the community's needs for food, energy, and water. The unsustainable use of these land resources is the primary cause of environmental degradation. Thus, in order to ensure the long-term viability of an area's land development, it is necessary to conduct regular monitoring of land cover and land use changes (Garg, 2017).

Statement of Problem

Since the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992, achieving sustainable development, which includes land resource development, has been a top priority for many countries. Rapid population increase, owing to a high birth rate and immigration, has resulted in minimal land resource development in and around many urban and rural areas. Due to a rising human population, the Makurdi Metropolis has land/environmental development issues. Much of this data is speculative or based on assumptions. There is a scarcity of concrete data on population increase and land resource development based on scientific findings. Many places across the country are also dealing with identical issues, but there is a dearth of information. As a result, research into the effects of population growth on land resource development in the Makurdi Metropolis in Benue State, Nigeria is required.

Objectives of the study

The main objective of the study is to examine the effect of population growth on land resource development in the Makurdi Metropolis, Benue State, Nigeria. The specific objectives of the study are to:
i.   Examine the effect of the birth rate on land resource development in Makurdi Metropolis, Benue State, Nigeria;
ii.   Find out how immigration affects land resource development in Makurdi Metropolis, Benue State, Nigeria.

Hypotheses of the Study

H_{01}: The birth rate has no significant effect on land resource development in Makurdi Metropolis, Benue State, Nigeria;
H_{02}: Immigration has had no significant effect on land resource development in Makurdi Metropolis, Benue State, Nigeria.

II   LITERATUREREVIEW

Conceptual framework

Population Growth

Population growth refers to the change in the size of a population, which can be either positive or negative-over time, depending on the balance of births and deaths. For the world as a whole, population growth occurs when the number or rate of births exceeds the number or rate of deaths. Population growth may affect natural resource development by affecting household decisions about land use, labor or capital intensity, product choice, technology adoption, off-farm employment, migration, or fertility (Kenneth, 2018). It may also affect natural resource development by affecting community and societal decisions relating to collective management of common property resources; development or adaptation of technology; investments in infrastructure; development of property rights, land tenure relations, markets, or other institutions; or development of organizations (Obidi, 2017).
In addition, rapid population growth tends to impact the interactions between human beings and their environment. An increasing number of people in the population leads to pressures on land resources, which limits the amount of arable agricultural land and tends to worsen the situation of food supply and human reproduction (Sibly & Jim, 2002).
Biodiversity is lost as a result of population growth, which includes the spread of humans into natural areas. Many

creatures play an important role in agriculture and other areas of human life (Okoro, 2018).The annual increase in the population size is defined as a sum of differences: the difference between births and deaths; and the difference between immigrants and emigrants, in a given country, territory, or geographic area in a given year (Dennis, 1996). Population growth may have an effect on natural resource development by influencing household decisions regarding land use, labor or capital intensity, product selection, technology adoption, off-farm employment, migration, or fertility (Kenneth, 2018). It may also have an effect on natural resource development by influencing community and societal decisions about collective management of common property resources; technological development or adaptation; infrastructure investments; development of property rights, land tenure relations, markets, or other institutions; or organizational development (Obidi, 2017).

Dimensions of Population Growth

a) Birth Rate

A birth rate is the number of individuals born in a population in a given amount of time. The human birth rate is stated as the number of individuals born per year per 1000 in the population. For example, if 35 births occur per year per 1000 individuals, the birth rate is 35. This rate is frequently expressed as a percentage, such as 3.5 per 100, or 3.5 percent (Richard & Kristin, 2006).
Ali *et al.* (2015) posit that the birth rate is the term used to define the number of babies born every year per 1,000 people in a population. A natural increase in a population occurs when the birth rate is greater than the death rate. That is, there are more births than deaths in that population a year. Mushtaq (2016) says that birth rate is the number of live births in a given population, and it is usually calculated as the number of live births per 1,000 people each year.

b) Immigration

Immigration is the voluntary or involuntary movement of people to a new country in which they intend to settle for an extended period of time (Martin & Zürcher, 2008). Immigration levels have reached historically unprecedented levels in recent years, often involving movement from less-developed countries to more-developed countries. It is estimated that there are currently around 232 million international migrants worldwide (approximately 3.2 percent of the world population), and these numbers are expected to continue to increase for the foreseeable future. A 2012 Gallup poll revealed that nearly 640 million adults (13 percent of the

world's adults) emigrate if given the chance, with 23 percent of those who would like to move indicating the United States as their preferred destination (Esses *et al.,*2017).

Immigrant-receiving nations differ markedly in their approach to immigrants, particularly those who are highly skilled, as a valuable commodity, and accept a large number of immigrants into the country each year on the basis of their potential economic contributions. Others, such as the United States, place emphasis on family reunification, and their immigration policies focus more on how to avoid large numbers of "undocumented" or "irregular" immigrants. Others, like Germany, have always said that their country isn't a country that accepts immigrants. Only recently have formal policies been put in place to accept immigrants.

Concept of Land Resource Development

Land resources development refers to the development of delineable areas of the earth's terrestrial surface, encompassing all attributes of the biosphere immediately above or below this surface, including those of the near-surface climate, the soil and terrain forms, the surface hydrology (including shallow lakes, rivers, marshes, and swamps), the near-surface sedimentary layers and associated groundwater and geohydrological reserves, the plant and animal populations, the human settlement pattern, and physical results of past and present human activity (terracing, water storage or drainage structures, roads, buildings, etc.) (FAO/UNEP, 1997).

Land resource development, in its narrow sense, is the actual practice of using the land by the local human population, which should be sustainable (FAO, 2001). UN-ECE (1996) asserts that land resource development is the process by which the resources of land are put to good effect. Land resource development includes everything that needs to be done to make sure that the land and natural resources are used in a way that is good for the environment.

Land is an essential natural resource, both for the survival and prosperity of humanity, and for the maintenance of all terrestrial ecosystems. For ages, people have become progressively more adept at exploiting land resources for their own ends. The limits of these resources are finite, while human demands on them are not. Increased demand, or pressure on land resources, shows up as declining crop production, degradation of land quality and quantity, and competition for land. This is the time to look at humanity as stewards instead of exploiters. We have the responsibility to protect the rights of future generations and to keep land as the foundation of the global ecosystem.

Dimensions of Land Resource Development

a) Agricultural development

Agricultural development is the process of establishing the conditions necessary for agricultural potential to be realized. These conditions include the accumulation of knowledge and technological availability, as well as the allocation of inputs and outputs (De Laiglesia, 2016). Sustainable agriculture has been defined by FAO (2001) as the management and conservation of the natural resource base and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations. Such sustainable development in agriculture conserves land, water, plant and animal genetic resources and, in turn, is environmentally non-degrading, technically appropriate, economically viable, and socially acceptable.

As stated earlier, agricultural production derives its existence from the use of land. Without productive land resources, no meaningful agricultural activity can take off. Similarly, profitable crop and livestock production can thrive only if the elements of sunshine, water, and soil nutrients, as well as plant nutrients contained in chemical fertilizers, are present in the right proportion and quality. Furthermore, increased agricultural and industrial output thrives best where a favourable man-made socioeconomic environment exists. Land resources must, therefore, be developed in ways to provide a basis for sustained agricultural development (Medugu, 2006).

b) Real estate development

Real estate development, or property development, is a business process, encompassing activities that range from the renovation and re-lease of existing buildings to the purchase of raw land and the sale of developed land or parcels to others (Frej & Peiser, 2003). The development of real estate is a highly regimented process. The state sector is primarily responsible for taxes, labor laws, land and property laws, public infrastructure, certain financial operations, planning and zoning regulation, building permits, and land supply. Regulations and public policies are supposed to ensure that these requirements are met. As a result, the public sector plays a significant role in the real estate development process (Luke, 2017). Real estate developers are the people and companies that coordinate all of these activities, converting ideas from paper to real property. The real estate development process requires the skills of many professionals: architects, landscape architects, civil engineers, and site planners to address project design; market consultants to determine demand

and a project's economics; attorneys to handle agreements and government approvals; environmental consultants and soils engineers to analyze a site's physical limitations and environmental impacts.

Theoretical Framework

Malthusian Theory

Around two centuries ago, Thomas Robert Malthus presented his theory, which stated that population grows geometrically while food supplies grow arithmetically, causing poverty. Human reproductive power outstrips the power of land to feed people. Hodgson (1983) opined: "On the basis of this theory, we can say that there is a negative relationship between: fertility rates and standards of living (the higher the fertility rates, the lower the standards of living and vice versa); the second negative relationship is between fertility rates and social class; and the third negative relationship is between fertility rates and urbanization.

The Classical Theory

Malthusian hypothesis is the base and foundation of this philosophy. David Ricardo proposed it, and it's also known as Stationary Theory. It states that as the population grows, so does the demand for food and housing. Initially, only fertile lands were farmed, but as population pressure grew, less fertile lands were farmed as well. As salaries grow and the cost of production rises, the load on each piece of land tends to climb as well. People make less profit as they make more money, resulting in a negative trend, or zero growth rates of profit over time.

Mill (1909), who believed that technological development may stop the trend of zero growth rates, improved and enlarged this thesis. Unfortunately, technical advancements occur more frequently in industrialized countries, whereas less developed countries are more likely to experience stagnation. Agriculture is the most important economic sector in developing and developing countries alike. Approximately 2/3 of the population lives in agriculture and relies on it for survival. It is also a fact that agriculture is a traditional sector in these countries. People are sedentary and fearful of taking risks.

Empirical review

Soumya (2009) examined population growth, changes in land use, and environmental degradation in India. It is hypothesized that urbanization is likely to be associated with increased land utilization for non-agricultural purposes and the density of the population with an intensity of cropping pattern. The study reveals that there has been a phenomenal increase in population and urbanization. The population increase has taken place even in relatively land abundant and semi-arid states such as Rajasthan and Gujarat. However, from this study, we did not find strong support for either of the hypotheses.

Chinedu's (2020) study is focused on the effect of population growth on land resource development. A case study in Aba urban, Abia state, Nigeria. The study found that there is a link between development and population growth. However, the fact that the two opinions are related to each other in many cases means that the main negative relationship between population and growth and the level of land development, as stated in the study, suggests that programmes for controlling the rate of population growth should be encouraged.

Putri, Naufal, Nandini, Dwiputra, Wibirama, & Sumantyo (2019) examined the Impact of Population Pressure on Agricultural Land towards Food Sufficiency (Case in West Kalimantan Province, Indonesia). According to the study, the land pressure of West Kalimantan is mostly categorized as safe, except for Pontianak City, whose population is pressured the most among all cities, so that the land carrying capacity is classified as low. It is due to factors like population growth and the main activities of certain regions that affect land use and, consequently, the environment.

Olusegun (2018) examined the effects of migration on land resource development in Ibadan using a structural equation modeling approach. He found that immigration positively and significantly improved land resource development in the study area.

III   METHODOLOGY

Research Design

The researcher adopts the survey design in this research work because survey research studies large and small populations to discover the relative incidence, distribution, and interrelations of some certain variables. This type of research enables the use of a variety of methods for recruiting participants, collecting data, and instrumentation.

Study Area

The study was conducted in Makurdi Local Government Area (LGA), Benue state. Makurdi is a town in eastern Nigeria that serves as the capital of Benue state. It is located on the Benue River's south bank. Makurdi was founded around 1927 when the railroad connecting Port Harcourt (279 miles [449 kilometers] south-southwest) to

Jos and Kaduna was extended. Makurdi quickly developed into a transportation and market hub leading to an increase in population.

Population of the Study

The population for this study comprised all the households in Makurdi Metropolis. The population under this study is infinite and thus consists of a countless number of residents of Makurdi Metropolis who use land for various purposes, either for farming, business or residential purposes. Hence, three (3) categories of respondents, namely farmers, landlords, and business owners, form the population of this study. The breakdown of the population of the study is shown below: farmers = 198, landlords = 127, business owners = 106. Hence, the total number of respondents in the study area was 431.

Sample and Sampling Technique

The sample size for the study is 431, since the population is of manageable size. A multi-stage sampling procedure was employed in the selection of the farmers, landlords, and business owners who could provide information on land resource utilization. At the second stage, a simple random sampling selection was used to select 198 farmers, 127 landlords, and 106 business owners as respondents for the study. This gave a total of 431 respondents selected for the study.

Validity and Reliability

A pilot study using 30 percent of the sample was carried out, and the result was used to estimate the validity and reliability of the instrument used for data collection for this study. The result indicates that the instrument is valid and the reliability of the instrument using.
A pilot test was conducted. The input variable factors used for this study were subjected to exploratory factor analysis to investigate whether the constructs as described in the literature fit the factors derived from the factor analysis. Factor analysis indicates that the KMO (Kaiser-Meyer-Olkin) measure for the study's three (3) variable items is 0.945, with Barlett's Test of Sphericity (BTS) value of 3 at a level of significance of p = 0.000. Our KMO result in this analysis surpasses the threshold value of 0.50 as recommended by Hair, Anderson, Tatham and Black (1995). Therefore, we are confident that our sample and data are adequate for this study.
The Total Variance Explained table shows how the variance is divided among the three (3) possible factors. One factor has an Eigenvalue (a measure of explained variance) greater than 1.0, which is a common criterion for a factor to be useful. When the Eigenvalue is less than 1.0, the factor

explains less information than a single item would have explained. Table 2 shows that the Eigenvalue 1.869 is greater than one (1). Component one yielded a variance of 62.284. The cumulative of the rotated sum of squared loadings section indicates that only one component, i.e., component 1, accounts for 62.284 percent of the variance of the whole variables of the study. This shows that the variables have strong construct validity.
Table 3 shows the reliability statistics, which indicates that the overall Cronbach Alpha value is 0.842. Cronbach Alpha statistics of 0.70 are considered adequate and reliable for research. Hence, the instrument for this study falls above the limit of a reliable instrument for this study.
As shown in Table 4, an item-total correlation test is performed to check if any item in the set of tests is inconsistent with the averaged behavior of the others, and thus can be discarded. A reliability analysis was carried out on the variables of the study values scale, comprising three (3) items. Cronbach's alpha showed the questionnaire to have acceptable reliability with α = 0.842. Most items appeared to be worthy of retention, resulting in a decrease in the alpha if they were deleted. There is no exception to this in all the variables of the study, as none of the items, if deleted, will improve the overall Cronbach Alpha statistics. As such, none of the variables were removed.

Model specification

The implicit and explicit forms of the model are shown below:
$$LRD = f(BIR, IMG) \qquad - \qquad - \qquad - \qquad (1)$$

The explicit form of the model is stated as

$$LRD = \beta_0 + \beta_1 BIR_1 + \beta_2 IMG_2 + U_t \qquad - \qquad (2)$$

Where:

LRD = Land Resource Development
BIR= Birth rate
IMG = Immigration
B_0 = Regression constant
$\beta_1 - \beta_4$ =Regression coefficients
A priori, it is expected that all the independent variables in the model will have negative signs, implying that when these variables increase, land resource development will be negatively affected.

Method of Data Analysis

Multiple regression was used to assess the effect of the independent variables on the dependent or predictor variable of the study. The probability value of the estimate

Table 1. Kaiser-Meyer-Olkin and Bartlett's test.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.945
Bartlett's Test of Sphericity	Approx. Chi-Square	21.014
	df	3
	Sig.	.000

Source: SPSS Result, 2022

Table 2. Total Variance Explained.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.869	62.284	62.284	1.869	62.284	62.284
2	.969	32.303	94.588			
3	.162	5.412	100.000			

Extraction Method: Principal Component Analysis.
Source: SPSS Result, 2022

Table 3. Reliability Statistics.

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.842	.937	3

Source: SPSS Result, 2022

was used to test the study hypotheses for this study with the following decision rules: In this case, we accept the null hypothesis, which means that the probability value p[(bi)] is greater than the critical value bi. This means that the estimate bi is not statistically significant at the 5% level of significance. In other words, if the probability value p [(bi) critical value bi] is greater than the null hypothesis, we reject it, implying that the estimate bi is statistically significant at the 5% level of significance.

IV   RESULTS AND DISCUSSION

This section presents the results of the regression analysis, the hypotheses upon which the study is anchored and the discussion of the result based on the specific objective of the study. To check for normal distribution of the data used for the study, the regression standardized residual was used for the inspection of data normality.

a)   Normality Assumptions

Figure 1 overleaf shows a histogram of the residuals with a normal curve superimposed. The residuals look close to normal, implying a normal distribution of data. Here is a plot of the residuals versus the predicted dependent variable of land resource development (LRD). It looks like there are no problems with the assumption that residuals are normally distributed at each level of Y and have the same variance across levels of Y.

Table 5 provides the statistics for the significance of the model used in the study and the it is based on the comparison between the estimated and the critical value at 95 percent confidence level. As shown by the result of

Table 4. Item-Total Statistics.

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
LRD	166.3500	15869.608	.578	.146	.717
BIR	140.5500	4609.418	.422	.705	.469
IMG	163.1000	6799.042	.766	.684	.601

Source: SPSS Result, 2022
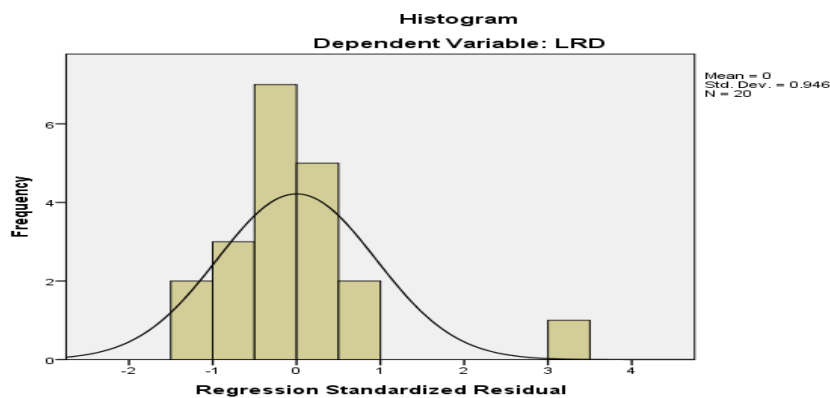
Figure 1. Regression Standardized Residual.
Source: SPSS Output, 2022

Table 5. Statistical Significance of the Model (ANOVA[a]).

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6287.349	2	3143.675	1.454	.026[b]
	Residual	36757.201	17	2162.188		
	Total	43044.550	19			

a. Dependent Variable: LRD

b. Predictors: (Constant), IMG, BIR

Source: SPSS 20.0 Result Output, 2022

the study, the F-ratio in the ANOVA table above tests whether the overall regression model is a good fit for the data. The table shows that the independent variables statistically significantly predict the dependent variable $F_{(2, 17)} = 1.454$, $p = 0.026^{b}$ (i.e., the regression model is a good fit of the data).

Table 6 examines the model summary which gives the result of the coefficient of determination which gives the percentage of the total variation of the dependent variable as jointly accounted for by the explanatory variable. The study's coefficient of determination R^2 is 0.796, or 79.6 percent. This indicates that 79.6 percent of the variations in the model can be explained by the explanatory variables, while 20.4 percent of the variations can be attributed to unexplained variation captured by the stochastic term.

Table 6. Model summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.892ᵃ	.796	.603	6.49934

a. Predictors: (Constant), IMG, BIR

b. Dependent Variable: LRD

Source: SPSS 20.0 Result Output, 2022

Table 7. Collinearity Diagnosticsa.

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	BIR	IMG
	1	2.679	1.000	.04	.02	.01
1	2	.253	3.251	.85	.15	.03
	3	.068	6.300	.11	.83	.96

a. Dependent Variable: LRD

Source: SPSS 20.0 Result Output, 2022

Table 8. Regression coefficients.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	72.865	18.294		3.983	.001		
	BIR	-.379	.122	-.645	-3.107	.006	.344	2.904
	IMG	.439	.136	.470	3.228	.004	.344	2.904

a. Dependent Variable: LRD

Source: SPSS 20.0 Result Output, 2022

Table 7 examines if the dataset used for this study has issue with multicollinearity. The result of the collinearity diagnostics test in Table 7 indicates that there are no serious problems with multicollinearity. Several Eigenvalues are close to 0, indicating that the predictors are highly intercorrelated and that small changes in the data values may lead to large changes in the estimates of the coefficients. However, condition index values greater than 15 indicate a possible problem with convergent As shown by the result of the condition indices, which indicates that none of the values are larger than 15.00.

This suggests that there is no serious problem with collinearity in the dataset used for this study.

Discussion of Result and Testing of Hypotheses

The first specific objective of the study examines the nexus between birth rate and land resource use. The finding from Table 8 shows that birth rate (BIR) has a negative effect on land resource development (LRD) in Makurdi Metropolis and the effect is statistically significant ($p < 0.05$) and is in line with *a priori* expectation.

People in the study area who have more children will reduce their use of land resource development (LRD) by 64.5 percent. Using the estimate's probability value, *p* (b_1), and a confidence level of 0.05.Thus, we reject the null hypothesis. That is, we accept that the estimate b_1 is statistically significant at the 5 percent level of significance. This implies that the birth rate has a significant negative effect on land resource development in the Makurdi Metropolis, Benue State. This finding is in line with that of Chinedu (2020), whose study is focused on the effect of population growth on land resource development. A case study in Aba urban, Abia state The study found a negative relationship between population growth and the level of land development. Equally, Putri, Naufal, Nandini, Dwiputra, Wibirama, and Sumantyo (2019) examined the impact of population pressure on agricultural land toward food sufficiency in West Kalimantan Province, Indonesia and discovered that land pressure caused by an increased birth rate is one of the factors affecting land use and, consequently, the environment.

The result of the empirical result as shown in Table 8 indicates that immigration (IMG) has a positive effect on land resource development (LRD) in Makurdi Metropolis and the effect is statistically significant (*p<0.05)* and not in line with *a priori* expectations. This means that if there is an increase in immigration (IMG), there will be an increase in land resource development (LRD) in the study area by 47.0 percent. Using the estimate's probability value, p (b_2), and a confidence level of 0.05. Thus, we reject the null hypothesis. That is, we accept that the estimate b_2 is statistically significant at the 5 percent level of significance. This implies that immigration has a significant positive effect on land resource development in the Makurdi Metropolis, Benue State. These findings are in line with those of Olusegun (2018), who examined the effect of migration on land resource development using a structural equation modeling approach. He found that immigration positively and significantly improved land resource development in the study area. Soumya (2009) looked at population growth, changes in land use, and environmental degradation in India. She found that urbanization, like in the case of Makurdi metropolis, is likely to lead to more land being used for non-agricultural purposes.

V   CONCLUSIONS AND RECOMMENDATIONS

Conclusion

The impact of population expansion on land resource development in Makurdi Metropolis, Benue State, was investigated in this study. The study looks at the evolution of land resources in the context of agricultural land usage and real estate utilization. The birth rate and immigration were used to analyze population growth. The findings show that the birth rate has a negative impact on land resource development because it puts pressure on agricultural land use as well as real estate land use. Overpopulation caused by increased birth rates is determined not just by the population's size or density, but also by the population's relation to available sustainable resources such as land. Immigration also has a positive impact on land resource development, according to the study. This could be due to the efforts of immigrants who have brought resources to the study region to help build the environment. It was determined that ideal population growth indices are required for efficient land resource development.

5.3   Recommendations

Based on the findings of the study, the following recommendations are made:

i.   The government should designate layouts and provide allocation papers for members of the communities in the study area to expand building into areas that were hitherto not accessible. This will help to control population growth as a result of the increased birth rate in the study area.

ii.   Immigration into the study can be strengthened by the government through providing incentives to immigrants. This can be done through speedy processing of land titles such as certificates of occupancy and rights of occupancy by the government, and a waiver on basic land developmental levies.

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