**TITLE PAGE**

**A STATISTICAL ANALYSIS ON THE FERTILITY AND MORTALITY RATE IN NIGERIA. (A CASE STUDY OF OSOGBO LOCAL GOVERNMENT IN OSUN STATE)**

This project has the aim of studying the fertility and mortality rate in Osogbo Local Government.  The study employed the use of statistical methods like moving Average, least square and Demography analysis.  The result of the analysis shows that there is relationship between fertility and mortality. It is also the predictive power of an increase. Therefore, it is recommended that government should provide more medical facilities for easy delivery.

CHAPTER ONE

**1.1       INTRODUCTION**

In statistical analysis and inference statistics is playing an important role nearly in all phases of human life. Formally dealing only with affair of the state and this account for its name statistics.

The influence of statistics is now spread to manufacturing companies, agricultural sectors, bank, business communication, economic, education, political science, psychology, sociology and other numerous held of life. It’s therefore, a body of scientific method and theory of collecting, organizing, presenting and analyzing of data as well as drawing valid conclusion and making a reasonable decision. The application is found in all discipline of numerical form.

Furthermore, this project is to explain and to analyze more on fertility and mortality rate of people in “Osogbo Local Government”. This project cover four fiscal year from 2006 – 2009 and data is being collected at Lautech Teaching HospitalOSOGBO. Also computation would be determined from the total number of fertility and mortality rate and this will be use for information required for the actualization of facts.

**1.2       HISTORICAL BACKGROUND**

Lautech Teaching Hospital is owned by both Osun State Government and Oyo State Government. The hospital is situated at Idi-seke area in Osogbo Local Government. LAUTECH Teaching Hospital is equiped to standard that no other hospital in the state can complete with it. LAUTECH Teaching Hospital has many professional doctors and well trained and very efficient nurses.

**1.3       AIMS AND OBJECTIVES OF THE STUDY**

1. To know if the economy can be predicted from the fertility rate.
2. To predict the economy of Osogbo Local Government using the fertility and mortality rate.
3. To know the nature of the relationship that exists amongst fertility rate and mortality rate the economy of Osogbo Local Government.
4. To recommend ways of ensuring adequate documentation of fertility and mortality rate.
   1. **Research Questions**
5. What are the challenges of proper documentation of the fertility and mortality rate?
6. Can the economy of the Nigeria be predicted using the fertility and mortality rate?
7. What is the nature of relationship that exists between fertility, mortality rate and the economy of Osogbo Local Government.

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**1.4       TYPES OF STATISTICS**

There are two types of statistics namely:

1. Descriptive statistics
2. Inference statistics

In descriptive statistics, the research has information on every member of the population and also describes the characteristics of the population such as: Total, average, Means or more (Population Parameters). But in Inferential Statistics, the researcher has information on part of population (sample). Mean, mode and standard deviation are collected for the sample; each of them is called statistics.

**1.5       USES OF STATISTICS**

Statistics is useful in all field of human endeavour. We can use the knowledge of statistics to find the number of employed people in a country, we can use it to find market trend, to make any possible request in any business ventures. Infact, there is no aspect of our daily life that statistics is not applicable.

**1.5.1   TYPES OF STATISTICAL DATA**

Data can be defined as pieces of information collected for specific purpose.

In any survey, what determines the types of data to be collected is the topic studying upon, which enquiries are to be made.

**1.5.2   PRIMARY DATA**

Primary data can be define as the data collected or drawn from the original source for specific reason, from which it will be useful. These types of data are always accurate and reliable upon it can be collected through these methods:

1. Mail questionnaire
2. Telephone interview
3. Personal interview
4. Direct observation
5. Experiment

**1.5.3   SECONDARY DATA**

This is the data collected for a purpose different for which is originally meant for. It is a secondhand data collected for a purpose direct from statistical enquiries in which they used. It has the advantage of reducing the time and cost to be used.

**1.6       POSSIBLE LIMITATION TO THE USE OF DATA**

The data collected is a secondary data and it’s liable to some kind of difficulties which limits the extent to which it can be used dealing with secondary data.

Therefore, any suggestion or recommendation made as the outcome of analysis is not only meant for LAUTECH Teaching Hospital.

**Significance of the study**

The significance of this study is to educate researchers firms, hospitals, families and other related organizations on the need to ensure adequate documentation of the fertility and mortality rate as it helps in effective economic planning of Nigeria

**CHAPTER TWO**

**LITERATURE REVIEW**

**2.1 THEORETICAL LITERATURE**

The nature of the relationship between fertility and mortality rate and economic growth has so attracted the attention of a large number of the world’s most influential thinkers that most of them have started propounding theories to explain the relationship. Generally the various explanations of the relationship between fertility and mortality rate and the society have focused on the causes of population growth, the consequences of increase or decrease of fertility and mortality rate, and the responses of people to fertility and mortality rate. Most of the early writers on population growth were very much concerned with the need to balance population with resources.

According to Okafor (2004:84), population is a critical factor in the development plans of any civilized society. For effective planning for the development of developing countries, it is necessary to have an actual count of the population i.e. in form of an accurate census. This will enable government to know how many people to whom they should distribute amenities and social services.

According to Udabah (2002:59), it is a central problem of economic development. If the population of a nation expands as fast as national income, per capita income will not increase. When population expands rapidly, a country may by great effort raise the quantity of capital only to find that a corresponding rise in population has occurred so that the net effect of its “growth policy” is that larger populations now maintained at the original low standard of living. Much of the problem of developing nations like that of Nigeria is due to population growth or the increase in fertility rate. Most developing nations have made appreciable gains in income, like Nigeria do in exporting crude, but most of the gains have been eaten up (literally) by the increasing population.

On the other hand, the early Roman Christians and Islamic writers were largely in favour of population growth without showing concern for the need to balance the number of people with available resources. This attitude was apparently influenced by high mortality, which characterized the period.

**2.1.1 THEORIES 0F POPULATION GROWTH/INCREASE IN FERTILITY RATE**

Most world thinkers or philosophers have in recent times been attracted by the nature of the relationship between fertility and mortality rate and the socio economic system of a given geographical zone. This attraction gave rise to the postulation of so many theories of population. Among these theories, they can be classified into three classes or school of thoughts.

1. The pessimistic theorist (The Malthusian theory).
2. The optimistic theorist (Marxist theorist)
3. Liberal theorist.

**2.1.2 THE MALTHSIAN THEORY**

Thomas Malthus was an English clergyman who lived from 1766-1834. He was widely known as the first professional demographer. It was during the period of the physiocrate thinking in the 18th century that he postulated his theory. He had the most influential work relating to population growth and its consequences. He was the first man to draw out in a systematic way a picture that links the consequence of growth to its causes. His theory of population growth can be broken into eight major points based on evolution.

1. Population level is severely limited by subsistence.
2. When the means of subsistence increases, population increases.
3. Population pressures stimulate increase in productivity.
4. Increase in productivity stimulates further population growth.
5. Since the productivity can never keep up with the potential of population growth for long, there must be strong checks on population to keep it in line with carrying capacity.
6. It is through individual cost/benefit decisions regarding sex, work, and children that population and production are expanded or contracted.
7. Checks will come into operation as population exceeds subsistence level.
8. The nature of these checks will have significant effects on the rest of the socio cultural system, Malthus points specifically to misery, vice, and poverty.

Due to the above outlined points from Malthus theory of population growth, he can then be regarded as a key contributing element of the canon of socioeconomic theory. For clarity we can simply compress the above points into three major parts:

1. Causes of population growth
2. Consequences of population growth
3. Avoiding the consequences of population growth.

According to Malthus, “the power of population is so superior to the earth to produce subsistence for man that premature death must in some shape or other visit the human race. The vices of mankind are active e and able minister of depopulation. They are the precursors in the great army of destruction, and often finish the dreadful work themselves. But should they fail in this war of extermination, sickly seasons, epidemics, pestilence and plague advance in terrific array and sweep off their thousands and tens of thousands. He also reviews that on the population growth he perceived the critical importance of population growth to standard of living in early nineteenth century. He asserted two relations concerning rates of increase.

First, food production tends to increase in an arithmetic progression (eg 100,103,106, 109,112) where the increments in this example are 3 units per period. Secondly, population tends to increase in a geometric progression (eg 100, 103, 109.09, 109.27, and 112.55, where the increase in this example is also 3 percent per period). As a relationship, Malthus argued that population growth will always tend to outrun the growth in food supply. The difference in the above example is not too much after five periods. But after twenty periods, the arithmetic increase in food supply has increased to 160 while geometric increase in the population has increased it to 181.

Furthermore, he argues that only natural causes (e.g. accidents and old age), misery (war, pestilence, and above all famine), moral restraint and vice (which for Malthus included infanticide, murder, contraception and homosexuality) could check excessive population growth. Above all he saw moral restraints as the only acceptable means that implies delaying marriage until a man feels he is able to support a viable family.

Malthus himself noted that there are consequences of population growth that many people misrepresented his theory and took pains to point out that he did not just predict picture catastrophe. He argued that constantly subsisting cause of periodical misery has existed ever since we have any histories of mankind thus exist at present and will forever continue to exist, unless some decided change place in the physical constitution of our nature.

**2.1.3 THE MARXIST THEORY**

Marx was a socialist writer who disagrees with Malthusian theory of population growth. Marx and Engels saw that the theory of Malthus was outrageous and against humanity. This lead to their writing called Marxist theory.

The highpoint of opposition to Malthus ideas come in the middle of the nineteenth century with the writings of Karl Mark (capital, 1867) and Friedrich Engels (outlines of a critique of political economy, 1844), who argued that

Who argued that what Malthus saw as the problem of the pressure of the means of production on population? They thus viewed in terms of their concept to the labour reserve army. In other words the seemingly excess of population that Malthus attributed to the seemingly innate disposition. The poor to reproduce beyond their means was actually a product of the very dynamic of capitalist economy. Hence Engels called Malthus’s hypothesis “the crudest, most barbarous theory that ever existed, a system of despair which struck down all those beautiful phrases about love thy neighbor an world citizenship.

**2.1.4 THE LIBERAL THEORIST (CORNUCOPIAN)**

Some 19th century economists believed that improvements in the division and specialization of labour, increased capital investment and other factors had rendered some of Malthus warnings implausible in the absence of any technological improvement of increase in capital equipment, as increased supply of labour may have a synergistic effect on productivity that overcomes the law of diminishing returns. As American land economist Henry George observed with characteristic piquancy in dismissing, both e Jay hawk and the man eat chickens; but the more jay hawks, the fewer chickens while the more men, the more chickens. This set of economist dismisses the Malthusian catastrophe largely due to the influence of technological advances and the expansion of market economy; division of labour, and stock of capital goods. Malthus is thus regarded by some such as British physicist John Maddox as a failed prophet of doom.

**2.1.5 FACTORS AFFECTING POPULATION GROWTH**

Many factors have been identified as influencing the increase or decrease of the population of a country such as Nigeria. Some of these factors are natural, some are socio-cultural, while others are inbuilt. Such factors include:

1. Fertility rate
2. Mortality
3. Natural disaster
4. War.

**FERTILITY RATE**

This has to do with the rate at which women give fertility in a given environment. Most demographers agreed that fertility rate has positive effects on the population of a country like Nigeria where the fertility rate is very high. The reason for this high fertility rate in Nigeria is obvious and this include:

1. **Early marriage:** In most third world countries, with particular reference to Nigeria, women marry at a tender age. These are cases of men and women in traditional homes in Nigeria marrying at the age of one year, ten years, fifteen years or even more or less. Biologists agree that the level of fecundity of a man or woman is very high between fifteen and thirty, because these children marry at very tender ages. The marriages are usually contracted by both parents and fertility from the new couple start at puberty. In this case, before the couples are up to thirty five, they had already given fertility to eight to ten children. This couple may see themselves as still being young and consequently will continue to give fertility as long as God is willing to bless them with children. This type of situation increases the population of a place.
2. **Culture:** Polygamy (lineage and kinship network). The effect of polygamy on fertility is complex. By definition, each polygamous household has at least two wives; Nigerian data (NDHS 1999) reveal that 35% of all currently married women are in polygamous households, of which 17.2 percent have two or more co-wives. The result is that a much larger percentage of women are in polygamous households than there are monogamous households. Another consequence of polygamy is that it puts pressure on women and makes them soon marry at a very early age. In addition, the pressure to have more than one wife leads other men to recruit young girls polygamous to be withdrawn from school and to marry at an early age. Another characteristic of the African household that has direct bearing on demand for children is its durability or perpetuity. It is generally accepted that people do not actually die; members die and are replaced through fertility. Consequently, there is need to ensure that fertility levels remain higher than mortality levels if the lineage is not ultimately to disappear. Considerable expansion of membership enhances the power and prestige of the lineage and reduces the likelihood of extinction through death. Additionally, enormous weight is maintained to family continuity because each new fertility in the lineage is regarded as providing a vehicle for the return of an ancestor. Hence to prevent a fertility is viewed as tantamount to consigning an ancestor to oblivion (Bleak 1987; MakinwaAdebusoye and Edigbola, 1992; National Research Council, 1993; Caldwell 1987). Desire to perpetuate the lineage results in large kinship networks and population growth.
3. **Quest for Male Children:** Most families in Nigeria valued male children more than female children. This is because, according to them, female children later in life marry and leave the compound while male children stay back to control their father’s wealth and lands. Thus in a family where there are only females, the father and even the mother of such families are never happy until they get a male issue. Attempts to see if they can get a male issue may lead to such couples having up to twelve to fifteen children. This practice increases population growth of a place.
4. **Low status of women:** The extent to which women enjoy any decision-making is powerfully shaped by social institutions (Mason, 1984). The patriarchal, hierarchical and polygynous organization of many African households tends to perpetuate the low status of women in African societies. Consequently, most women cannot exert much, if any, control over their lives in the families within which they love. Early marriage patrilocal residence after marriage and polygynous unions are institutions that perpetuate women’s subordinate position and make them rather voiceless and powerless in matters affecting their reproduction. At marriage, a woman assumes a low status relative to all members of her husband’s extended family which is elevated usually by attainment of high fertility. Hence, population is increased.

**MORTALITY (MORTALITY RATE)**

This has to do with the rate at which people die especially children. In recent years, the rate of mortality in Nigeria has reduced while the fertility rates have controlled to grow. The reduction in child mortality has been attributed to improved Medicare. The breakthrough in medicine has made possible the production of vaccines and cures for killer diseases like malaria, yellow fever, chicken pox, small pox, hepatitis, polio e.t.c. In short, reduce mortality rate means increased population growth.

**NATURAL DISASTERS**

Natural disaster is a negative factor of production growth i.e. it affects population growth negatively. When they occur in a very large extent they reduce the population of a place, such natural disasters include drought, earth quake, volcano, flood, tornado, barren land etc.

Such natural disasters can claim lives or cause the inhabitants to migrate to other place or places of the world thereby causing a heavy reduction in the population of the place.

**WAR**

This is a typical example of man-made factor which can drastically affect the population of a place. In modern times, the outbreak of either inter local, tribal or continental wars has resulted in the use of sophisticated weapons which can result in loss of life and property, hunger and starvation resulting from the war can also lead to death. Finally, people may choose to migrate from the war zone to a more peaceful zone. All these are more can lead to reduction in the populated place

**2.2 EMPIRICAL LITERATURE**

Some observers attributed nearly all of the world’s maladies to excessive population growth. Then claim that rapid population growth has at least three adverse effects on human wellbeing. First, it increases poverty the number of people that are impoverished, the proportion of the community that is impoverished, and the severity of the impoverishment. Secondly, it increases environmental degradation – the misuse of natural resources with adverse consequences on many dimensions of human well-being.

Finally, it presents environmental enhancement by holding back the savings and investment that would permit environmentally sustainable economic growth and retards the agricultural productivity that would encourage environmentally friendly agriculture and conservation (Ahlburg 1994, Kelly and McGreevy 1994).

These contentions however are not necessarily accurate. The adverse effects of population growth can easily be confused with other factors because rapid population often occurs along with the factors that reduce human example, rapid population growth is common in many tropical areas of the world. Yet tropical environments themselves retards human productivity activity due to heat, endemic disease, and poor soils, (Sachs and Warner 1997). It would be easy to conclude that fast population lowers productivity when actually the tropical environment may be the cause.

Furthermore, a large body of demographic literature documents the incidence of population growth in Nigeria (see, for example Olusanya and Purcell, 1981: Faroog, 1985: Feyisetan and Ainsworth, 1996; Anyimue and Okojie, 1978; National population commission, 2002 and Federal Republic of Nigeria, 2004). These documents argue that this growth in population should not be cause for concern since in certain circumstances, a large population could be to the advantage of the country in terms of the sheer size of its domestic market, better division of labour, increased productivity through improvement in the ratio of labour force to population as well as enhancement of its political and military power. A large population also diversifies the demand for products and services and promoters the tendency to increasing returns to scale, thereby raising economic development and growth (Tesnu, 2000).

Additionally, advances in the arts, sciences and technology are the purview of highly talented individuals and invariably the large the population the more likely would be the number of such individuals in the society (Jakande ,1988, Mauldin and Sinding, 1993 and Idele, 1997). Admittedly, population growth puts severe pressure on existing resources, but as Simon 1996) observes, such growth Ushers in needed adjustments that neutralize the effects of depleting resources through the search for substitutes by stimulating technological change. Put differently, the ultimate resource is people who exert their dexterity to manage the challenges of growth. When viewed from the perspective, population growth is not necessarily a problem but an opportunity in disguise. Be that as it may, Nigeria’s large population has growth and development implication. To begin with it does not augur well for planning purposes. Plans only succeed when the implementation is pursued with reliable data. But in Nigeria experience the unreliability of demographic data makes plan implementation futile exercise in the country (African Development Bank, 2001).

Studies described elsewhere (World Bank, 1994; United Nations, 1998; Adonri, 2003) also detail other negative consequences associated with demographic change in Nigeria such as health complications arising from pregnancies that occur too early or too frequently during the reproductive of the mother. Population and health are thus closely related when considering high risk pregnancies. By preventing such pregnancies a significant impact can be made in enhancing the quality of life of the mother and child and by extension that of the entire population.

Population growth in Nigeria is equally associated with unemployment with figures ranging from 17 percent per annum for the entire population to 60 percent for the youth because job opportunities are fewer than the number seeking for them and stagnating economic performance because a large proportion of available resource is consumed instead of invested to generate growth (Federal Republic of Nigeria, 2004 b). In addition, it posses continuous pressure on resources, particularly on agricultural land. For instead, due to high density of people in the Eastern states as much as 53 percent of the farming population cultivate less than 0.4 hectares in a given year and in the more congested areas of these state most farmers cultivate only 0.2 hectares per year. This results to fragmentation of farm land and their subdivision into smaller plots to accommodate the growing farming populace. With time, the small plots would become untenable for even subsistence farming, forcing those concerned to move into marginal soils, where greater degradation takes place with attendant reduction in agricultural output (Akinbode, 2002, Madu, 2005). The application of modern farming techniques and fertilizers could assuage. This problem but unfortunately as a capital deficient country, the traditional farming dominate agricultural practice in Nigeria. Inevitably, therefore population pressure on a fixed factor like land would usher in diminishing returns (Iniodu 1998). T his is one of the explanation to decreasing peasant income and accompanying widespread poverty among the rural dwellers, the incessant food storage and insufficient calorie intake among the Nigeria people.

The changes in the structure of Nigeria’s population continue to shift in favour of the young age group 0-14 years. This age group accounted for 43 percent of the population during the 1963 census but the figure increased to 45 percent of the population during the 1991 census.

The health sector suffers the same investment fatigue with average growth rate of 2 percent and 1.2 percent for the capital and recurrent 1985 and 2002 being lower than the population growth rate of 3 percent (Central Nigeria 2003 b) that is why the public health institutions are over burdened by operational costs per capita over use negatively impacts on the physical conditions of their facilities and the growing number of patients reduces the availability of drugs in hospitals overwhelms the laboratories and machines employed in medical practice with attendant inefficiency in health care delivery. Other social like safe drinking water, good housing and constant electricity supply have become luxuries in Nigeria because as efforts are made to satisfy some communities, tearing number elsewhere yearn for attention, thereby dwarfing whatever achievements made in the realm of health and human development. For instance the proportion of the Nigerian population with access to safe drinking water and adequate sanitation in 1999 was 54.1 percent and 52.8 percent respectively (Federal office of statistic / UNICEF, 2000). The housing situation has worsened and the number of homeless people has increased, while urban shuns have risen in size (UNSN, 2002).

This submission to not imply that once population is growing, social services must crumble. On the contrary, robust economic growth coupled with equitable distribution of income lesson the negative consequences of population growth on economic development as the experiences of China, Indonesia and South Korea demonstrated in Nigeria, however growth has been sluggish and the gap between the rich and the poor keeps widening to the extent that the share of the poorest is 20 percent of the population in national consumption amounted to only 4 percent in 2002, while that of the richest 20 percent was 56 percent (Federal Republic of Nigeria, 2004 c ). A study by UNECA (1999) confirms this high income inequality among Nigeria citizens with a Gini co-efficient of 444 percent in the 1990s. Although there appears to be no link between population growth and low savings in Nigeria, the fact remain that as population grows, “capital widening” is needed to maintain existing per capita income and savings while declining fertility makes it possible for resources to be released for “capita deepening”, which helps the cause of poverty alleviation.

The forgoing arguments strengthen our belief that Nigeria has a population load factor that weight too heavily on its meager resources to guarantee the welfare of the citizens. Since the basic needs of the people are not adequately catered for, exacerbation of poverty is inevitable as rural decay and urbanization crunch intensify. That is why curbs are needed in Nigerian population growth rate to a level that is supportive of efforts to achieving sustainable economic growth and development in the country .

**2.2.1 ADVERSE EFFECTS OF POPULATION GROWTH ON ECONOMIC GROWTH**

**POVERTY:**

A core idea of the Malthusian legacy is that population growth depresses wages because it increases the supply ofworkers and thus directly lowers thewages of workers–theirprice ‘’Depressed wages are likely to be particularly onerous for the poor, labour earnings constitute the main source of income for the poor, who are less likely to own their income generating assets such as land (Kelly and MC Greevey1994).

In addition, the argument is made that population growth strains investment. As an economy strives to absorb workers, the supply of savings to be invested in capital declines, even though such investment is what spurs economic growth over the long run. According to proponents of Solow’s view, they recognize that technological advances can accommodate population growth, but neo-Malthusian argues that the accommodation is more the exception than the rule.

It also merit noting that neo-Malthusian view poverty as more than income deprivation rapid population growth strains the fixed capacities for basic human services basic infrastructure essential for survival and longevity are spread over greater number of people and hence to the per capita delivery of services is reduced. In short, non-pecuniary measures of poverty also increase (Ahlburg 1994)

**DEFORESTATION:**

Some observers claim that resources are harvested at excessive rates due to population pressure. Their contention is that timber is harvested too soon in order to supply products such as wood for housing construction. This depletes forests and causes additional environmental problems. More generally, the impoverishing effects of population growth make the populace excessively dependent on natural resource based activities such as timber production. Deforestation can cause soil erosion, watershed instability, and loss of carbon sequestration it can also reduce agricultural productivity. Moreover, the poor it is said, bear a disproportionate part of the costs of deforestation it can cause fuel supplies to dwindle, and the cost of gathering wood from large areas are thought to be borne disproportionately by women. (Todaro 1996)

**WATER POLLUTION**

Population growth is blamed for overuse of resource and reduction of conservation measures. Soil erosion threats to marine ecology and water pollution are comm. Of only viewed as negative consequences of rapid population growth. Water pollution is often considered the most serious pollution. According to Tadaro (1996), water pollution and scarcity lead to about two million deaths per year.

**NET SAVINGS**

One of the alleged harms of population growth is reduced savings. Population growth, it is said diverts resources to child rising and consumption, reducing the proportion and reducing the fraction of output that is saved and invested. Modern theories of consumption over the life cycle hold that population growth increases “dependency ratio” and in turn reduces saving (Kelly 1988) that is, with fast –growing population, a larger proportion of people are under the age of 15. This group has a lower savings rate than adults between the ages of 15 and 64(Todaro 1996).

**AGRICULTURAL PRODUCTIVITY**

Agricultural productivity permits greater specialization in an economy and generates greater food supplies. Rapid population growth may keep productivity low, depressing wages and keeping people on marginal farms. Indeed, stagnation of agricultural and the failure to adopt innovation technology represent the basic Malthusian apocalypse. There is ample evidence of low agricultural productivity in relatively poor countries, with corresponding adverse effects on poverty rates and environment (Todaro 1996)

**2.2.2 AN OVERVIEW OF THEORY OF ECONOMIC GROWTH**

**THE FACTORS BEHIND ECONOMIC GROWTH**

The solow model is the theoretical benchmark for most studies of long –run growth of output (typically measured by growth real gross domestic product (GDP). The value of all the goods and services produced in an economy during a year and it explains how saving, investment and growth respond to population growth and technical change. The model is characterized by a production function that explains the level of output and includes two input factors: labour and capital (physical and human capital). Economic growth is the determined by the amount of available capital in the economy, the efficiency with which the capital is used and the degrees of its employment. Population growth and increases in physical capital lead to growth if the new resources are employed in the productivity process of the country. Improvements in the productivity of the human capital and physical capital stocks lead to increased efficiency and enhanced growth. Growth and investments in human and physical capital increase the capital stock, provided that the investments and growth are greater than the depreciation. Human capital investment consists of education attainment, training and better health. Since the available resources of the economy are not employed all times, the rate of employment is directly related to economic growth.

The model predicts a stable steady-state output growth which is limited to population growth (in equilibrium), meaning that per capita output is constant over time steady. State equilibrium is an equilibrium in which each variable is either constant or growing at a constant rate). Growth is also influenced; however, by rates of saving and technical change which explain growth in per capita output, i.e. technical changes of total factor productivity determine changes in output growth with unchanged input of labour and capital. Population growth, savings and technical change are exogenous variable. The model also predict’s “conditional convergence”. Which states that economic with low initial per capita output (poor countries) grow faster than countries with predictions follow from the basic assumptions of a constraint returns to scale of production function with diminishing returns to capital and labour. This means that increases in, for example, the amount of capital (input of labour unchanged) lead successively to smaller increases in output the lower the ratio of capita). The higher the return to investing in capita. Using this model, Solow shows that the rates of saving and population growth determine the steady – state level income per capita across countries reach different steady- states because of variations in the key factors that determine the level of steady- state

**CHAPTER THREE**

**RESEARCH METHODOLOGY**

**3.0 INTRODUCTION**

This chapter describes the various methods and techniques used to collect and analyze the data gathered for the study to gain a deeper understanding of the topic under study.

The data collection stage is important since the result of the analysis is dependent on the quality of the data obtained. Therefore, the method selected for data collection must be the most appropriate to assist in achieving the objectives of the study:

**3.1 RESEARCH DESIGN**

The type of research design for this study is exploratory and it is conducted because a problem has not been clearly defined. It helps to determine the best research design, data collection method and selection of subjects.

Primary ways which are Literature Research, talking to experts in the area of study and interview method were also employed.

**3.2. POPULATON OF STUDY**

Population is defined as the total number of persons in a particular situation. It is the totality of all cases which possesses a set of well-defined characteristic or conforms to some design. It is the entire group of items which the researcher wishes to study and plan to generalize on. However, in this research, the population will comprise of medical practitioners and some selected patients in the federal medical center Osogbo.

**3.3 DATA COLLECTION METHOD**

This study utilizes primary data extracted from the central bank statistical bulletin from 2000 - 2014.

**3.4 MODEL SPECIFICATION**

The model for the study comprises of two constructs as described below:

***MODEL 1***

***GDP= α+β1BR + β2BR + e-------------------------------------- (1)***

***Where***

***GDP***signifying gross domestic product is used to measure the economic growth of Nigeria.

***BR*** signifies fertility rate

***DR*** signifies mortality rate

***α***is the equation’s constant.

***β1***the coefficient of fertility rate.

***β2***the coefficient of mortality rate.

***e*** Is the error term of the equation

**3.3 DATA ANALYSIS**

Saunders et al (2000) defines data analysis as consisting of three concurrent flows of activity that is data reduction, data display and a conclusion drawing/verification part.

Various analytical tools and soft wares such as pie charts, tables, and Statistical Package for Social Science (SPSS) will be used in analyzing data for this study.

Data collected will be analyzed using frequencies and percentages. These frequencies and percentages will enable the researcher to clearly represent true data characteristics and findings with a great deal of accuracy. Interpretation and analysis of data will also be used to describe items in tables used for this study.

**CHAPTER FOUR**

**DATA PRESENTATION, ANALYSIS AND INTERPRETATION**

This chapter is devoted to the presentation, analysis and interpretation of the data gathered in the course of this study. The data used for this study is secondary data from the central bank of Nigeria 2012 statistical bulletin. The data are been analyzed using regression.

**4.1 Data Presentation and Analysis**

|  |  |  |  |
| --- | --- | --- | --- |
| YEAR | FERTILITY RATE | MORTALITY RATE | GDP |
| 2000 | 40.16 | 13.72 | 3.5 |
| 2001 | 39.69 | 13.91 | 3.5 |
| 2002 | 38.75 | 14.1 | 3.0 |
| 2003 | 38.24 | 13.76 | 7.1 |
| 2004 | 40.65 | 13.99 | 6.2 |
| 2005 | 40.43 | 17.18 | 6.9 |
| 2006 | 40.2 | 16.94 | 5.3 |
| 2007 | 37.23 | 16.68 | 6.4 |
| 2008 | 36.65 | 16.68 | 5.3 |
| 2009 | 36.07 | 16.56 | 5.6 |
| 2010 | 35.51 | 16.31 | 8.4 |
| 2011 | 39.23 | 16.06 | 7.2 |
| 2012 | 38.78 | 13.48 | 6.3 |
| 2013 | 38.78 | 13.20 | 6.2 |
| 2014 | 38.03 | 13.16 | 6.3 |

*SOURCE:CBN Bulletin(2000-2014)*

**RESEARCH HYPOTHESES**

**Hypothesis 1**

H0 there is no relationship between fertility rate and economy of Osogbo Local Government.

H1 there is a relationship between fertility rate and economy of Osogbo Local Government.

Level of significance: 0.05

Decision rule: reject the null hypothesis if the p-value is less than the level of significance or accept the null hypothesis if otherwise.

| **Correlations** | | | |
| --- | --- | --- | --- |
|  |  | FERTILITY RATE IN NIGERIA | GROSS DOMESTIC PRODUCT |
| FERTILITY RATE IN NIGERIA | Pearson Correlation | 1 | .741 |
| Sig. (2-tailed) |  | .014 |
| N | 15 | 15 |
| GROSS DOMESTIC PRODUCT | Pearson Correlation | .741 | 1 |
| Sig. (2-tailed) | .014 |  |
| N | 15 | 15 |

**Conclusions on the Decision rule based on the Correlation table above**

Since the p-value (0.014) is less than the level of significance (0.05), we reject the null hypothesis and conclude thatthere is a relationship between fertility rate and economy of Osogbo Local Government.

**Hypothesis 2**

H0 there is no relationship between mortality rate and economy of Osogbo Local Government.

H1 there is a relationship between mortality rate and economy of Osogbo Local Government.

Level of significance: 0.05

Decision rule: reject the null hypothesis if the p-value is less than the level of significance or accept the null hypothesis if otherwise.

| **Correlations** | | | |
| --- | --- | --- | --- |
|  |  | GROSS DOMESTIC PRODUCT | MORTALITY RATE IN NIGERIA |
| GROSS DOMESTIC PRODUCT | Pearson Correlation | 1 | -.694 |
| Sig. (2-tailed) |  | .008 |
| N | 15 | 15 |
| MORTALITY RATE IN NIGERIA | Pearson Correlation | -.694 | 1 |
| Sig. (2-tailed) | .008 |  |
| N | 15 | 15 |

**Conclusions on the Decision rule based on the Correlation table above**

Since the p-value (0.008) is less than the level of significance (0.05), we reject the null hypothesis and conclude thatthere is anegative relationship between mortality rate and economy of Osogbo Local Government.

**Hypothesis 3**

H0 there is no relationship between fertility rate, mortality rate and economy of Osogbo Local Government.

H1 there is a relationship between fertility rate, mortality rate and economy of Osogbo Local Government.

Level of significance: 0.05

Decision rule: reject the null hypothesis if the p-value is less than the level of significance or accept the null hypothesis if otherwise.

| **ANOVA** | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
| 1 | Regression | 5.434 | 2 | 2.717 | 1.146 | .003a |
| Residual | 26.070 | 11 | 2.370 |  |  |
| Total | 31.504 | 13 |  |  |  |
| a. Predictors: (Constant), MORTALITY RATE IN NIGERIA, FERTILITY RATE IN NIGERIA | | | | | | |
| b. Dependent Variable: GROSS DOMESTIC PRODUCT | | | | |  |  |

**Conclusions on the Decision rule based on the ANOVA table above**

Since the p-value (0.003) is less than the level of significance (0.05), we reject the null hypothesis and conclude thatthere is a relationship between fertility rate, mortality rateand theeconomy of Osogbo Local Government.

**MODEL FOR THE STUDY**

| **Model Summary** | | | | |
| --- | --- | --- | --- | --- |
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | .415a | .172 | .022 | 1.53948 |
| a. Predictors: (Constant), MORTALITY RATE IN NIGERIA, FERTILITY RATE IN NIGERIA | | | | |

The multiple correlation coefficient R= 0.415 indicates a medium relationship between fertility rate, mortality rateand the economy of Osogbo Local Government.

| **Coefficients** | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
| B | Std. Error | Beta |
| 1 | (Constant) | 10.705 | 12.780 |  | .838 | .420 |
| FERTILITY RATE IN NIGERIA | .031 | .273 | .033 | .848 | .04 |
| MORTALITY RATE IN NIGERIA | -.264 | .295 | -.260 | -.892 | .01 |
| a. Dependent Variable: GROSS DOMESTIC PRODUCT | | | |  |  |  |

**Conclusions based on table 3 above**

The gross domestic product will increase by 0.031 for every increase in fertility rate. Therefore one can say that fertility rate positively influences the economy of Osogbo Local Government.

The gross domestic product will decrease by -0.264 for every increase in mortality rate. Therefore one can say that mortality rate negatively influences the economy of Osogbo Local Government.

**CHAPTER FIVE**

**FINDINGS, CONCLUSION AND RECOMMENDATION**

The objectives of the study was to

1. To know if the economy can be predicted from the fertility rate.
2. To know if there is a relationship between fertility rate and the economy of Osogbo Local Government.
3. To know if there is a relationship between mortality rate and the economy of Osogbo Local Government.
4. To predict the economy of Osogbo Local Government using the fertility and mortality rate.
5. To know the nature of the relationship that exists amongst fertility rate, mortality rate and the economy of Osogbo Local Government.

Findings from the study revealed the following

1. There is a significant relationship between fertility rate and the economy of Osogbo Local Government.
2. There is a significant relationship between mortality rate and the economy of Osogbo Local Government.
3. There is a significant relationship between fertility rate, fertility rate and the economy of Osogbo Local Government.

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