

**HUMAN CAPITAL DEVELOPMENT AND ECONOMIC GROWTH
AS TOOLS FOR
NATIONAL TRANSFORMATION IN NIGERIA**

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CERTIFICATION

I certify that this project titled

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DEDICATION

I dedicate this research project to the Beginning and the End, the First and the Last, the Giver of life, the I Am that I Am, the Strengthener, My Redeemer, my Maker, the Almighty God who has been the source of my strength, support, help and courage. If it had not been the Lord who has been on my said, where would I have been? He is the one who redeemed my life and made me relevant in life. He gave me the spirit of commitment to complete my research project successfully and victoriously. Unto Him alone do I give all the glory. I also dedicate this to my loving and praying father who did not give up on me, my loving and caring mother who could sacrifice anything to ensure my success and to my mentor and supervisor.

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ABSTRACT

This study examined human capital development and Economic growth as tools for national transformation in Nigeria. It assessed the relationship human capital development has with economic growth and analyzed how the relationship can result in national transformation in Nigeria from 1980 to 2013. Ordinary Least Squares (OLS) was used to analyze the data.

The results of the study revealed that Human Capital development (HCD) has a negative impact on economic growth (RGDP) in the short run. Further study revealed that on the long run human capital development has a positive impact on economic growth. The study concluded that high level of human capital development holds the key to the nation's socioeconomic development as proved by this research study. We recommend that government should boost investment in the education and health sectors so as to enhance economic growth leading to the national transformation of the country.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Nigeria rebased its GDP from 1990 to 2010 resulting in an 89% increase in the estimated size of the economy. As a result, the country now boasts of having the largest economy in Africa with an estimated nominal GDP of USD 510 billion, surpassing South Africa's USD 352 billion. Nigeria maintained its impressive real gross domestic growth estimated at 7.4%, surpassing the 6.7% growth in 2012. This growth rate is higher than the sub regional level and far higher than the Sub – Saharan African level. The performance of the economy is attributed to the favourable improvements in the non-oil sector, with real GDP growth of 5.4%, 8.3%, 7.8% in 2011, 2012 and 2013 respectively. Agriculture (particularly crop production), trade and service continue to be the main driver of the non-oil sector growth. The oil sector growth performance also contributed 3.4%, 2.3% and 5.3% in 2011, 2012 and 2013. (AEO, 2014)

Despite all this, poverty and unemployment remain prominent among the major challenges facing the economy. The reason is because the benefits of economic growth have not sufficiently trickled down to the masses. Even though the 2014 national budget that was passed into law by the national assembly focuses mainly on National transformation, creating more jobs, alleviating poverty, human development and growth, there has not been any result so far in the country (Barbara, 2014).

The economists make us understand that the sudden economic growth does not mean that Nigeria grew overnight nor Nigerians are richer and more comfortable than they were. The majority of the country's 170 million still live on less than a dollar per day. The rebased GDP figure only implies that the economy is more than an oil enclave, exporting crude oil to pay for the goods imported into the country from richer countries. The contribution of the oil industry to Nigeria's GDP is now put at 14% compared with the 33% it contributes before. Manufacturing is higher than previously thought, services are booming. But Nigeria remains a tough place to do business and the majority of the population is still living less comfortable life. This shows that Nigeria is still far from National Transformation. For Nigeria to meet the millennium development goals (MDGs) 2015 and also to achieve a growing and developing economy, it needs to start taking necessary steps and policies that will boost human capital development as well as economic growth in the country (Johannesburg, 2014).

According to Omoh (2011), Nigeria's economic managers are fond of reeling out economic indices and informing the country that its economy is developing and it is doing well. Very often, they adjudge the economy as developing with economic growth rate. The Minister of Finance and the Central Bank of Nigeria (CBN) Governor have at various points announced that the economy has grown by 7 percent. In spite of the 7 percent economy growth, 40 percent of labour force willing to work cannot find jobs, financial institutions are not granting credit which has resulted in low or no investment, a lot of industries have experienced industrial closures rather than industrial expansion, foreign direct investment (FDI) into Nigeria dropped by as much as 62 percent in 2010, from \$6 billion in 2009 to 2.3 billion in 2010. The assumed developing economy has its poverty index raised from 45 percent in 1999 to 70 percent today (UN, UNCTAD (2011)).

For a meaningful growth to take place in Nigeria, the government and the economic managers must shift their attention from economic growth and focus on National transformation which can be achieved by ensuring a growing and developing economy. Human capital plays an indispensable role in the transformation of any nation's economy; it must be developed and efficiently utilized. Lucas (1988), Romer (1990), Barro and Lee (1993) using endogenous growth model revealed that investment in human capital led to growth in physical output which in turn led to economic growth. Todaro (1999) was of the view that investment in physical output alone without an investment in human capital will result in a rising economic growth without any impact on human capital development. This implies that a country can have a high GDP revealing stable economic growth without a corresponding growth in human development. Hence, the education sector may be lagging behind, the health sector may be poor and the cost of living can also be high.

Ali (2002) quoted a merchant banker from Gulf Cooperation council countries (GCC) as having asked and answered the question "what is rich?" According to him, *Rich is education... expertise... technology... good health... enjoying life ... living comfortable... acquiring knowledge*. Reverse is the case in Nigeria, the Nigeria government believe that "rich" means physical wealth (money) therefore, they have been focusing on increasing the economic output and productivity, neglecting infrastructural facilities, securities, poverty alleviation programmes and human development.

Planning in Nigeria was centered on the accumulation of physical capital for rapid growth and development, without recognition of the importance of human development in the development plans. There can be no significant national transformation in any country without adequate human capital development. A country that will experience economic transformation must be both human and output conscious, the government of Nigeria has been focusing more on output because of the wealth it fetches them for embezzlement neglecting human development, they also depend on how these resources are used – whether for buying weapons instead of producing food, or building houses instead of providing health care and educational facilities. That is why Nigerian economy is referred to as growing but not developing, the impact of economic growth has not trickled down to the masses.

1.2 Statement of the problem.

There can be no significant economic growth in any country without adequate human capital development. In the past, much of the planning in Nigeria was centered on the accumulation of physical capital for rapid growth and development, without recognition of the important role played by human capital in the development process.” Over the years, government has neglected the serious decay in both infrastructure and human capital development and hence, resulted in the low productivity in the Nigeria economy for many decades.

During the second development plan of Nigeria between 1970-1974, it was noted that the major constraint to the plan implementation was inadequate absorptive capacity due to:

- ❖ Shortage of skilled man power.
- ❖ Serious neglect of government in funding of education sector
- ❖ Political instability which cause frequent changes in education policies
- ❖ Low measure of budgetary allocation to human resources development and its relative indices
- ❖ Low quality of education which is needed for human capital development.
- ❖ Failure in development due to wrong mix of economic growth and human capital development.

The major problem with growth and development in Nigeria is that what the government refers to as national development with which they confuse the populace that the economy is growing and developing is occasioned by rising oil prices, when the prices of crude are high and it earns more money. If the prices of oil crashes today, it means that the economy will shrink. Why will this happen? Individuals in the economy are not productive.

The gap this research tries to cover is to see how the economy of Nigeria can be transformed looking at the impact of human capital development and economic growth which has not been the major objective of many researchers in this field.

1.3 Research Questions

It is against these backdrops that we pose the following questions:

- 1) To what extent does human capital development has effect on economic growth in Nigeria?
- 2) What is the relationship between education and health (human capital development) in respect to economic growth in Nigeria?
- 3) Is there any significant relationship existing between human capital development and economic growth in the transformation of Nigeria?

1.4 Objective of the Study

The broad objective of this research is to evaluate and appraise the role of human capital development and economic growth as a vital tool in the transformation of a Nigeria. The specific objectives are as follows:

1. To empirically determine the linkage between human capital development and economic growth in the transformation of Nigeria.
2. To examine human capital development and its impact on economic growth.
3. To determine the short run and long run relationship between human capital development and economic growth.
4. To determine the direction of causality between human capital development and economic growth.

1.5 Significance of the study

This study is prompted by the slow rate of Nigeria economic transformation and socio-economic development despite the high economic growth rate and the renewed attention paid to the role of human capital formulation in the country's development process as declared by the federal government in its 1999-2003 economic policy programme. It has been discovered that the high growth rate is characterized by sales of crude oil which is unreliable and non-renewable and is prone to fall when there is a fall in the price of crude oil. Can any economy

grow by as much as 7 per cent without absorbing more labour in an economy where close to 40 per cent of the able-bodied labour force willing to work cannot find jobs? Can an economy grow in a situation where financial institutions are not granting credit, can an economy grow in a situation where there are no new investments, no replacement of machinery, instead of industrial expansion, there are closures? How many new jobs created stand as a measure of the level of growth recorded? Many Small and Medium enterprise in Nigeria (SMEs) which are very crucial in the transformation of the economies of countries world-wide remain stagnant, uncompetitive and do not reach their full capacity due to lack of fund and human development. Nigeria still records massive poverty, high mortality rate, and low levels of education. Academic Staff Union of Universities (ASUU) strike and medical doctor strike have become an annual event in Nigeria. The government and its agencies will find this work useful in formulating policies, directives and regulations that will enable national transformation in Nigeria with the full employment of human capital development and economic growth as tools.

1.6 Scope of the Study

The research work intends to examine the relationship between human capital development and economic growth. To show the ways through which human capital development and economic growth can enhance development in Nigeria.

The research work also covers the problems and prospects of human capital development and economic growth as well. It uses a time series data from 1980 to 2013 covering a period of 35 years.

The data for the study are reports from National Bureau of Statistics (NBS) and Central Bank of Nigeria (CBN) of various years and index mundi

1.7 Limitations of the study

The following form a setback to the study:

- a. Time constraints: the time given for this research work is very short that the researcher cannot visits all the institutions he intends visiting for proper research work
- b. Financial constraints: money is another problem that stopped the research from getting all information intended for this work.
- c. Data constraints: due to the poor database system in Nigeria, the researcher could not get the adequate data needed for proper research work.

1.8 Organisation of the Study

This research work is divided into five Chapters: Chapter one comprises of the introduction. Chapter two covers the theoretical framework and literature review while Chapter three majors in the research methodology; Chapter four is discussion and interpretation of results. Chapter five then covers the summary of findings, conclusion and policy recommendation.

1.9 Definition of Terms

National Transformation: This can be defined as an articulation of the long-term intent to launch Nigeria onto a path of sustained social and economic progress and accelerate the emergence of a truly prosperous and united Nigeria (Vision 20:2020 economic transformation blueprint 2009).

Economic Growth: This is a quantitative sustained increased in the countries per capita output or income accompanied by expansion in consumption, capital and volume of trade (Jhingan, 2001).

Human Capital: These are those resources that are inherent in each human being, which can be traded between the users and the owners to improve their respective living conditions (Schultz, 1961).

Education: This is a life-long process through which man's all round (moral, emotional, physical and intellectual) development is facilitated for him to be useful to himself and the society into which he is born (Ijaiye and Lawal, 2004).

Health: This is not only the absence of illnesses; it is also the ability of people to develop to their potential during their entire lives. In that sense, health is an asset individuals possess, which has intrinsic value (WHO, 2004)

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Transformation according to caselli, et al (2001) can be defined as the convergence of a nation where every individual is unskilled to one in which everyone is skilled. It can also be the situation where greater freedom and capabilities will improve economic performance and increased incomes will increase the range of choices and capabilities enjoyed by households and governments. In order to achieve this, human capital development will have an important effect on economic growth. Similarly, economic growth will enhance human development. This Chapter will analyse the relationships that exist between economic growth and human capital development and the two-way linkages involved.

According to the Nigeria Vision 20:2020 economic transformation blueprint 2009, National transformation can be defined as an articulation of the long-term intent to launch Nigeria onto a path of sustained social and economic progress and accelerate the emergence of a truly prosperous and united Nigeria. Recognising the enormous human and natural endowments of the nation, the blueprint is an expression of Nigeria's intent to improve the living standards of her citizens and place the country among the Top 20 economies in the world with a minimum GDP of \$900 billion and a per capita income of no less than \$4000 per annum. Fundamental to the Vision are two broad objectives – optimizing human and natural resources to achieve rapid economic growth, and translating that growth into equitable social development for all citizens.

National Transformation, according to economic transformation blueprint 2009 is defined across four dimensions:

Social Dimension: A peaceful, equitable, harmonious and just society where every citizen has a strong sense of national identity and citizens are supported by an educational and healthcare system that cater for all, and sustain a life expectancy of not less than 70 years

Economic Dimension: A globally competitive economy that is resilient and diversified with a globally competitive manufacturing sector, which is tightly integrated and contributes no less than 25% to Gross Domestic Product.

Institutional Dimension: A stable and functional democracy where the rights of the citizens to determine their leaders are guaranteed, and adequate infrastructure exists to support a market-friendly and globally competitive business environment

Environmental Dimension: A level of environmental consciousness that enables and supports sustainable management of the nation's God-given natural endowments to ensure their preservation for the benefit of present and future generations.

The importance of National Transformation in Nigeria

According to the economic transformation blueprint 2009, the following are the importance of national transformation in Nigeria.

- a) Aggressively pursuing a structural transformation from a mono-product economy to a diversified, industrialized economy;
- b) Investing to transform the Nigerian people into catalysts for growth and national renewal, and a lasting source of comparative advantage; and
- c) Investing to create an environment that enables the co-existence of growth and development on an enduring and sustainable basis.
- d) Creating the platform for success by urgently and immediately addressing the most debilitating constraints to Nigeria's growth and competitiveness

2.2 Conceptual Framework

2.2.1 Human capital development

Recent challenges such as globalization, a knowledge-based economy, and technological evolution, have promoted many countries and organizations to seek new ways to maintain competitive advantage. In response, the prevailing sense is that the success depends in large part on the people with higher levels of individual competence. In the end, the people are becoming valuable assets and can be recognized within a framework of human capital. Broadly, the concept of human capital is semantically the mixture of human and capital. In the economic perspective, the capital refers to 'factors of production used to create goods or services that are not themselves significantly consumed in the production process' (Boldizzoni, 2008). Along with the meaning of capital in the economic perspective, the human is the subject to take charge of all economic activities such as production, consumption, and transaction. On the establishment of these concepts, it can be recognized

that human capital means one of the production elements which can generate added-values through inputting it.

Human capital has been defined in various ways. The concept of human capital refers to the knowledge, skills, attitudes, physical and managerial effort required to manipulate capital, technology, and land among other things to produce goods and services for human consumption (UNECA, 1990). Human capital is the term economists often use for education, health, and other human capacities that can raise productivity when increased (Todaro and Smith 2003). Health and education are two closely related human capital components that work together to make the individual more productive. Schultz (1961) saw human capital as those resources that are inherent in each human being, which can be traded between the users and the owners to improve their respective living conditions. He outlined these inherent resources in human beings to include knowledge (knowing what to do), skills (knowing how to do what is to be done), and attitude (behavioural demonstration of a favourable inclination while doing that which is to be done). No mention is made here of health. Barro (1991) carried out a study on the effects of human capital on growth. His study was based on data sets pertaining to very diverse array of countries. He used a narrow flow of human capital such as school enrolment rates at the primary and secondary level. Human capital can thus be regarded in two ways: the narrow sense which deals with just education, or the broader sense which adds health to the education component. It has become conventional to discuss human capital in its narrower sense because expenditure on education and training is capable of measurement as compared to healthcare (Jhingan, 2005).

The method to create the human capital can be categorized into two types. The first is to utilize 'human as labor force' in the classical economic perspective. This meaning depicts that economic added-value is generated by the input of labor force as other production factors such as financial capital, land, machinery, and labor hours. Until the monumental economic growth of the 1950's, most of economists had supported the importance of such quantitative labor force to create products. The other is based on the assumption that the investment of physical capital may show the same effectiveness with that of human capital on education and training (Little, 2003). This assumption accepts as a premise that human capital expansively includes the meaning of 'human as creator' who frames knowledge, skills, competency, and experience originated by continuously connecting between 'self' and 'environment'. Among the concepts of the human capital mentioned above, the latter is said to be more important than the former (Beach, 2009).

Actually, many empirical literatures show that human capital affects various social components. In the 1950's, some economists discovered that the investment of human capital was the primary element to raise individuals' wages compared to the quantitative input of other components such as land, financial capital, and labor force (Salamon, 1991). Similarly, Woodhall (2001) affirm that the investment of human capital is more effective than that of physical capital. Throughout the investment of human capital, an individual's acquired knowledge and skills can easily transfer to certain goods and services (Romer, 1990).

Accumulation of knowledge and skills are the key concept of human capital, there is therefore a widespread belief that learning is the core factor to increase the human capital. In other words, learning is an important component to obtain much knowledge and skills through different means of acquisitions such as education, training, etc. (Sleezer, et al 2003). Such accumulation of human capital through learning activities significantly influences many sectors. In the macroscopic aspects, many researchers present that accumulation of one's human capital on education and training investment largely affects the growth of an individuals' wage, firms' productivity, and national economy (Denison, 1962; Schultz, 1961). Microscopically, Lepak and Snell (1999) show that firm's core competences or competitive advantage is induced by the investment of human capital entailed with value creating potential. According to Lucas (1988), a microeconomic model shows that education investment for workers significantly affects their productivity in the workplace. Along with the belief that education and training improve workers' productivity, many researchers stress the importance of education and training in the human capital field (Griliches and Regev, 1995; Rosen, 1999).

In recent times, economists have devoted a great deal of effort to develop and quantify the concept of human capital, and have studied it through the concept of investment in its formation, in such activities as education (academic study or on-the-job training), migration and medical care (Becker, 1993). The whole idea of human capital emanate from the fact that the acquisition of utilitarian skills, talents, knowledge, and the maintenance of the acquirer during his/her education, study, or apprenticeship, always costs a real expense, which is an investment in the person, hence such investment is conceived to be a capital. The point being stressed here is that the improved skills of a workman may be considered in the same light as a machine or instrument of trade, which facilities and abridges labor and which, though it costs a certain expense, repays that expense with a profit over time.

Following the above line of argument, Schultz (1995) posits that much of what we call consumption constitutes investment in human capital. He also asserted that direct expenditures on education, health care, and internal migration create advantage of better job opportunities. According to him, people use their leisure time to improve their skills and knowledge, which in turn enhances the quality of the human efforts and its productivity. These efforts are capital because they are substantially products of deliberate investment. In the words of Becker (1993), they are called human capital because people cannot be separated from their knowledge, skills, and health or values in the way they can be separated from their financial and physical assets. Schultz therefore asserted that investment in human capital is probably the major explanation for the differences observed in the productive (output) levels in the various economies of the world. The argument is that well-developed human capital plays an important role in the development process of nations.

Importance of Human Capital on Socio-economic development

The origin of human capital goes back to the emergence of classical economics in 1776, and thereafter developed as a scientific theory (Fitzsimons, 1999). After the manifestation of that concept as a theory, Schultz (1961) recognized human capital as one important factor for national economic growth in the modern economy. With the emergence and development of human capital as an academic field, some researchers expansively attempted to clarify how the human capital could contribute to socio-political development and freedom (Alexander, 1996; Grubb and Lazerson, 2004; Sen, 1999). The concept of human capital can be variously categorized by each perspective of academic fields.

The first viewpoint is based on the individual aspects. Schultz (1961) recognized the human capital as 'something akin to property' against the concept of labor force in the classical perspective, and conceptualized 'the productive capacity of human beings as vastly larger than all other forms of wealth taken together'. Most of researchers have accepted that Schultz view of human capacity is based on knowledge and skills embedded in an individual (Beach, 2009). Similar to his thought, few researchers show that human capital can be closely linked to knowledge, skills, education, and abilities (Garavan et al., 2001; Youndt et al., 2004). Rastogi (2002) conceptualizes the human capital as 'knowledge, competency, attitude and behavior embedded in an individual'.

The second viewpoint is based on human capital itself and the process of accumulation. This perspective stresses that knowledge and skills is obtained through educational activities such

as compulsory education, post-secondary education, and vocational education (De la Fuente and Ciccone, 2002, as cited in Alan et al., 2008). Despite the extension of the concept of human capital, this perspective neglects that human being would acquire knowledge and skills through his or her experience.

The third viewpoint is closely linked to the production-oriented perspective of human capital. Romer (1990) refers to the human capital as 'a fundamental source of economic productivity'. Rosen (1999) states the human capital as 'an investment that people make in themselves to increase their productivity'. More recently, Frank and Bernanke (2007) define that human capital is 'an amalgam of factors such as education, experience, training, intelligence, energy, work habits, trustworthiness, and initiative that affect the value of a worker's marginal product'. Considering the production-oriented perspective, the human capital is 'the stock of skills and knowledge embodied in the ability to perform labor so as to produce economic value' (Sheffin, 2003).

Furthermore, some researchers define that human capital is 'the knowledge, skills, competencies and attributes in individuals that facilitate the creation of personal, social and economic well-being' with the social perspective (Rodriguez and Loomis, 2007). Consequently, human capital simultaneously includes both the instrumental concept to produce certain values and the endogenous meaning to self-generate it. In order to dependently or independently create these values, there is no doubt that learning through education and training is an important term in defining the concept of human capital. Considering that experience can be included as a category of knowledge, the human capital can be said to be synonymous to knowledge embedded in individuals.

Characteristic of Human capital

According to Crawford (1991), compared to physical capital, human capital has broad characteristics which includes expandable, self-generating, transportable, and shareable characteristic. To begin with, the expandable and self-generating characteristics of human capital are closely linked to the possibility that the stock of knowledge increases individuals' human capital. Furthermore, the increase of human capital can be expanded by either endogenous or exogenous factors. It is possible that original knowledge can be continuously elaborated and developed through the relationship between external knowledge, information, skills, experiences, and other knowledge-based factors as well. In the economic perspective, the characteristic of human capital focusing on knowledge can be a core element to solve

'problem of scarcity' in which the available resources can be equally distributed to all economic agents.

Secondly, the transportable and shareable characteristics of human capital mean that the original holder of knowledge can distribute his or her knowledge to others. On the circumstance that the original knowledge-holder's exclusive ownership is slightly acceptable, the distribution of knowledge between the holders and the takers can be actualized. Consequently, the former two characteristics extend the 'volume' of human capital, and the latter two expand the 'range' of human capital.

Impacts of Human Capital

The impact of human capital is largely categorized into three parts: individual, organization, and society. In the perspective of individual in the internal labor market, most researchers attribute the ability of individual to increase their income to individual productivity (Becker, 1993; Denison, 1962; Schultz, 1961; Schultz, 1971; Sidorkin, 2007). For the purpose of maximizing organizational profits, most employers prefer to employ highly productive individuals. Furthermore, it is considered that labour mobility increases owing to the improvement of individual productivity in the internal labor market. In order to increase productivity in a firm, the highly-productive individuals are recognized as the worker with much possibility to move to higher level in the internal market (Sicherman, 1991; Galor 1990). In the perspective of individual in the external market, an unemployed individual's human capital affects his or her job-seeking and employable opportunities (Greider, et al., 1992; Vinokur et al., 2000). On the internalized human capital, an individual easily holds the possibility to access job related information with high level of human capital, and thereafter he or she can easily obtain the occupational chances compared to otherwise.

With respect to organization, Lepak and Snell (1999) suggest that the potential of human capital is closely linked to core competences and competitiveness of organization. Similar to this perspective, Edvison and Malone (1997) viewed that individual human capital can affect organizational human capital such as collective competences, organizational routines, company culture and relational capital.

Finally, the social perspective of human capital is the synthesis of both individual and organizational perspective. McMahon (1999) depicts the possibility of human capital for 'democracy, human rights, and political stability' on common consciousness of social

constituents. According to Beach (2009), human capital can increase social consciousness of constituents within community. Consequently, the link between human capital and social consciousness is based on a close inter-relationship resulting in sociopolitical development (Alexander, 1996; Grubb and Lazerson, 2004; Sen, 1999).

Division of Human Capital

Generally, some researchers present three distinguished kinds of human capital such as general, firm-specific, and task-specific human capital (Gibbons and Waldman, 2004; Hatch and Dyer, 2004). Otherwise, Becker (1964) delineates that human capital is categorized into general and specific one. General human capital is 'to be defined by generic knowledge and skill, not specific to a task or a company, usually accumulated through working experiences and education' (Alan et al., 2008). The general human capital holds 'transferable' characteristic across jobs, firms and industry. It is relatively easy that the general human capital embedded in an individual transfers to different industries. Contrast to the general human capital, firm/task specific human capital is usually accumulated through education, training, working experience on 'knowledge specific to a firm/task' (Alan et al., 2008). As pointed out by Becker (1964, 1976), the specific human capital is rarely transferable to be applied to other jobs, firm, and industry, and thus it is impossible to transfer much income in the labor market. Furthermore, human capital is 'specific if it increases a worker's productivity only at the firm' (Becker, 1964). Consequently, it is difficult that the specific human capital embedded in an individual transfers to different industries.

Conventional Measurement Method of Human Capital

The conventional standard to measure human capital stock has been largely categorized into three parts: Output-, Cost-, and Income-based approach. School enrollment rates, scholastic attainments, adult literacy, and average years of schooling are the examples of output-based approach; cost-based approach is based on calculating costs paid for obtaining knowledge; and income-based approach is closely linked to each individual's benefits obtained by education and training investment.

Output-Based Approach

For the purpose of analyzing relationship between human capital and economic growth, some economists attempted to measure the stock of human capital utilizing 'school enrollment rates' as a proxy of human capital (Barro, 1991; Barro and Lee, 1993). Throughout calculating the ratio between individuals of school age and students enrolling in the

educational institutions, the economists show the stock of human capital that each country holds. However, the method includes a drawback that a student's effectiveness can be recognized after participating in production activities. In the perspective of educational attainment, Nehru, et al., (1993) attempted to measure relationship between human capital and students' 'accumulated years of schooling' in the employable age as educational attainment. Assuming that the stock of human capital is the sum of each individual's years of schooling; it is difficult to clearly demonstrate this relationship, because educational attainment is a part of regular [school] education. Actually, many of adults tend to participate in many formal education and training activities to improve their productivity. Besides measuring the stock of human capital with school enrollment rates and educational attainment, Romer (1990) suggested the ratio between skilled-adults and total adults to measure the stock of human capital in the national economy. Furthermore, Organization for Economic Cooperation and Development (OECD) utilizes International Adult Literacy Survey (IALS), the ratio between literate adults and total adults, to measure the stock of human capital. However, the method of IALS includes a few drawbacks in that literacy can be slightly related to labor productivity, and the productivity can be increased by informal/non-formal learning activities such as personal learning and On-the-Job training.

Cost-Based Approach

Cost-based approach is based on measuring the stock of human capital through summing costs invested for one's human capital. For the purpose of calculating the invested costs, Kendric (1976) utilized an individual's investment costs considering depreciation, and Jorgenson and Fraumeni (1989) presented discounted income in the future. Considering that this approach is based on indirectly measuring stock of human capital, it is difficult to precisely classify boundary between investment and consumption in the perspective of costs for the human capital.

Income-Based Approach

This approach is based on the returns which an individual obtains from a labor market throughout education investment. Mulligan and Sala-i-Martin (1995) defines that aggregate human capital is the sum of quality adjustment of each individual's labor force, and presents the stock of human capital utilizing an individual's income. Considering that human-unrelated factors have more influence on an individual's income, this approach does not showcase a complete measurement for human capital.

From the above description of human capital, one can actually conclude that human capital development is the totality of efforts or activities geared toward making a person useful to him or herself, family, and the society at large. It refers to the process of acquiring and building a person who possess the skills, education and experience that are essential for sustainable growth and development of a country. According to Okojie (1995) human capital development is associated with investment in man and his development as a creative and productive person. It is a continuum, a continuing process from childhood to old age, and a must for any society or enterprise that desires to survive under the complex challenges of a dynamic world.

Harbinson and Mongers (1964) succinctly define human capital development as the process of increasing the knowledge, skills, and the capacities of all people in a society. Similarly, Essien (2000) sees it as a well thought-out plan and action aimed at the developing and grooming of human beings so as to present them fit and qualified to be productive to themselves in particular, and to the entire society in general. Human capital development involves the provision of formal and non-formal education that would broaden the minds of the individuals and acquaint them with various utilitarian skills to enhance their expertise in different fields of human endeavor. In addition, it has to do with the provision of quality health care delivery systems that would keep the people fit for productive functions in the economy.

According to Ovenseri-Ogbomo (2006) for any meaningful development to take place anywhere, it must start with the development of the human beings. He considered human capital to be the engine of growth, agent of economic transformation, a catalyst for social re-engineering, and a base for economic take-off. It was on this basis Schultz (1995) argued that investment in human capital can overcome many of the characteristics of the labor force that act as impediments to greater productivity, such as poor health, illiteracy, un-receptiveness to new knowledge/ideas, fear of change, a lack of incentive, and immobility.

2.2.2 Economic growth

Economic growth is essential for sustainable development. There is a strong link between economic growth and improvement in standard of living. Economic growth can support environmental sustainability by increasing the resources available for environmental improvement. Economic growth is a quantitative sustained increased in the countries per capita output or income accompanied by expansion in consumption, capital and volume of

trade (Jhingan, 2001). Among the notable macroeconomic objectives, economic growth has been one of the most important for a long time in Nigeria. Growth is an important objective of economic policy particularly in Nigeria because it is the key to high standard of living; it brings increasing revenue which means more and better schools, hospitals and other social services. Economic growth makes it easier politically to carry out policies of income distribution. Durable growth requires sustainable policies, one that do not give rise to accelerating inflation for its attainment. There can be no significant economic growth in any country without adequate human and natural resources. In essence, human capital formation is fundamental to nation's economic progress. Ojo (1996) explained that improved human beings will not complain about their education, health, food, housing and security among other things, therefore the improved human beings are better producers who contribute positively to economic growth and its sustainability.

The growth and development theorists in both micro and macro-economic are concerned with collection activity, the level of national output and its growth over time. They also study the problems of stagnation, unemployment, inflation, interest rates, economic growth, wages, the exchange rate, the stock market and cyclical instability, and the policies (fiscal and monetary policy) adopted by governments to deal with these problems. They also promote the economic welfare of the poor and wealthy households affected by fluctuation in interest rates or the rate of inflation which are called endogenous variables. Development thus became synonymous with rapid, aggregate economic growth. The relationships between endogenous and exogenous variables are random, as exogenous variables are not strictly independent of the endogenous variables (Burda and Wyplosz, 2001). Within the emergence of the endogenous growth literature model, the focus would be shifted from relying on the unknown exogenous technological progress to explaining economic growth by different theoretical and empirical models where the engine of growth also include human capital or knowledge that is accumulated during a period of time.

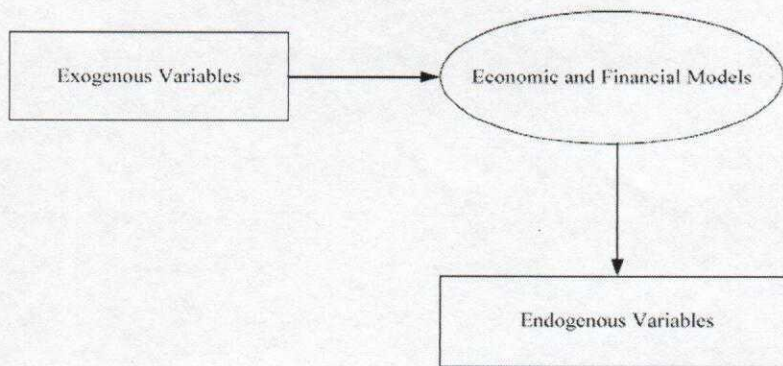


Figure 1. Relationships between endogenous and exogenous variables

However, periods of high unemployment and stagnation occur from time to time throughout the world (e.g. in the 1930s in the US, the early 1980s and the early 1990s in South East Asia). During the same period (1990s) Libya experienced the same economic problems of stagnation and unemployment. The theorists of the 1950s and early 1960s however observed that the process of development growth as a series of successive types of economic growth, in which the right quantity and mixture of saving, investment and foreign aid were all that was essential to enable the development of nations which had historically been followed more by developed countries (Bourne, 2006).

Maddison (1995) considers the economic growth performance over the long-term to be due to three main causal influences which increase per capita output: technology progress; accumulation of physical capital; integration of global economies vis-à-vis trade in goods and services, investment, intellectual and entrepreneurial interaction. Other factor includes: economic size; structural change; the relative scarcity or profusion of natural resources. However, the target of economic growth theories is to increase the welfare of human beings and, hence, determine the growth in the standard of living of the population of a country.

2.2.3 Growth and its Impact on Human Capital Development

Human development can be theoretically traced to Sen's capabilities approach which posits that a person's capability to have various functioning vectors and enjoy the corresponding well-being achievements is an indicator of welfare (Sen, 1985). This perspective shifts the analysis of development beyond the vector of attributes such as income, education, health, to

vector of possible opportunities available to individuals in a particular state. However, there is a link between the two vectors, for instance, a starving or uneducated person would have fewer choices than a healthy, educated person. Yet the capabilities approach goes far beyond individual attributes to analyze the role of the social environment on human choice and agency: an individual in an open, free society would enjoy a larger set of potential functioning than one in a closed, oppressive society. However, while capabilities make an appealing goal for development, they are notoriously difficult to measure in that the full set of possible human functioning is almost unobservable.

The first major attempt to translate the capabilities approach into a tractable ranking of nations came in the 1990 UNDP Human Development Report. The human development's objective was to "capture better the complexity of human life" by providing a quantitative approach to combining various socio-economic indicators into a measure of human development (UNDP 1990). The use of life expectancy, literacy, and GDP as components of a Human Development Index admittedly constitutes a rough proxy and simplification of the original capabilities theory.

Income growth became the main contributor which directly increases the capabilities of individuals and consequently the human development of a nation since it encapsulates the economy's command over resources (Sen, 2000). For example, while the citizens of the Indian state of Kerala have life expectancies and literacy rates comparable to those of many developed countries, the fact that they cannot enjoy many of the benefits of citizens of such countries (such as better housing, transportation, or entertainment) demonstrates the importance of GDP as an instrument for achieving a wide range of capabilities. However, GDP also has a strong effect on literacy and health outcomes, both through private expenditures and government programs. Thus, insofar as higher incomes facilitate the achievement of other crucial human development objectives, it also has an indirect effect on human development.

The impact of economic growth on a nation's human development level, of course, also depends on other conditions of the society. One important component here is the role of the distribution of income, both at a micro level within a household as well as at a macro level across households. At the micro level there is great potential for a positive causality, individual and household consumption can be an important element in increasing human development and may respond more closely to the real needs of the population than

government programs. However, individual consumption may not always go towards goods which contribute maximally to human development.

At a macro level, the distribution of the increased income from economic growth will also have a strong impact on human development. Since poorer households spend a higher proportion of their income on goods which directly promote better health and education, economic growth whose benefits are directed more towards the poor will have a greater impact on human development, via increased food expenditure as well as on education. For example, Birdsall, Ross and Sabot (1995) show that if the distribution of income in Brazil were as equal as that in Malaysia, school enrollments among poor children would be 40% higher.

2.2.4 Human Capital Development and its impact on economic growth

Human development also has an important effect on economic growth. Human capital development represents a broader concept, many of its elements overlap significantly with the traditional notion of human capital. Human capital development correlates with human capital and human capital affects the economic growth of a nation, therefore, human capital development is bound to have an impact on economic growth. More specifically, each of the various components of human development is likely to have a distinct impact on economic growth. Education, for instance, has a strong effect on labour productivity. In agriculture, Birdsall (1993) uses data from Malaysia, Ghana and Peru to show that each extra year of a farmer's schooling is associated with an annual increase in output of 2-5%. In Indonesia, Duflo (2000) estimates an increase in wages of 1.5 to 2.7% for each additional school built per 1,000 children. In addition to its direct effect on productivity, education also affects the rate of innovation and technological improvements. Foster and Rosenzweig (1995) demonstrate that increased education is associated with faster technology adoption in Green Revolution India. Similarly, higher education levels have been shown to increase innovation in businesses in Sri Lanka. In this sense human development may also enter into an Uzawa-Lucas type endogenous growth model as a factor affecting growth rates through its effect on technological change. Statistical analysis of the clothing and engineering industries in Sri Lanka according to Deraniyagala (1995), showed that the skill and education levels of workers and entrepreneurs were positively related to the rate of technical change of the firm. Education alone, of course, cannot transform an economy. The quantity and quality of investment, domestic and foreign, together with the choice of technology and overall policy environment, constitute other important determinants of economic performance. The quality

of private entrepreneurs, of public policy-makers and of investment decisions generally, is bound to be influenced by the education of both officials and managers; moreover, the volume of both domestic and foreign investment and the rates of total factor productivity will undoubtedly be higher when a system's human capital level is higher.

Health has also demonstrated positive effects on economic growth beyond its inherent desirability as an end in itself. Strauss and Thomas (1998) review a large literature documenting how improvements in health and nutrition improve productivity and incomes. Schultz (2000) finds correlations between health and income in his analysis of data from Ghana, Cote d'Ivoire, Brazil, and Vietnam. The review shows that labour productivity gains increases in poor countries with increase in calorie intake. The implication of this is that labour productivity enhancement follows fairly immediately as current intakes of calories or micro-nutrients are increased.

Education and health may also have strong indirect impacts on economic growth through their effect on the distribution of income, and education even more so through its impact on health (for example, Behrman and Wolfe, 1987b provide evidence of the impact of women's education on family health and nutrition). As education and health improve and become more broadly based, low income people are better able to seek out economic opportunities. For example, a study of the relation between schooling, income inequality and poverty in 18 countries of Latin America in the 1980s found that one quarter of the variation in workers' incomes was accounted for by variations in schooling attainment; it concludes that "education is the variable with the strongest impact on income equality" (Psacharopolous et al., 1992). And a more equal distribution of income is known to favor growth for both economic and political economy reasons. Education may also affect per capita income growth via its impact on the denominator, i.e. population growth. For example, a study of 14 African countries in the mid-1980s showed a negative correlation between female schooling and fertility in almost all countries, with primary education having a negative impact in about half the countries and no significant effects in the other half, while secondary education invariably reduced fertility (Birdsall, Ross and Sabot, 1995); (Jayaraman, 1995); (Strauss and Thomas, 1995); (Thomas, Strauss and Henriques, 1991); (Behrman and Wolfe, 1987a).

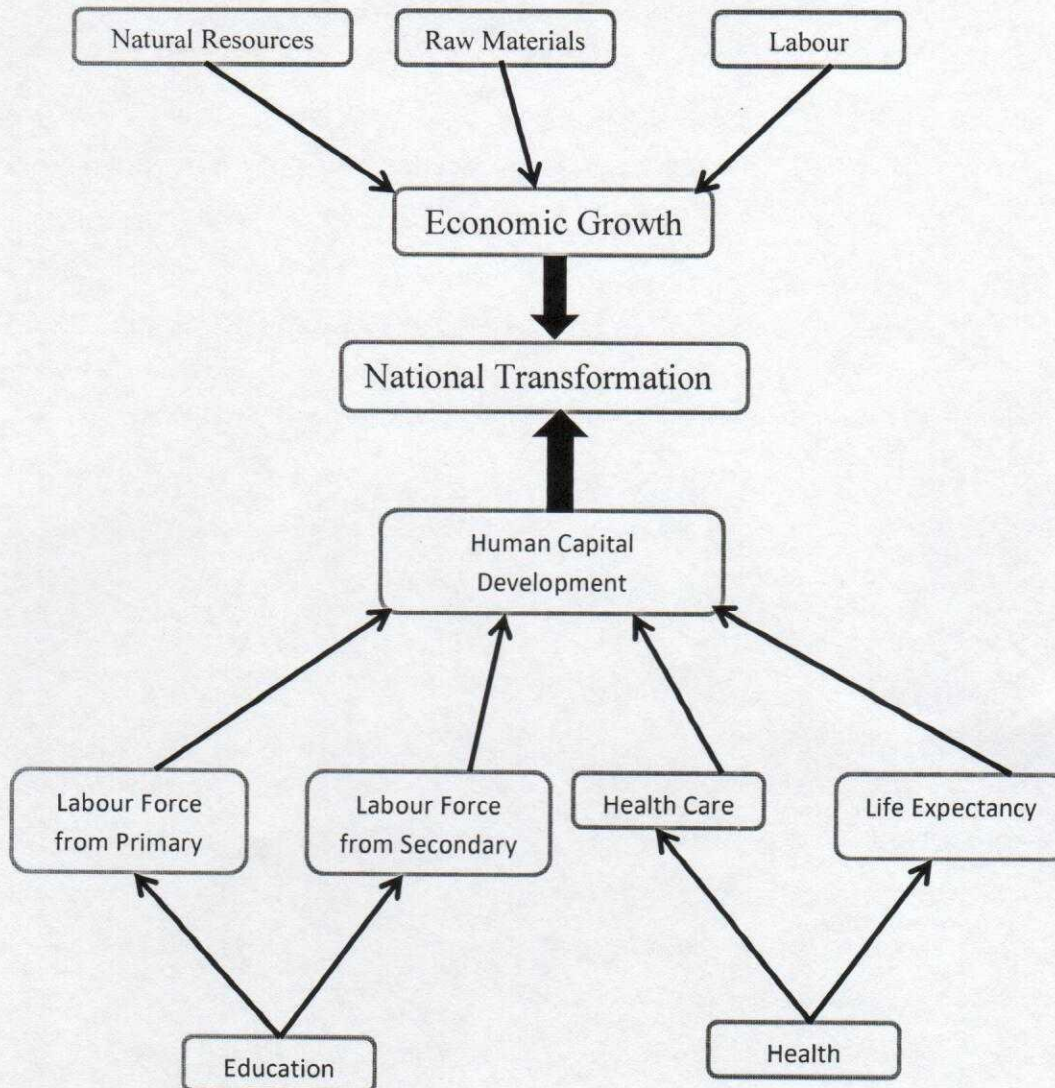
2.2.5 The Joint Human Capital Development/Economic Growth Linkages

The two-way relationship between economic growth and human development suggests that nations may enter either into a virtuous cycle of high growth and large gains in human

development, or a vicious cycle of low growth and low rates of human development improvement. In these states, levels of economic growth and human development are mutually reinforcing, either leading towards an upward spiral of development, or a poverty trap. The existence and persistence of these cycles depends on the strengths of the linkages previously cited between economic growth and human development. Countries may also find themselves in a lop-sided state, at least temporarily, with relatively good growth and relatively poor human development, or vice versa. There may be various reasons why a country can experience high rates of GDP growth relative to the improvement in human development indicators, they include corruption in governance, low social expenditures, or inequitably distributed incomes. A recent analysis of such cases raises concerns about the sustainability of this state, e.g., Ranis, Stewart, and Ramirez (2000) find that of the eight economic growth-lopsided nations in 1960-70, all eight moved to the vicious cycle of low economic growth/low human development. These results suggest that good economic growth not accompanied by increases in human development may prove to be ultimately unsustainable.

“Human development lopsided” nations, on the other hand, fared better over the last forty years, with four nations moving into virtuous cycles and four others moving into vicious cycles. In the 50% favorable cases, early progress in human development meant that they were able to take advantage of policy reforms to generate growth. Thus, a high level of human development early in a nation’s history can, with the right policy decisions, translate into a virtuous cycle of good growth and human development supporting each other. The policies involved, such as encouraging higher levels of investment, technology change and an improved distribution of income, can leverage the successes in human development into sustainable economic gains. This contrast clearly points to an important conclusion for development sequencing that human capital development seems to be a necessary prerequisite for long-term sustainable growth. Human development may, moreover, exhibit threshold effects, in the sense that nations must attain a certain human development level before future economic growth becomes sustainable.

2.2.6 Graphical representation of the relationship between human capital development and economic growth as instrument for national transformation



Source: Researcher

2.3 Theoretical Framework

Various theories of economic growth are examined under this framework, however, this research work is based mainly on the Lucas model and the Romer model which are grouped under the endogenous model.

2.3.1 Growth Theory

The history of economic theory growth of output and the distribution of income between wages and profits were presented by Adam Smith in 1776 as the "Wealth of Nations". The

most important contribution was to introduce the notion of increasing returns, based on the division of labour. His major contribution was to the fundamental forces which underlie the development of economic policy (Farmer, 1997). Smith's theory discussion in relation to the advance of stock as interwoven within his theory is the notion which depends on capital accumulation to consider market allocation of resources and income in such a manner that Bowley (1975:376) is led to comment that, "advances of stock are of overwhelming importance as the means of resource allocation". As the capital accumulation to the stocks play a role in the economic growth process of circulating, fitted capital used to support productive labour in turn generates the capital necessary to support labour in the future. Smith indicated that the relationship of economic growth had for a long time been regarded as primary to the understanding of political policy and social environment by increased specialisation and division of labour and upon the accumulation of real capital. He created the simplest of production functions model of growth by the following equations:

$$Y = f(L, K, T) \dots \dots \dots (1)$$

where Y is output, L is labour, K is capital and T is land. In this case, output is related to labour. According to Eltis (1975:426) "Adam Smith's theory of growth has provided better predictions of the course that economic development was to follow in the nineteenth and twentieth centuries than the theories of his great successors, Malthus, Ricardo, and Marx, who predicted a constant living standards for the great mass of population". In fact, Smith chose to emphasize the capital acclamation portion of his theory, rather than the level of contribution which he began within "Wealth of Nations". David Ricardo was another of the great classical theorists. In 1817 he published "Principles of Political Economy and Taxation" and his model, like Smith's growth and development, is a function of capital accumulation, and the capital accumulation depends on reinvestment.

2.3.2 EXOGENOUS GROWTH MODEL

2.3.2.1 The Harrod-Domar Growth Model

The modern growth theory started with a classic article of British economists by Roy Harrod and Domar, "An Essay in Dynamic theory" now called the Harrod-Domar Growth Model. This model described the economic mechanism that more investment leads to more growth. According to Harrod (1939, 1948) and Domar (1946) the capitalist system is inherently unstable by using the production function. However, they explained how the aggregate supply expanded which means the investment has two effects, one on the aggregate demand

side such as business expands more, and the other on the aggregate supply side whereby more investment increases capital stock and produces more business. He came up with the equation below:

$$\frac{\Delta Y}{Y} = \frac{s}{k} \dots \dots \dots (2)$$

Where (s) is the ratio of national saving, (k) the national capital-output ratio, ($\Delta Y/Y$) measures the growth of output. From the Equation (2) the most fundamental strategy of economic growth is simply to increase the proportion of national income saved, but this would raise and then increase ($\Delta Y/Y$) at the rate of GDP.

Nevertheless, the main obstacle for developing countries according to this theory was the relatively low level of new capital formation in most poor nations. Also, the capital constraint approach to growth and development became the justification in terms of cold war politics for transfers of capital and technical assistance from the developed to the developing nations.

2.3.2.2 Neoclassical Growth Theory

The “neoclassical economic theory” tried to get closer to the Keynesian economics by development of the theory of expectations and of the real business cycle, where many problems could be faced today, both financial and social activities such as money and banking, organized securities, foreign exchange markets, large corporations, holding companies, business associations, organized labour, etc. During the 1960s, neoclassical growth theory was practiced and people generally accepted its approach to modelling growth in the long-term, which has been driven by increasing returns: Ramsy (1928), Arrow (1962), Cass (1965), Koopmans (1965), Solow (1956) and Swan (1956). This kind of framework assumed the neo-classical model production of consumption rising as a function of the stock of knowledge increasing within constant return to scale, which returns to each input (labour and capital) as well as smooth elasticity of the substitution between the inputs. For instance, Arrow (1962), in his model “learning by-doing”, argued that new machines are improved and more productivity will result as the function of the cumulative which will also increase investment for the industry, because new knowledge should be discovered as the result of investment. However, Arrow’s model meant that two problems could be encountered which would increase any rates of growth model of increasing returns:

- Existing competitive equilibrium.

- The function of capital and labour increase returns to scale.

Main features of the original Solow model with technological progress

The centerpiece of the standard neoclassical growth model developed by Solow is an aggregate production function of the form: $Y_t = F(K_t, L_t \cdot A_t)$, where Y is output, K is capital, L is labor and A is an index of technology or efficiency. Solow posits that F has the usual neoclassical properties; in particular, it is characterized by constant returns to scale, decreasing returns to each input, and a positive and constant elasticity of substitution. The fundamental dynamic equation of the model relates the evolution of the capital stock to a constant rate of saving and a constant rate of depreciation. Labor and the level of technology grow at exogenous exponential rates. If there were no technological progress, growth in this model would eventually come to a halt. However, the formulation of the model is chosen so as to allow increases in efficiency to offset the diminishing returns to capital. The economy therefore converges to a steady state in which output and capital per worker both grow at the exogenous rate of technological progress. Accordingly, in the long run, economic growth is unaffected by changes in the rate of saving or population growth. Changes in these parameters alter only the level of the long-run growth path, but not its slope.

The basic *neoclassical growth model* was developed by Solow-Swan. This model used the aggregate production function based on three key assumptions:

- The labour force grows at constant exogenous rate.
- Output is a function of capital and labour. That is, $Y = F(K, L)$
- There is no independent investment: $S = 1 = sY$

2.3.2.3 The human-capital augmented Solow model

Starting from the Solow model, the simplest way to introduce human capital is the one chosen by Mankiw/Romer/Weil (1992). In their influential contribution, they present a simple extension to the Solow model by letting human capital enter as a separate input into an otherwise standard Cobb-Douglas production function with Harrod-neutral (i.e. labor-augmenting) technological progress (Barro/Sala-i-Martin, 1995: 54-55). The production technology in this model, which has come to be known as the human-capital augmented Solow model, thus takes the form:

$$Y_t = K_t^\alpha H_t^\beta (A_t L_t)^{1-\alpha-\beta}, \dots \dots \dots (3)$$

Where Y is output, K is capital, H is the stock of human capital, A is the level of technology and L is "raw" labour. The exponents α , β and $1-\alpha-\beta$ measure the elasticity of output to the respective inputs. Mankiw/Romer/Weil assume $\alpha + \beta < 1$, so that the function exhibits constant returns to scale but diminishing returns to reproducible factors. Like in the Solow model, the population and the level of technology grow at the exogenous rates n and g , respectively, while capital depreciates at the rate δ . Mankiw/Romer/Weil make three other important assumptions:

- That people invest in human capital just like they invest in physical capital; that is, by foregoing consumption and devoting a fraction of their income to the accumulation of human capital (analogous to the fraction invested in physical capital);
- That human capital depreciates at the same constant rate δ as physical capital and
- That output (the homogeneous good produced in the economy) can be used for either consumption or investment in (physical or human) capital.

Because of the assumption of diminishing returns to "broad" capital (human and physical) and just like in the original Solow model, measured in effective units of labor, all quantities are constant in the steady state, so that output per worker and capital per worker grow at the exogenous rate of technological progress. This implies that an increase in the rate of investment in human capital has no effect on the long-run growth rate of the economy. Although there is no rate effect, the increase does have a level effect. The level of steady state income per capita is positively related to the rates of investment in physical and human capital and negatively related to the rate of population growth. Therefore, a (permanent) increase in the fraction of income devoted to the accumulation of human capital shifts the steady-state level of income upwards, leading to a higher long-run growth path.

In summary, the human-capital augmented Solow model treats human capital basically as an additional, ordinary input in production. Human capital is modeled in exactly the same way as physical capital: It is accumulated by investing a fraction of income in its production, depreciates at the same rate as physical capital, and is produced with the same technology as both physical capital and consumption. Meanwhile, like in the original Solow model, long-run growth is exogenous, its rate equaling the pace of technological progress.

2.3.3 Endogenous Growth Theory

The most unsatisfactory feature of the growth literature of the 1950s and 60s was the fact that the main subject of study, the long-run growth rate, was exogenous to the model. 'New

growth theory', jumpstarted by Romer 1986, attempted to 'endogenize' the sources of growth, so that the rate of growth would be determined within the model. The endogenous growth literature has produced two distinct approaches on how to incorporate human capital into models of economic growth (Aghion/Howitt, 1998). The first, which is due to Lucas, regards the accumulation of human capital as the engine of growth (Lucas, 1988). The second approach emphasizes the role of the human capital stock in the process of innovation and adoption of new technologies (Romer (1990); Nelson/Phelps (1966). In this research, "growth driven by human capital accumulation" formulated by Lucas 1988 and "Human capital and technological change" formulated by Romer 1990 shall be considered.

2.3.3.1 Growth driven by human capital accumulation

In the model formulated by Lucas (1988), human capital enters into the production function similarly to the way in which technology does in the Solow model, that is, in labor augmenting form (which would seem like a rather natural way to conceptualize things). The economy consists of identical individuals (or representative agents) maximizing life-time utility. Agents have control over two variables: the level of consumption, and the allocation of time between work and skill acquisition. The first variable determines the accumulation of physical capital, while the second variable affects an agent's future productivity. Lucas proposes the following production technology:

$$Y_t = AK_t^\beta (u_t h_t L_t)^{1-\beta} h_a^\gamma t' \dots \dots \dots (4)$$

where Y, A, K and L are, once again, output, technology, capital and labor, while u is the fraction of an individual's time allocated to work, h is the skill level or human capital of the representative agent, and h_a is the average human capital in the economy (Lucas, 1988). The level of technology, A, is assumed to be constant (so that it could in principle be dropped from the expression or subsumed within the capital term). Population growth is taken as exogenous. Setting aside the last term on the right-hand side for the moment, the most important assumption of the model concerns the law of motion according to which the human capital variable evolves over time. Lucas writes:

"To complete the model, the effort 1 - u_t devoted to the accumulation of human capital must be linked to the rate of change in its level, h_t . Everything hinges on exactly how this is done." Lucas (1988: 18).

Specifically, Lucas assumes the function relating the fraction of time allocated to skill acquisition $1 - u_t$ to the growth rate of human capital $\frac{\dot{h}_t}{h_t}$ to have a linear form, so that:

$$\dot{h}_t = h_t \delta (1 - u_t) \Leftrightarrow \frac{\dot{h}_t}{h_t} = \delta (1 - u_t) \dots \dots \dots (5)$$

Where the parameter δ is the maximum attainable growth rate of h , which one might refer to as the productivity of schooling (Aghion/Howitt, 1998: 330). The linearity assumption implies that the growth rate of human capital is independent of its level. In other words, no matter how much human capital has been accumulated, a given effort always produces the same percentage increase. Romer has offered a possible explanation why this may be plausible: The acquisition of skills may in fact facilitate or prepare learning (Romer, 2001: 134). As an example, he states that in primary school, children are taught basic knowledge (such as literacy) which may not improve their ability to contribute to production by very much. Instead, it may be a prerequisite for the acquisition of productivity-enhancing skills throughout the rest of their education and their professional career. Because there are no diminishing returns to the acquisition of skills, human capital can grow without bound, thereby generating endogenous growth. The properties of the steady state in the Lucas model depend on whether there are external effects of human capital, which is the case if $\gamma \neq 0$. In that case, the term $h_{a,t}^y$ in the above is different from 1 and therefore affects output (Rudd, 2000). The externality arises from the fact that the effect on h_a of individual decisions with regard to the acquisition of human capital is too small to be perceived by individual agents. This is because the benefits of higher average human capital are being spread over the whole population and cannot be appropriated by an individual.

In the steady state, if there is no externality ($\gamma = 0$), output, physical and human capital per capita grow at the same rate (constituting a so-called balanced growth path). As Temple points out, one consequence of this is that, because the ratio of human capital to physical capital is constant in the steady state, there is an imbalance effect: When an exogenous shock happens to increase the level of human capital, this will trigger an equi-proportional rise in physical capital to restore the steady-state ratio (Temple, 2001a: 78). Stated differently, one would expect that an increase in human capital per worker would lead to higher investment in physical capital too. In the case where there is a positive external effect ($\gamma > 0$), physical capital per worker will grow faster than human capital (Lucas, 1988: 23). In addition, in the presence of an external effect, a competitive equilibrium will lead to suboptimal growth (which might justify government intervention).

2.3.3.2 Human capital and technological change

A second category of endogenous growth models maintains the assumption underlying the Solow model that technological progress is at the heart of economic growth. However, by no longer leaving technological change unmodeled, these theories acknowledge that a large portion of inventions is the result of purposeful research and development (R and D) activities carried out in reaction to economic incentives. This changes the role for human capital, which enters into these models as a catalyst of technological progress rather than as an independent source of sustained growth.

Nelson/Phelps were the first to contend that people's educational attainment may have a significant influence on their ability to adapt to change and introduce new technologies (Nelson/Phelps, 1966). Accordingly, a higher level of human capital would speed up the process of technological diffusion in the economy. This would enable countries lagging behind the world technology frontier to catch up faster to the technological leader. However, in the model developed by Nelson/Phelps, the evolution of the best-practice level of technology is left exogenous, so that human capital only plays a role in helping countries narrow the gap to the technological frontier (Nelson/Phelps, 1966). Romer has extended this concept beyond the adoption of existing technologies to the creation of new ones, starting from the observation that Research and Development activities require highly skilled labor as the single most important input (Romer, 1990). A major implication of both of these approaches is that technological progress, and thus growth, depends on the stock of human capital (as opposed to its accumulation). In Romer's model, the economy has three sectors: a final-goods sector, an intermediate goods sector, and a research sector. The research sector uses human capital and the existing stock of knowledge to produce designs for new capital goods, which are sold to the intermediate-goods sector. The latter uses the designs and the economy's savings to produce intermediate capital goods, which are combined in the final-goods sector with labor and human capital to produce final output.

The reasons for sustained growth in this model are twofold (Aghion/Howitt, 1998: 37). First, there is an increasing variety of products which expands with the stock of ideas, A. Second and more importantly, Romer assumes that there are knowledge spillovers because all researchers have unrestricted access to the existing stock of knowledge.

In the steady state, capital, output and the stock of knowledge all grow at the same rate, driven by technological progress.

$$\dot{A} = \delta H_A A \Leftrightarrow \frac{\dot{A}}{A} = \delta H_A \dots \dots \dots (6)$$

The above equation which represent the stock of knowledge implies that the growth rate of A depends on the amount of human capital employed in research, HA, which, as Romer shows, is a linear function of the total stock of human capital (that is, HA + HY) and the rate of interest (which is not of much relevance in this context) Romer (1990). What this means is that a rise in the stock of human capital will permanently speed up growth. This is what distinguishes Romer's model from the Lucas model, where a rate effect requires an increase in the rate of accumulation of human capital. In the Romer model, a one-time increase of the stock of human capital is sufficient to augment the rate of economic growth forever.

Table 2.1 Differences between models of economic growth which include human capital

	Augmented Solow model	Lucas model	Romer model
Human capital is accumulated by...	investing a fraction of income	spending a fraction of time acquiring skills	not modeled
Technology for production of human capital	same production function for C, K and H	separate sector for production of H using only human capital	not modeled
Role of human capital	input in production	input in production of Y and H	input in production of Y and A
Growth rate determined...	outside of the model	within the model	within the model
Determinant of long-run growth	Exogenous technological change	rate of human capital accumulation	stock of human capital
Effect of a permanent change in	level effect	rate effect	rate effect

the variable governing the accumulation of human capital			
Effect of a one-off increase in the stock of human capital	level effect	level effect	rate effect

Source: Florian Schutt (2003)

2.4 Empirical Literature Review

The aim of this is to review the work of other researchers related to human capital development and economic growth and examine their findings.

(Lawanson, 2009) also using a macro data investigated the role of investment in health and education on economic development in Nigeria between 1983 and 2007. The study adopted Error Correction Mechanism (ECM) and found a positive relationship between human capital and economic growth in Nigeria, although the link was weak. Only tertiary enrolment and education expenditure positively spurred economic growth. Health expenditure, primary and secondary enrolment had no relationship with economic growth. The major flaws of the study are the use of GDP as a proxy for economic development and the short observation (24 years).

Dauda (2010), using the human capital model of endogenous growth developed by Mankew, Romer and Weil (1992), examined empirically the role of human capital in Nigeria's economic development, the researcher made use of various analytical tools, part of which are unit root tests, co-integration tests and error correction mechanism (ECM). Empirical result show that there is a long-run relationship among labour force, physical capital investment proxied by real gross domestic capital formation, human capital proxied by enrollment in educational institutions and economic growth in Nigeria. Findings reveal that there is a feedback mechanism between human capital development and economic growth in Nigeria. It further reveals that no transformation can take place in Nigeria if human capital development and economic growth are not given the utmost priority. The policy implementation of the findings is that government should place a high priority on human capital development. Since the natural resources are ready-made in Nigeria, effort should be intensified to increase investment in human capital to achieve the growth which would engender economic

development, transforming the nation. He pointed in his policy implication that education most importantly should be given prominence in Nigeria's developmental efforts. This will propel the economy to higher levels of productivity.

Amassoma and Nwosa (2011) studies the causal nexus between human capital investment and economic growth in Nigeria for sustainable development in Africa at large between 1970 and 2009 using a vector error correction (VEC) and pairwise granger causality methodologies. The findings of the VAR model and pairwise estimate reveal no causality between human capital development and economic growth. The study recommends the need to increase budgetary allocation to the education and health sector and the establishment of sound and well-functioning vocational institute needed to bring about the needed growth in human capital that can stimulate economic growth. Also, the study identified that labour mismatch is an issue that government needs to reckon with in order to accelerate and sustain economic growth. In this regard, policy makers in conjunction with employers and individuals need to update information on the real labour market value of different qualification, in order to help them navigate through the increasingly complex education system and make the optimal kinds of educational investment decisions needed to propel economic growth.

Eigbiremolen and Anaduaka (2014) studied the relationship between human capital development and economic growth in Nigeria. They employ the augmented solow human-capital-growth model to investigate the impact of human capital development on national output, a proxy for economic growth, using quarterly time series data from 1999 – 2012. They employ stationary test and co-integration analysis to analyse their data. Findings shows that gross total capital formation, total stock of human capital and total government expenditure on education (a proxy for human capital development) jointly explained about 75% variations or changes in the output of the economy. Also, they are statistically significant in explaining the level of the economy's output. That is, they remain indispensable in the achievement of economic growth and development in Nigeria. Furthermore, there findings shows that there is a positive relationship between all the proxy of human capital development and economic growth which implies that a greater amount or level of gross total capital formation, total stock of human capital and total government expenditure on education would engender a higher level of output or economic growth in Nigeria. To achieve a growing and developing economy, none of these factors must be ignored. The policy implication of these findings is that government and policymakers should as a matter of

urgency give high priority to human capital development. Concerted and sincere efforts should be made in building and developing human capacity through adequate educational funding across all levels since it remains the major way of attaining sustainable economic growth and development.

Isola and Alani (2012) examine the contribution of different measures of human capital development to economic growth in Nigeria. They employed the Augmented Dickey-fuller (ADF) tests for unit root test. Adult literacy rate, life expectancy, growth rate of labour, growth rate of capital and structural adjustment programme were used to proxy human capital development and economic growth proxied by GDP. Their findings reveal that education measured by literacy rate had a positive relationship with economic growth, a 1% increase in literacy rate resulted in a 2.465% increase in the growth rate of GDP. The result also showed the importance of health in the process of economic growth. It indicated a positive relationship between health proxied by life expectancy, and economic growth. A 1% increase in life expectancy other things being constant raised economic growth by 2.73% despite the low budgetary allocation to health and education. The co-efficient of growth of capital indicated that a 1% increase in investment led to about 0.051% in growth rate of the economy. However, growth of labour force had a negative sign which was a result of the structural adjustment programme employed by the government which led to the retrenchment of many workers. In spite of the meager resources allocated to both education and health sector, the empirical analysis showed that education measured by adult literacy rate and health measured by life expectancy, had positive relationship with economic growth.

(Vinod and Kaushik, 2007) investigated the role of human capital on economic growth in eighteen developing countries (Nigeria inclusive) between the period 1982-2001, using time series and panel regressions. The Ordinary Least Squares method was used to estimate the data. Findings from the time-series regression revealed that the elasticity of gross domestic product (GDP) with respect to human capital (adult literacy) was greater than 1, for 13 of the 18 countries sampled. For Nigeria, one percentage increase in literacy level will increase GDP by 73%. The coefficient of the labour force variable for Nigeria was negative at -0.1296, implying that a one per cent increase in the size of the labour force will reduce GDP by about 13%. This opposes (Babatunde and Adefabi's, 2005) findings which supported that growth of labour force positively influences economic growth in Nigeria. The panel regression further revealed that the human capital variable was positively significant. For

most of the countries, a 1 per cent increase in literacy increased growth by 120 to 470 per cent.

(Ndiyo, 2007) however reported a negative and statistically significant relationship between education and productivity in Nigeria. The time series data set was more robust covering about thirty years, 1970-2000. Real education expenditure was used to proxy educational capital. Other human capital variables adopted are number of university graduates and labour force. Exploiting the Vector Autoregressive method (VAR), he found that educational capital depresses economic growth in Nigeria. Also using a non-linear production form, the empirical evidence did not support a positive correlation among number of graduates, real education expenditure, and economic growth in Nigeria. He attributed the result to impeding factors inherent in the educational system such as over-emphasis on paper qualifications as against delivery, redundancy of some skills and workers etc.

2.4.1 Health and Economic Growth

In order to explain the relationship between health and economic growth, it is necessary to understand the concept of health in a broad sense. Health is not only the absence of illnesses; it is also the ability of people to develop to their potential during their entire lives. In that sense, health is an asset individuals possess, which has intrinsic value (being healthy is a very important source of well-being) as well as instrumental value. In instrumental terms, health impacts economic growth in a number of ways. For example, it reduces production losses due to worker illness, it increases the productivity of adult as a result of better nutrition, and it lowers absenteeism rates and improves learning among school children (WHO, 2004).

There is a link between macroeconomics and health status. A very important component of economic development of a country is its peoples' state of health. In fact, there is the argument as to whether it is health that causes development or economic development causes health improvements. Nurudeen and Usman, (2010) argue that rising government expenditure on health results in an increase in economic growth. They among others, suggest that government should raise its expenditure in the development of the health sector since it enhances productivity and economic growth. In the same flow, Berger and Messer (2002) view health as a form of capital, such that health care is both a consumption good that yields direct satisfaction and an investment good that yields indirect utility through increased productivity, fewer sick days and higher wages. According to WHO (2010), public health

expenditure consists of recurrent and capital spending from government budgets, external borrowings and grants (including donations from international agencies and NGOs), as well as compulsory health insurance funds. Research has proven that breakthrough in public health, diseases control and improved nutritional intake have given rise to great takeoffs in economic development. Rapid growth of Britain during the industrial revolution, rapid growth of Japan in the 20th century, Europe and East Asia in the 1950s and 1960s were as a result of improvement in health status (Sein and Dalpatadu, 2005). The measurement of health is regarded as health status. Since health is multi-dimensional, health status is also multi-dimensional, and thus has a variety of measures (Mwabu, 2008). Health status determines job productivity, the capacity to learn at school and the ability to grow intellectually, physically and emotionally. Elimination of diseases and improvement of individual health will enhance income earning capacity (WHO, 2004). Nigeria's health reform agenda is well articulated in the National Economic Empowerment and Development Strategy (NEEDS), engineered by the National Planning Commission (NPC, 2004). The goal of this health reform is to improve the health status of Nigerians in order to attain a globally acceptable level of poverty reduction. Aranda (2010) noted that the major reason for health expenditure is the expectation of improved health status, and that health status is governed by health investment. The demand for health care is derived from the demand for health itself. Both health care expenditure and improved health status are means to an end; the end is increased productivity and national development.

2.4.2 Education and Economic Growth

Education is a life-long process through which man's all round (moral, emotional, physical and intellectual) development is facilitated for him to be useful to himself and the society into which he is born (Ijaiye and Lawal, 2004). It is a mechanism through which the society generates the knowledge and skills required for its survival and sustenance. It enriches people's understanding of themselves and the world. It improves the quality of their lives and leads to broad social benefits to individuals and society, at large (Kazeem and Ige, 2010). Education, according to Osundare (2009), is the supreme light-giver, the breezy dawn after a night of suffocating darkness. It clears a path through the jungle and; it is the compass that takes man ashore from the rough and clueless waters.

Ararat (2007) analyses the role and impact of education on economic growth in the two largest economies of the former Soviet Bloc, namely, the Russian Federation and Ukraine.

The study attempts to estimate the significance of different educational levels, including secondary and tertiary education, for initiating substantial economic growth that now takes place in the two countries. This study estimates the model of endogenous economic growth and the system of linear and log-linear equations that account for different time lags in the possible impact of higher education on economic growth. The model estimation shows that there is no significant impact of educational attainment on economic growth. The results from the system equations indicate that an increase in access of population to higher education brings positive results for the per capita GDP growth in the long term.

Dauda (2009) carried out an empirical investigation on the relationship between investment in education and economic growth in Nigeria, using annual time series data from 1977 to 2007. The paper employs Johansen co-integration technique and error correction methodology. Empirical results indicate that there is, indeed a long-run relationship between investment in education and economic growth. All the variables used including gross fixed capital formation and educational capital are statistically significant (except labour force) in the Nigerian economy. The findings have a strong implication on educational policy in Nigeria. The study seems to suggest that a concerted effort should be made by policy makers to encourage increase in educational investment in order to accelerate growth which would engender economic development.

Babatunde and Adefabi (2005) examined the long-run relationship between Education and economic growth in Nigeria using the Johansen co- integration approach as a framework of analysis. The results of the co-integration technique suggest that there is long-run relationship between enrolments in primary and tertiary levels of education and the average years of schooling with output per worker. The study concluded that a well-educated labour force possessed a positive and significant impact on economic growth through factor accumulation and on the evolution of total factor productivity.

Nurudeen and Usman (2010) carried out a disaggregated analysis on government expenditure and economic growth in Nigeria. Their analysis concluded that there was no significant relationship between expenditure on education and economic growth in Nigeria. However they suggested that government should increase expenditure in the educational sector since it would increase productivity and economic growth.

In addition, Lawal and Wahab (2011) "Education and Economic Growth: The Nigerian

Experience” concluded that the achievement of rapid economic growth through boosting and rapid investment in education is a decision in a right direction as much as it would not affect the average cost of education or reducing the quality of education. Nigerian economy would benefit greatly from an increase in government expenditure that goes to the education sector even if it comes at the expense of a reduction in other aspects of investment.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Sources and Methods of Data collection.

The study utilized secondary data (1980-2013). The main sources of data for this study are mainly secondary in nature. These include the publications of National Bureau of Statistics (NBS), World Bank Database, publications of the Central Bank of Nigeria (CBN) which include; the statistical bulletin, annual report, statement of accounts, financial review of various years and other related items and also Programmes from the internet such as Index mundi.com.

3.2 Model Specification

Human capital development can influence the capacity of individuals and the economy to increase the overall performance of the economy. Nevertheless we can comfortably say that human capital is a key factor at work in influencing the growth of a country's gross domestic product.

The objective of this study is to test for the relationship between human capital development and economic growth and how they can transform the development of Nigeria from a less developed to a more developed country. In order to achieve the specific objectives of this study, the variables to be used are real gross domestic product, human capital development (which is computed by adding government expenditure on education and government expenditure on health and taking the average), inflation rate, net export, oil rent and agricultural output.

The following functional relationship is specified to determine the relationship between human capital development and economic growth in transforming Nigeria economy.

$$RGDP = f(HCD, INF, NEX, OILR, YAG, GG)$$

Where;

RGDP is real gross domestic product;

HCD is human capital development;

INF is inflation rate;

NEX is net export;

OILR is oil rent;

YAG is agricultural output.

GG is good governance

Note:

- 1) Since Becker (1993) stated that investment in education and health is the basic component of human capital development, therefore, Human capital development is computed using the formula below:

$$\frac{\sum(GEH + GEE)}{2}$$

Where;

GEH is the recurrent and capital expenditure of the government on health

GEE is the recurrent and capital expenditure of the government on education.

- 2) Good governance is a dummy variable which has zero when there is no good governance and one (1) when there is good governance.

Here, RGDP stands as the dependent variable while HCD, INF, NEX, OILR and YAG stand as the independent variables. The data for this study covers the period of 33 years spanning from 1980 to 2013.

Re-stating the above equation in an estimable form gives:

$$\ln RGDP = b_0 + b_1 \ln HCD + b_2 \ln INF + b_3 \ln NEX + b_4 \ln OILR + b_5 \ln YAG + E_i$$

E_i is the error term.

The economic apriori criteria refer to the sign and size of the parameters and the economic relationship between the variables. The apriori expression of this economic growth model is that $b_0, b_1, b_2, b_3, b_4, b_5 > 0$. In order to estimate these coefficients the study looks for suitable econometric method to estimate the value of the coefficients.

3.3 EMPIRICAL ANALYSIS

3.3.1 Unit Root Test

This process examined the characteristics of the variables selected to avoid the problems of spurious regression often associated with non-stationary time series and generate long-run

equilibrium relationships concurrently. The variables were examined in logarithmic forms to help in achieving linearity. The data series was tested for stationarity using the Augmented Dickey Fuller (ADF), Phillips-Perron (PP) test and Generalized Least Square (GLS) tests statistic as the starting point to assess the order of integration. The model of the unit root test can be presented as:

$$Y_t = eY_{t-1} + U_t \quad -1 \leq p \leq 1$$

Where U_t is a white noise error term

If $p = 1$, there is a unit root, but if p is less than 0.10, there is non unit root.

Augmented Dickey Fuller (ADF) Equation

$$\Delta Y_t = B_1 + B_2^t + \delta Y_{t-1} + \sum_{i=1}^m \delta_i \Delta Y_{t-1} + E_t$$

3.3.2 Co-Integration Equation

The Johansen-Juselius (JJ) procedure utilizes two test statistics to determine the number of co-integrating vectors. These are trace and maximum eigenvalue test statistics. Utilizing the λ trace = $T \sum_j = r+1n (1\lambda_j)$ equation, the null hypothesis for the trace test statistic states that there are at most r number of co-integrating vectors and the alternative hypothesis as $r+1$ co-integrating vectors. In the equation T represents the number of observations, and λ shows the estimated values of the characteristic roots assuming that the series are $I(1)$.

3.3.3 Error Correction Model

The error correction model is a standard diagnostic tests conducted during the process of estimation to rule out any discrepancies. It is use to test for the speed of adjustment.

CHAPTER FOUR

DATA PRESENTATION AND DATA ANALYSIS

4.1 Empirical Result

Stationarity Test: A stationary test was carried out in this research so as to avoid running a spurious regression. The Augmented Dickey-fuller test, Phillip-Perron test and General least square test statistic was used for this analysis since it adjusts for serial correlation. The test was done to know if variable contains unit root and hence it is non-stationary or otherwise. The result is shown below in table 4.1

Table 4.1 UNIT ROOT TEST

Variables	t-stats	Prob. Value	Level of Integration	Level g=Sig
HCD	-6.7716	0.0000	I(1)	1%
INF	-5.4034	0.0409	I(1)	5%
NX	-3.0381	0.0449	I(1)	5%
OIL REV	-6.4444	0.0000	I(1)	1%
RGDP	-3.7521	0.0078	I(1)	1%
YAG	-4.4244	0.0014	I(1)	1%

The Augmented Dickey-Fuller Test, Phillip-Perron test and the Elliott-Rothenberg-Stock General least square test statistic in table 4.1 shows that Human Capital Development (HCD) is integrated at order 1 and is significant at 1%. Inflation (INF) and Net Export (NX) are integrated at order 1 also and significant at 5%. Oil Revenue (Oil Rev), Real Gross Domestic Production (RGDP) and Agricultural Output (YAG) are integrated at order 1 and are significant at 1%.

More so, the regression estimates shows the short run impact of the independent variables on the dependent variable. The regression result is shown in table 4.2 below.

Table 4.2 REGRESSION RESULT: SHORT RUN IMPACT

Dependent Variable: RGDP

Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistics	Prob.
C	5.55E+12	1.18E+12	4.709421	0.0002
RGDP(-1)	0.222756	0.104826	2.125014	0.0469
HCD(-1)	10.14786	5.983543	1.695962	0.1062
INF(-1)	1.08E+10	1.09E+10	0.988160	0.3355
NX(-1)	-10.99412	4.281993	-2.567523	0.0188
OIL_RENT(-1)	-1.52E+10	2.75E+10	-0.554197	0.5859
YAG(-1)	3.025842	0.338560	8.937400	0.0000
D(HCD(-1))	-13.55201	5.034712	-2.691715	0.0144
D(INF(-1))	-7.97E+09	1.07E+10	-0.747870	0.4637
D(NX(-1))	3.750526	3.738951	1.003096	0.3284
D(OIL_RENT(-1))	4.68E+10	2.29E+10	2.042313	0.0552
D(YAG(-1))	-2.286417	0.503683	-4.539395	0.0002
R-square = 0.998211				
R-squared adjusted = 0.997175%				
Prob (F-statistics) = 0.00000				
Dubin-watson statistics = 1.930765				

This result shows that the short run impact of HCD on RGDP is negative. This does not support a priori expectation, Lucas and Romer Model specify that an increase in Human capital will increase the growth of an economy but this result shows that an increase in Human capital will result to decrease in the growth of Nigeria economy. It shows that a unit increase in HCD will decrease RGDP by 13.55 units holding other variable constant. This result is significant at 5%. The above finding could be as a result of the fact that the Human Capital Development is very much below average in Nigeria when compared with the advanced economies. Human Capital development might not be potent to transit Nigeria from under-developed to developed economy. This result further shows that in the Short run oil revenue and agricultural output have positive and negative impact on economic growth respectively.

The R-squared adjusted is over 0.99, meaning that over 99% of the variation in the dependent variable (RGDP) is explained from within the model. The Probability (F-statistic) is 0.0000

and shows that the model is of good fit. The Dubin-Watson Statistics is 1.930765, and informs the researcher of the absence of serial correlation.

Furthermore, the causality is computed using the Pairwise Granger Causality Test. This test shows that HCD does not Granger Cause RGDP, but RGDP does granger cause HCD. So both variables have a unidirectional causality, with the transmission mechanism moving from RGDP to HCD. This result is shown on table 4.3

TABLE 4.3: PAIRWISE GRANGER CAUSALITY TEST

Null Hypothesis:	Obs	F-Statistic	Prob.
HCD does not Granger Cause RGDP	32	0.62435	0.5432
RGDP does Granger Cause HCD		11.6446	0.0002

Since the variables are of order one, it shows the presence of short run disequilibrium. So it is important that the researcher ascertain whether or not long run co-movement or co-integration occurs. The co-integration test as computed by Johansen shows that at least four variables co-integrate in the long run. This is shown by the trace test and also supported by the maximum eigen value test on table 4.4

Table 4.4: JOHANSEN COINTEGRATION TEST

Trend assumption: Linear deterministic trend

Unrestricted Cointegration Rank Test (Trace)

Hypothesized	Eigenvalue	Trace Statistics	0.05 Critical value	Prob. **
None *	0.863247	133.1371	69.81889	0.0000
At most 1 *	0.710609	75.43921	47.85613	0.0000
At most 2 *	0.568782	39.47988	29.79707	0.0028
At most 3	0.360007	15.08679	15.49471	0.0575
At most 4	0.071269	2.144139	3.841466	0.1431

Trace test indicates 3 co-integrating equations at the 0.05 level.* denotes rejection of the hypothesis at the 0.5 level. **MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized	Max-Eigen	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob. **
None *	0.863247	57.69786	33.87687	0.0000
At most 1 *	0.710609	35.95933	27.58434	0.0033
At most 2 *	0.568782	24.39310	21.13162	0.0167
At most 3	0.360007	12.94265	14.26460	0.0800
At most 4	0.071269	2.144139	3.841466	0.1431

Max-Eigen value test indicates 3 co-integrating equations at the 0.05 level. * denotes rejection of the hypothesis at the 0.5 level. **MacKinnon-Haug-Michelis (1999) p-values

Finally, table 4.5 shows the regression result of the long run impact of the independent variable on the explained variable. This is necessary because the Johansen Co-integration test shows the existence of a long run relationship among the variable in Nigeria using data-set between 1980 – 2013. The long run impact of HCD on RGDP is positive. This result supports the theoretical view of the Lucas model and Romer model. Romer model specify that a unit increase in Human Capital will speed up growth of an economy permanently The result shows that a unit increase in HCD will increase RGDP by 11.86 units holding other variable constant. This result is significant at 5%. Again, good governance has a positive impact on economic growth on the long run, this shows that a unit increase in good governance will increase economic growth by 8.22 units. We can infer that the positive impact of human capital development on the growth of the economy can be explained by the positive impact of good governance on the economy.

Also, the result shows that inflation rate, net export, agricultural output has a positive impact on economic growth. But oil revenue has a negative impact on economic growth, this explain the dutch and curse surrounding the resource.

TABLE 4.5 REGRESSION RESULT (LONGRUN IMPACT)

Dependent variable: RGDP

Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GG	8.22E+11	2.18E+11	3.760581	0.1655
HCD	11.85748	0.726814	16.31432	0.0390
INF	5.43E+10	9.90E+09	5.479483	0.1149
NX	1.260874	0.461073	2.734651	0.2232
OIL-REV	-2.16E+11	1.69E+10	-12.79804	0.0496
YAG	2.753471	0.136619	20.15.445	0.0316
C	1.70E+13	1.55E+12	11.00207	0.0577
R-squared	0.999982			
Adjusted R-squared	0.999877			
F-statistic	9466.446	Durbin-Watson stat	2.186113	
Prob(F-statistic)	0.007867			

TABLE 4.6 ERROR CORRECTION MODEL ESTIMATES

Variable	Coefficient	Std. Error	t-Statistics	Prob.
HCD (1)	26.52724	6.856537	3.868898	0.0038
INF (1)	357033.1	389459.1	0.916741	0.3832
NX (1)	-140934	88708.6	-1.588733	0.1466
OIL-REV (1)	-0.98187	8.815632	-0.111375	0.9138
YAG (1)	4292078	761860.4	5.633681	0.0003
ECM(-1)	-0.75589	0.388065	-1.957818	0.0819

The co-integration test results show that the residuals, and thus the variables, are co-integrated. This necessitates the development of the error correction model for short-term adjustment. ECM (-1) is -0.75589. The percentage value of ECM is thus 75.6%, showing that the variables have to be adjusted approximately 76% to restore equilibrium in the short-run. The above result is significant at 10% since the probability Value is approximately 0.08.

4.2 Discussion of Findings

- ❖ Human Capital Development has a negative impact on economic growth in the short run.

- ❖ The direction of causality between Human Capital development and economic growth is unidirectional with the transmission mechanism running from economic growth to human capital development.
- ❖ Long run co-integration among the variables exists.
- ❖ Human capital development has a positive impact on economic growth in the long run.

This shows the existence of gross inadequacy in our human capital development index which is required for national transformation. The implication of this is that in the short run, human capital development will not bring about economic growth which is required for national transformation. This may be as a result of inadequacy of certain development indicators such as: political instability, bad governance, poor institutional development, corruption, gender imbalance, income disparity, etc. This result could also be associated with the decay in most of the institutions, incessant strikes and disruption of academic activities, all resulted in half-baked or unqualified human resources in the country, Nigeria and adversely affected the GDP of the nation in the short run. Therefore, for human capital development to translate to national transformation in Nigeria, these inadequacy must be addressed which explain the reason why human capital development and good governance are positively related.

Therefore, if development indicators as mentioned above are not put in place, the growth will not be sustainable because any further increase in human capital development in the long run will not be able to positively affect GDP as shown in the result.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary

This study is based on analyzing the relationship between human capital development and economic growth in order to achieve national transformation in Nigeria. It provides systematic approach to the understanding of the importance of human capital development on economic growth, using Nigeria as a case study, on the note that Nigerian government had been accounting for growth without development as a result of poor attention paid to human capital development. The high level of human capital development has increased the utilization of resources both human and material and as expected, there has been a multiplier effect that has led to economic growth in Nigeria. Therefore, there is a wide gap between the state of development of Nigeria when attention was not paid to health and education at all and the state of development of Nigeria when the government recognized the importance of Human capital development. As a result, a high sense of optimism has emerged concerning the benefits of increased continuous development of human skills and abilities. This eventually spilled over into socio-economic and development policies, as many analysts and policy makers now believe that human capital development can offer great gains to developing countries of which Nigeria is a dominant member.

Furthermore, an assessment of the importance of human capital development in the Nigerian economy was made using government expenditure on education and health as guide. To statistically and scientifically prove that human capital development and economic growth plays a major role in the transformation of an economy, a statistical analysis was embarked upon where a multiple regression model was used to evaluate the relationship between human capital development and economic growth for the period of 1980-2013. The multiple regression performed on the model revealed that all the variables accounted for 99% variations in the gross domestic product (GDP) of Nigeria.

5.2 Conclusion

High level of human capital development holds the key to the nation's socioeconomic development as proved by this research study. Also, human capital development is one of the greatest catalysts of the improvement of the standard of living of the population. If the government gives more attention to a growth-enhancing human capital development, it will hasten the transformation of the country's development.

This paper has explored empirically the relationship between economic growth and human capital development in determining national development in Nigeria. Economic growth is proxied by real gross domestic product, while, human capital development is proxied by the average of government expenditure on health and education sector. It was revealed that human capital development and economic growth has both negative and positive relationship. Its negative side was observed to be no correlation between government expenditure on health and education and increase in gross domestic product in the short run. The positive side was that government expenditure on health and education increase real gross domestic product in the long run.

Conclusively, Nigeria can only reposition herself as a potent force through the quality of her human capital assets in the highly competitive and globalised economy through a structured and strategic planning of her health and educational institutions. The following conclusion can be drawn:

Firstly, there exists a clear-cut and obvious relationship between human capital development and economic growth.

Second, the contribution of human capital development to economic growth in Nigeria has been less than satisfactory and there is much room for improvement.

Third, the education and health sectors are in a deplorable state and as such, demand urgent attention.

Fourth, the government has the major responsibility of provision of quality education and satisfactory health care, with the private sector playing a complementary role.

Fifth, only through well-planned policies, can Nigeria begin to fully benefit from human capital development, such that it enhances economic performance and growth.

Nigeria is endowed with abundant resources, one of which is human resources. The proper development of this resource will lead to improved economic performance while mismanagement of the resource will hamper whatever growth process has begun. The issues discussed in this study are of optimum importance to the national development of the country depending on how well economic managers and policy makers approach

them. It is indeed desirable that in the coming years the human capital of the country will be transformed from being merely potential, to kinetic so that sustainable, people oriented growth can be realized.

5.3 Policy Recommendation

Becker 1993 stated that investment in education and health is the basic component of human capital development. In this study, human capital is computed by taking the average of government expenditure on health and education. The findings of Matthew (2011) "Human capital investment and economic growth in Nigeria: the role of education and health" stated that government expenditure on health is inconsistent with a priori expectation implying a negative relationship between government expenditure on health and economic growth. The findings of Eigbiremolen and Anaduaka (2014) "Human capital development and economic growth: the Nigeria experience" revealed a positive relationship between government expenditure on education and economic growth which is consistent with a priori expectation. Based on these findings, we can conclude that the long run negative relationship between human capital development and economic growth is as a result of poor investment in the health sector or in the education sector.

Based on the general conclusion that Human capital development enhances economic growth, Nigeria is yet to fully benefit from it in terms of transformation in the economic development, this study makes the following recommendation to improve the growth-enhancing tendencies of human capital development so as to transform the country's level of development.

- 1) The Government should increase not just the amount of expenditure made on the education and health sectors, but also the percentage of its total expenditure accorded to these sectors. The ten percent benchmark proffered by the present national plan should be adopted.
- 2) The private sector should improve its participation in the provision of private schools and hospitals. While these are already available, efforts should be made to make these services more affordable to the general public.
- 3) Teachers/lecturers and doctors should be paid higher wages than what they presently earn. This should be done so as to curb the imminent brain drain problem of the country.
- 4) Better infrastructural facilities should be provided for existing schools and hospitals, while new educational and medical institutions should be established to provide quality education and healthcare for the populace.

- 5) The free basic education (UBE) and health care programs established by the Federal and State governments should be improved on, and sustained.
- 6) An enabling environment of macroeconomic stability should be provided by the government to encourage investment in human capital by the private sector and the government itself.
- 7) A government that is free from corruption, discontinuity, and political instability is needed. If the government is transparent and morally sound, then these policies can be implemented and sustained for better performance of the Nigerian economy through the development of human capital.

REFERENCE

- Amassoma, D. and Nwosa.P.I. (2011). Investment in Human Capital and Economic Growth in Nigeria: A Causality Approach. *Canadian Social Science*, 7(4), 114-120.
- Abu N., Abdullahi U. (2010). Government Expenditure and Economic Growth in Nigeria; 1970-2008 - A Disaggregated Analysis. *Business Economics Journal* 4(1):11.
- African Economic Outlook (AEO) 2014.
- Aghion, Philippe/Howitt, Peter (1998), *Endogenous growth theory*, Cambridge, MA: MIT Press.
- Alan, K. M. A., Altman, Y., and Roussel, J. (2008). Employee Training Needs and Perceived Value of Training in the Pearl River Delta of China: A Human Capital Development Approach. *Journal of European Industrial Training*, 32(1), 19-31.
- Alexander, K. (1996). *The Value of an Education*. MA: Simon and Schuster.
- Ali-Abdel, G.A. (2005). Building Human Capital for Economic Development in the Arab Countries. www.uis.unesco.org/template/pdf/ged/2005/gec. (Downloaded April 10 2011).
- Aniekwu, N.I (2006). Health Sector Reforms in Nigeria: A Perspective on Human Rights and Gender Issues. *International Journal of Justice Sustain*. 11(1):128-140.
- Aranda, P. (2010). The Determinants of Health and the Differences in Healthcare Expenditures among Countries. *Journal of Health Economics*. 15:103-118.
- Ararat, O. (2007). *Role of Education in Economic Growth in the Russian Federation and Ukraine*. Retrieved from <http://mpr.ub.uni-muenchen.de/7590>. 01 January 2007.
- Arrow K (1962). The economic implications of learning by doing. *Rev. Econ. Stud.* 29(3):155-173.
- Azariadis C, Drazen A (1990). "Threshold Externalities in Economic Development". *Q. J. Econ.*, 105: 501-526.
- Babatunde, M.A and Adefabi, R.A., (2005). Long-Run relationship between Education and Economic growth in Nigeria: Evidence from Johannes's cointegration Approach. Paper presented at the Regional conference on education in West Africa: constraints and opportunities. Dakar Senegal Nov. 1st – 2nd 2006.
- Barbara Barungi (2014); African Economic Outlook. 2014
- Barro R (1991). Economic growth in a cross-section of countries. *Quarterly Journal of Economic*, 106(2):407-443.
- Barro, Robert J., and Jong-Wha Lee. (1993). "International Comparison of Educational Attainment" *Journal of Monetary Economics* 32(3): 363-394.
- Barro, Robert J./Sala-i-Martin, Xavier (1995), *Economic growth*, New York: McGrawHill.
- Bakare A.S., Olubokun S. (2011). Health Expenditure and Economic Growth in Nigeria: An Empirical Study. *J. Emerg. Trend Econ. Manage. Sci.* 2(2):83-87.
- Beach, M. J. (2009). A Critique of Human Capital Formation in the U.S. and the Economic Returns to Sub-Baccalaureate Credentials. *Educational Studies: A Journal of the American Educational Studies*, 45(1), 24–38.
- Becker, G. S. (1976). *Human Capital*. New York: National Bureau of Economic Research.
- Becker, G. S. (1976). *The Economic Approach to Human Behavior*. Chicago: University of Chicago Press.
- Becker, G. S. (1993). *Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education* (3rd Ed.). Chicago: University of Chicago Press.

- Behrman, J. R., and Barbara L. Wolfe (1987a). Investments in schooling in two generations in pre-revolutionary Nicaragua: the roles of family background and school supply. *Journal of Development Economics*, 27
- Behrman, Jere and Barbara L. Wolfe (1987b). How Does Mother's Schooling Affect the Family's Health, Nutrition, Medical Care Usage and Household Sanitation? *Journal of Econometrics* 36(1-2): 185-204
- Berger M.C., Messer J. (2002). Public Financing of Health Expenditures, Insurance and Health Outcomes. *Appl. Econ.* 34:2105-2113.
- Birdsall, N., Ross, D., and Sabot, R. (1995). Inequality and growth reconsidered: lessons from East Asia. *World Bank Economic Review*, 9
- Bloom D, David C (2000). "Health, Human Capital and Economic Growth." Commission on Macroeconomics and Health, Geneva.
- Boldizzoni (2008). Means and ends: The idea of capital in the West; 1500-1970, New York: Palgrave Macmillan.
- Bowley, M. (1975). Some aspects of the treatment of capital in the wealth of nations by Skinner AS, Wilson T. *Essays on Adam Smith*. Oxford: Clarendon Press pp.361-376.
- Cass D (1965). "Optimum growth in an aggregative model of capital accumulation. *Rev. Econ. Stud.* 32(3):233-240.
- Crawford, R. (1991). *In the Era of Human Capital*. New York: Harpercollins.
- Dauda, R.O. (2009). *Investment in Education And Economic growth In Nigeria: A Cointegration Approach*. Paper Presented at the 9th Global Conference on Business and Economics held at University of Cambridge, UK.
- Dauda, R.O. (2010). *Role of Human Capital in Economic Development: An Empirical Study of Nigerian Case*. Oxford: Oxford Business and Economics Conference Program.
- De la Fuente, A. and Ciccone, A. (2002). *Le capital humain dans une économie mondiale sur la connaissance. Rapport pour la Commission Européenne*, Brussels.
- Denison, E. F. (1962). *The Sources of Economic Growth in the United States and the Alternatives before Us*. NY: Committee for Economic Development.
- Deraniyagala, S. (1995). *Technical change and efficiency in Sri Lanka's manufacturing industry*. Ph.D. dissertation, University of Oxford, UK
- Domar E (1946). Capital expansion, rate of growth, and employment. *Am. Econ. Rev.* 14(2):343-355.
- Duflo, Esther (2001). *The Medium Run Effects of Educational Expansion: Evidence from a Large School Construction Program in Indonesia*, Massachusetts Institute of Technology, Department of Economics Working Paper: 01/46
- Eigbiremolen O. and Anaduaka S. (2014). Human capital development and economic growth: Nigeria Experience. *International Journal of Academic research in Business and Social Sciences*. April 2014, Vol. 4
- Eltis, A. (1975). Adam Smith's theory of economic growth, In: Skinner AS and Wilson T eds. *Essays on Adam Smith*, Oxford: Clarendon Press pp.426-454.
- Farmer, D. (1997). Contemporary conceptual space: reading Adam Smith. *J. Manage. History* 3(3):246-255.
- Fitzsimons, P. (1999). *Human capital theory and education*. *The Encyclopedia of Education*. London: Macmillan.
- Florian Schutt (2003). The importance of Human capital on Economic growth. *Materialien des Wissenschaftsschwerpunktes "Globalisierung der Weltwirtschaft"*, Bd. 27, August 2003, ISSN 0948-3837
- Frank, R. H., and Bernanke, B. S. (2007). *Principles of Microeconomics (3rd ed.)*. New York: McGrawHill/Irwin.

- Garavan, T. N., et al. (2001). Human Capital Accumulation: The Role of Human Resource Development. *Journal of European Industrial Training*, 25(2), 48-68.
- Garcia, M. (1990). Resource allocation and household welfare: A study of personal sources of income on food consumption, nutrition and health in the Philippines. Ph.D. dissertation, Institute of Social Studies, The Hague
- Gemmell N (1996). "Evaluating the Impacts of Human Capital Stock and Accumulation on Economic Growth: Some New Evidence". *Oxford Bulletin of Econ. Statistics*, 58(1): p. 9-29.
- Griliches, Z. and Regev, H. (1995). Firm Productivity in Israeli industry 1979-1988. *Journal of Econometrics*, 65, 175-203.
- Grubb, W. N., and Marvin L. (2004). *The Education Gospel: The Economic Power of Schooling*. MA: Harvard University Press.
- Grammy, A.P., Assana, D. (1996). "New Evidence on the Effect of Human Capital on Economic Growth". *Applied Econ. Letters*. 4: p. 121-124.
- Grossman G, Helpman E (1991). Quality ladders in the theory of growth. *Rev. Econ. Study* 58(2):43-61.
- Hall RE, Charles IJ (1999). Why do Some Countries Produce So Much More Output Per Worker Than Others? *Quarterly Journal of Economics*. 114(1): 84-116.
- Harrod RF (1939). An essay in dynamic theory. *Econ. J.* 49(139):14-33.
- Harrod RF (1948). *Towards a dynamic economics*. London, Macmillan.
- Heckman J, Peter JK (1997). *Human Capital Policy*, University of Chicago, Department of Economics.
- Henderson JM, Richard EQ (1980). *Microeconomic Theory: A Mathematical Approach*. McGraw Hill Ltd., London.
- Hoddinott, John and Lawrence Haddad (1991). "Household Expenditures, Child Anthropometric Status and the Intrahousehold Division of Income: Evidence from the Cote d'Ivoire," Research Program in Development Studies, Woodrow Wilson School, Discussion Paper 155
- Immink, M., and F. Viterri (1981). Energy intake and productivity of Guatemalan sugarcane cutters: An empirical test of the efficiency wage hypothesis. *Journal of Development Economics*, 9
- Isola, W.A. and Alani, R.A. (2012). Human Capital Development and Economic Growth: Empirical Evidence from Nigeria. *Asian Economic and Financial Review*, 2(7), 813-827.
- Jayaraman, R. (1995). On the meta-production front: An evidence-gathering exercise. Processed for UNDP, New York
- Karl Marx. (1867). *Capital a critique of political economy volume I*. Progress Publishers, Moscow, USSR.
- Keller W (1998). Are international RandD Spillovers trade-related?: analysing Spillovers among randomly matched trade partners. *Eur. Econ. Rev.* 42(8):1469-1481.
- Koopmans T (1965). On the concept of optimal economic growth. *Cowles Foundation Discussion Papers*, (163):226-300.
- Krugman R (1987). The narrow moving band, the Dutch disease, and the consequences of Mrs. Thatcher: notes on trade in the presence of scale economies. *Journal of Development Economic*, 27(1-2):41-55.
- Krueger AB, Mikael L (2000). *Education for Growth, Why and for Whom?* NBER Working Paper 7591, Cambridge Mass.
- Lawal, H and Wahab, T. (2011). *Education and Economic Growth: The Nigerian Experience*. *Journal of Emerging Trends in Economics and Management Sciences*, 5(3).

- Lepak, D., and Snell, S. (1999). The Human Resource Architecture: Toward a Theory of Human Capital Allocation and Development. *Academy of Management Review*, 24, 31-48.
- Little, W. A. (2003). Motivating Learning and the Development of Human Capital. *Compare*, 33(4), 437-452.
- Lucas, Robert E. (1988), On the mechanics of economic development, in: *Journal of Monetary Economics*, Vol. 22, 1, pp. 3-42.
- McMahon, W. W. (1999). *Education and Development: Measuring the Social Benefits*. New York: Oxford University Press.
- Mankiw, N. Gregory/Romer, David/Weil, David (1992), A contribution to the empirics of economic growth, in: *Quarterly Journal of Economics*, Vol. 107, 2, pp. 407- 437.
- Mwabu G (2008). *Handbook of Development Economics*. Vol.4. Available at D01:10:1016/S1573-447(07)04053-3. Accessed January, 2013.
- Ncube M (1999). "Is Human Capital Important for Economic Growth in Nigeria: An Empirical Evidence" NES Proceedings.
- Nelson, Richard R./Phelps, Edmund S. (1966), Investment in humans, technological diffusion, and economic growth, in: *American Economic Association Papers and Proceedings*, Vol. 56, 1-2, pp. 69-75.
- National Planning Commission 2004. *National Economic Empowerment and Development Strategy (NEEDS), Chapter Ten: The Social Charter: Human Development Agenda*. Abuja: The NEEDS Secretariat, February.
- Nurudeen, A, and Usman, A. (2010). *Government Expenditure and Economic Growth in Nigeria, (1970-2008): A Disaggregated Analysis*. *Business and Finance Journal*, 3(6).
- Odusola AF (1998). "Human Capital Investment and the Empires of Economic Growth: The Nigerian Experience" in *Rekindling Investment for Economic Development in Nigeria*, Nigerian Economic Society (NES) Proceeding." NES Proceedings.
- Psacharopolous, G. (1994). Returns to investment in education: a global update. *World Development*, 22 (9), 1325±1343
- Ramsy F (1928). A mathematical theory of saving. *Econ. J.* 38(152):543-559.
- Ranis, Gustav, Frances Stewart and Alejandro Ramires (2000). Economic Growth and Human Development, *World Development* Vol. 28, No. 2
- Rastogi, P. N. (2002). Knowledge Management and Intellectual Capital as a Paradigm of Value Creation. *Human Systems Management*, 21(4).229-240.
- Rebelo S (1991). Long-run policy analysis and long-run growth. *Journal of Political Economy*, Vol. 99(3):500-521.
- Romer, Paul M. (1986), Increasing returns and long-run growth, in: *Journal of Political Economy*, Vol. 94, 5, pp. 1002-1037.
- Romer PM (1987). Crazy Explanations for the Productivity Slow Down. *NBER Macroeconomic Annual*, pp. 163-210.
- Romer, Paul M. (1990), Endogenous technological change, in: *Journal of Political Economy*, Vol. 98, 5, pp. S71-S102.
- Romer, David (2001), *Advanced macroeconomics*, 2nd edition, New York: McGrawHill.
- Rosen, H. S. (1999). *Public Finance*. New York: McGraw-Hill
- Rudd, Jeremy B. (2000), Empirical evidence on human capital spillovers, Board of Governors of the Federal Reserve System, Finance and Economics Discussion Paper no. 2000/46 (<http://www.federalreserve.gov/pubs/feds/2000/200046/200046pap.pdf>).
- Salamon, L. M. (1991). *Human Capital and America's Future*. Baltimore: Johns Hopkins University.

- Schultz, T. Paul (2000). Productive Benefits of Improving Health: Evidence from Low Income Countries, Yale University Mimeo 13
- Schultz, T. W. (1961). Investment in Human Capital. *American Economic Review*, 51, 1-17.
- Schultz, T. W. (1971). *Investment in Human Capital*. New York: Free Press.
- Sen, A. (1999). *Development as Freedom*. New York: Anchor Books.
- Sheffrin, M. S. (2003). *Economics: Principles in Action*. New Jersey: Pearson Prentice Hall.
- Sicherman, N. and Galor, O. (1990) A Theory of Career Mobility, *Journal of Political Economy*, 98(1), 169-192.
- Sleezer, C. M., Conti, G. J., and Nolan, R. E. (2003). Comparing CPE and HRD Programs: Definition, Theoretical Foundations, Outcomes, and Measures of Quality. *Advances in Developing Human Resources*, 6(1), 20-34.
- Sen, Amartya (1985). Well-Being, Agency and Freedom: The Dewey Lectures 1984, *The Journal of Philosophy*, Vol. 82, No. 4, 169-221
- Sen, Amartya (2000). A Decade of Human Development, *Journal of Human Development* Vol. 1, No. 1, 2000
- Solow, R. M. (1956) "A Contribution to the Theory of Economic Growth". *Quarterly Journal of Economics*, Vol. 70, No. 1, pp. 65-94.
- Strauss and John (1986). Does Better Nutrition Raise Farm Productivity? *The Journal of Political Economy*, Vol. 94, No. 2. pp. 297-320
- Strauss, John and Duncan Thomas (1998). Nutrition, and Economic Development *Journal of Economic Literature*, Vol. 36, No. 2., pp. 766-817.
- Streeten, Paul (1979). Basic Needs: Premises and Promises, *Journal of Policy Modelling*
- Swan T (1956). Economic growth and capital accumulation. *Econ. Record* 32(63):334-361.
- Temple, Jonathan (2001a), Growth effects of education and social capital in the OECD, in: *OECD Economic Studies*, no. 33 (2001/II), pp. 57-101.
- Thomas, D., J. Strauss, and M.H. Henriques (1991). How does mother's education affect child height. *Journal of Human Resources*, 26.
- UNDP (1996). *Human Development Project*. New York: Oxford University Press.
- Von Braun, J. (1988). Effects of technological change in agriculture on food consumption and nutrition: rice in a West African setting. *Economic Development and Cultural Change*, 37
- Wolgemuth, J. C., M. C. Latham, A. Hall, and D. Crompton, (1982). Worker productivity and nutritional status of Kenyan road construction labourers. *American Journal of Clinical Nutrition*, 36.
- WHO (2004). "Regional Macroeconomics and Health Framework" World Health Organization Regional Office for South-East Asia p.22.
- WHO (2010). *National Health Account Database, Supplemented by Country Data*. Available at <http://www.who.int/nha/en>.
- Woodhall, M. (2001). Human capital: educational aspects, *International Encyclopedia of the Social and Behavioral Sciences*.
- Youndt, M. A., et al. (2004). Intellectual Capital Profiles: An Examination of Investments and Returns. *Journal of Management Studies*, 41(2).335-361.
- Young A (1928). Increasing returns and economic progress. *Econ. J.* 38(152):527 542.

APPENDIX A**DATA**

YEAR	RGDP	HCD	NX	Yag	INF	Oil rent
1980	21,608,300,000,000	926,150,000			10.2	41.4
1981	18,771,600,000,000	616,400,000	-125,959,770,000	2,384,950,000,000	20.8	28.4
1982	18,573,900,000,000	710,550,000	-80,322,730,000	2,445,040,000,000	7.7	26.9
1983	17,635,800,000,000	623,500,000	-31,731,460,000	2,426,900,000,000	23.2	33.2
1984	17,279,300,000,000	525,700,000	5,986,320,000	2,299,760,000,000	17.8	44.6
1985	18,717,500,000,000	537,050,000	6,913,950,000	2,704,050,000,000	7.4	43.8
1986	17,078,900,000,000	486,600,000	21,993,660,000	2,966,720,000,000	5.7	27.2
1987	15,242,600,000,000	444,950,000	45,260,730,000	2,862,780,000,000	11.3	30
1988	16,392,300,000,000	763,650,000	49,757,740,000	3,156,660,000,000	54.5	26.2
1989	17,452,400,000,000	1,197,200,000	62,491,400,000	3,326,280,000,000	50.5	38
1990	19,680,400,000,000	1,476,200,000	49,716,930,000	3,468,850,000,000	7.4	43
1991	19,558,800,000,000	1,155,600,000	42,530,260,000	3,598,770,000,000	13	41.3
1992	19,643,600,000,000	1,542,900,000	23,746,560,000	3,674,520,000,000	44.6	38.5
1993	20,054,300,000,000	5,341,800,000	26,965,060,000	3,725,980,000,000	57.2	62.2
1994	20,236,700,000,000	6,655,800,000	43,511,710,000	3,817,960,000,000	57	50
1995	20,174,500,000,000	8,894,800,000	41,506,840,000	3,957,280,000,000	72.8	35
1996	21,181,900,000,000	10,101,650,000	9,449,340,000	4,121,610,000,000	29.3	37.8
1997	21,775,500,000,000	10,873,500,000	22,955,690,000	4,298,360,000,000	8.5	36.9
1998	22,366,900,000,000	19,352,800,000	31,419,310,000	4,475,210,000,000	10	22.7
1999	22,472,900,000,000	23,871,900,000	47,899,370,000	4,711,970,000,000	6.6	28.2
2000	23,668,100,000,000	42,874,950,000	54,636,360,000	4,850,750,000,000	6.9	40.5
2001	24,712,100,000,000	52,198,050,000	-12,845,120,000	5,039,000,000,000	18.9	36.6
2002	25,647,300,000,000	86,313,200,000	-8,858,760,000	7,819,650,000,000	12.9	25.7
2003	28,302,900,000,000	59,560,800,000	-36,040,610,000	8,365,670,000,000	14	28.6
2004	37,851,100,000,000	76,777,650,000	19,003,590,000	8,892,040,000,000	15	32.6
2005	39,155,000,000,000	95,860,480,000	-2,703,250,000	9,519,440,000,000	17.9	38.2
2006	42,370,000,000,000	130,889,190,000	70,420,570,000	10,224,200,000,000	8.2	34.2
2007	45,263,200,000,000	184,000,000,000	-115,006,490,000	10,959,400,000,000	5.4	31.1
2008	48,101,300,000,000	208,189,000,000	-23,580,870,000	11,646,200,000,000	11.6	32
2009	51,436,800,000,000	183,688,500,000	-133,336,850,000	12,330,900,000,000	11.5	23.7
2010	55,469,400,000,000	216,498,000,000	-78,737,580,000	13,048,900,000,000	13.7	16.4
2011	58,180,400,000,000	414,000,000,000	-70,536,830,000	13,429,400,000,000	10.8	19.1
2012	60,670,100,000,000	341,460,000,000	102,922,960,000	14,329,700,000,000	12.2	16.4
2013	63,942,800,000,000	352,745,000,000		14,750,500,000,000	8.5	13.4

APPENDIX B

RESULTS

TABLE 4.1 UNIT ROOT TEST

Augmented Dickey Fuller

Variables	t-stats	Prob. Value	Level of Integration	Level g=Sig
NX	-3.0381	0.0449	I(1)	5%
OIL REV	-6.4444	0.0000	I(1)	1%
RGDP	-3.7521	0.0078	I(1)	1%
YAG	-4.4244	0.0014	I(1)	1%

Phillips-Perron Test Equation

Dependent Variable: D(HCD,2)

Method: Least Squares

Date: 08/03/15 Time: 13:50

Sample (adjusted): 1982 2013

Included observations: 32 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(HCD(-1))	-1.207781	0.178359	-6.771635	0.0000
C	1.32E+10	7.31E+09	1.808980	0.0805
R-squared	0.604509	Mean dependent var		3.62E+08
Adjusted R-squared	0.591326	S.D. dependent var		6.24E+10
S.E. of regression	3.99E+10	Akaike info criterion		51.71792
Sum squared resid	4.78E+22	Schwarz criterion		51.80953
Log likelihood	-825.4867	Hannan-Quinn criter.		51.74828
F-statistic	45.85504	Durbin-Watson stat		2.076072
Prob(F-statistic)	0.000000			

Null Hypothesis: D(INF) has a unit root

DF-GLS Test Equation on GLS Detrended Residuals

Dependent Variable: D(GLSRESID)

Method: Least Squares

Date: 08/10/15 Time: 12:15

Sample (adjusted): 1983 2013

Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GLSRESID(-1)	-1.252418	0.231783	-5.403414	0.0000
D(GLSRESID(-1))	0.363243	0.169698	2.140526	0.0409
R-squared	0.536687	Mean dependent var		0.303226
Adjusted R-squared	0.520710	S.D. dependent var		23.01405
S.E. of regression	15.93279	Akaike info criterion		8.436977
Sum squared resid	7361.764	Schwarz criterion		8.529492
Log likelihood	-128.7731	Hannan-Quinn criter.		8.467135
Durbin-Watson stat	1.878228			

TABLE 4.2 REGRESSION RESULT: SHORT RUN IMPACT

Dependent Variable: RGDP
 Method: Least Squares
 Date: 07/25/15 Time: 06:11
 Sample (adjusted): 1983 2013
 Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.55E+12	1.18E+12	4.709421	0.0002
RGDP(-1)	0.222756	0.104826	2.125014	0.0469
HCD(-1)	10.14786	5.983543	1.695962	0.1062
INF(-1)	1.08E+10	1.09E+10	0.988160	0.3355
NX(-1)	-10.99412	4.281993	-2.567523	0.0188
OIL_RENT(-1)	-1.52E+10	2.75E+10	-0.554197	0.5859
YAG(-1)	3.025842	0.338560	8.937400	0.0000
D(HCD(-1))	-13.55201	5.034712	-2.691715	0.0144
D(INF(-1))	-7.97E+09	1.07E+10	-0.747870	0.4637
D(NX(-1))	3.750526	3.738951	1.003096	0.3284
D(OIL_RENT(-1))	4.68E+10	2.29E+10	2.042313	0.0552
D(YAG(-1))	-2.286417	0.503683	-4.539395	0.0002
R-squared	0.998211	Mean dependent var		3.01E+13
Adjusted R-squared	0.997175	S.D. dependent var		1.53E+13
S.E. of regression	8.11E+11	Akaike info criterion		57.96598
Sum squared resid	1.25E+25	Schwarz criterion		58.52107
Log likelihood	-886.4727	Hannan-Quinn criter.		58.14693
F-statistic	963.6543	Durbin-Watson stat		1.930765
Prob(F-statistic)	0.000000			

TABLE 4.3: PAIRWISE GRANGER CAUSALITY TEST

Pairwise Granger Causality Tests
 Date: 07/25/15 Time: 06:19
 Sample: 1980 2013
 Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
HCD does not Granger Cause RGDP	32	0.62435	0.5432
RGDP does not Granger Cause HCD		11.6446	0.0002

TABLE 4.4: JOHANSEN COINTEGRATION TEST

Date: 07/25/15 Time: 06:25
 Sample (adjusted): 1984 2012
 Included observations: 29 after adjustments
 Trend assumption: Linear deterministic trend
 Series: DRGDP DHCD DINF DNX DYAG
 Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.863247	133.1371	69.81889	0.0000
At most 1 *	0.710609	75.43921	47.85613	0.0000
At most 2 *	0.568782	39.47988	29.79707	0.0028
At most 3	0.360007	15.08679	15.49471	0.0575
At most 4	0.071269	2.144139	3.841466	0.1431

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.863247	57.69786	33.87687	0.0000
At most 1 *	0.710609	35.95933	27.58434	0.0033
At most 2 *	0.568782	24.39310	21.13162	0.0167
At most 3	0.360007	12.94265	14.26460	0.0800
At most 4	0.071269	2.144139	3.841466	0.1431

Max-eigenvalue test indicates 3 cointegrating eqn(s) at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

TABLE 4.5: REGRESSION RESULT (LONG RUN IMPACT)

Dependent Variable: RGDP
 Method: Least Squares
 Date: 07/25/15 Time: 05:36
 Sample (adjusted): 2005 2012
 Included observations: 8 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GG	8.22E+11	2.18E+11	3.760581	0.1655
HCD	11.85748	0.726814	16.31432	0.0390
INF	5.43E+10	9.90E+09	5.479483	0.1149
NX ^o	1.260874	0.461073	2.734651	0.2232
OIL_RENT	-2.16E+11	1.69E+10	-12.79804	0.0496
YAG	2.753471	0.136619	20.15445	0.0316
C	1.70E+13	1.55E+12	11.00207	0.0577
R-squared	0.999982	Mean dependent var	5.01E+13	
Adjusted R-squared	0.999877	S.D. dependent var	7.70E+12	
S.E. of regression	8.54E+10	Akaike info criterion	52.85043	
Sum squared resid	7.30E+21	Schwarz criterion	52.91994	
Log likelihood	-204.4017	Hannan-Quinn criter.	52.38161	
F-statistic	9466.446	Durbin-Watson stat	2.186113	
Prob(F-statistic)	0.007867			

TABLE 4.6 ERROR CORRECTION MODEL ESTIMATES

Variable	Coefficient	Std. Error	t-Statistics	Prob.
HCD (1)	26.52724	6.856537	3.868898	0.0038
INF (1)	357033.1	389459.1	0.916741	0.3832
NX (1)	-140934	88708.6	-1.588733	0.1466
OIL-REV (1)	-0.98187	8.815632	-0.111375	0.9138
YAG (1)	4292078	761860.4	5.633681	0.0003
ECM(-1)	-0.75589	0.388065	-1.957818	0.0819

R-squared 0.992261
 Adjusted R-Sqd 0.987961
 S.E. of Regression 270910.6
 Sum sqdResid 6.61E+11
 Log likelihood -205.096

Mean Dependent var 1894281
 S.D Dependent var 2469049
 Akaike info criterion 28.146414
 Schwarz criterion 28.42936
 Durbin-Watson stat 2.154743