

Investment in Human Capital through Institutions of Higher Education for the Revival of Kenya's Economy

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Despite economic theory postulating that increases in investment in human capital and physical capital leads to increase in economic growth, in the Kenyan case, this has not been true. This paper empirically examines the contribution of human capital and physical capital to economic growth in Kenya. Measures to be undertaken by higher education institutions in revamping Kenya's real economic growth by investing in human resource development are recommended.

Keywords: Human Capital, Economic Growth, Higher Education

Kenya's real economic growth, like that of many African countries, has been disappointing over the years. It is a truism that the quality of inputs that the country has, which is determined by the quality of labor, have enormous impact on economic growth through the production process. But quality of labor is determined by investment in human capital through the quality of education and training programs offered.

Structural rigidities present within the economy hinder growth (World Bank, 1983; Larson, 1994). This has resulted in the collapsing of manufacturing enterprises over time while those still in operation are under utilized due to low effective demand in the domestic market. Several public projects have become unproductive while physical infrastructure has deteriorated over the years. The public debt has increased over time (Republic of Kenya, 2001) thereby worsening the fiscal deficits situation. Most financial institutions have collapsed or are on the verge of collapse due to enormous bad and unserviceable debts, unfair competition due to globalization and leadership issues.

An economy must have people who possess critical skills and knowledge required for development. Without these skills and knowledge, physical capital, remains underutilized. This results in breakdowns and unnecessary wearing out of machines. Materials and components are wasted and the quality of production falls leading to high costs of production and eventual collapse of the production entities. Global wealth today is concentrated less and less in factories, land, tools and machinery (World Bank 2000). Knowledge, skills and resourcefulness of the people are therefore increasingly critical to the world and national economies. Knowledge is and has been at the center stage of economic development (Nafukho, 2005; Nafukho & Wawire, 2000; Lewis, 1962; Schultz 1962; Harbison & Myer, 1974). As the World Bank (1999) noted, knowledge enlightens the lives of people and is crucial to any development effort. Economic equality of the population remains low when there is little knowledge of available natural resources, possible alternative production techniques, necessary skills, existing market conditions and opportunities and institutions that might be created to favor economizing effort (Jhingan, 1989, p. 39).

The existence of surplus labor in the Kenyan economy is due to shortage of critical skills. The undeveloped human capital in the economy is manifested in low productivity, factor immobility, limited specialization in occupation, cultural, traditional, leadership, and limited investment in technology. High quality labor is developed in a high quality education system with tertiary education providing the advanced skills that command a premium at the workplace (World Bank, 2000). As the World Bank (2000) and Nafukho (2004) note, lifelong learning should be encouraged to help workers adjust to rapid changes taking place in the society. Education and training is therefore very important in greasing the wheels of economic growth. Kenya as a nation must continuously invest in high quality education and training that is needed for economic growth and development, hence the critical role of HRD.

Problem Statement

Kenya's economy is at crossroads. Real economic growth has been disappointing over time (Republic of Kenya, 2001 & 2005). The main factors of production that affect economic growth and are therefore critical in the rapid development of the Kenyan economy are physical capital and human capital.

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Economic theory postulates that increases in the quantities of human capital and physical capital will lead to increased economic growth. However, in Kenya, growth in wage employment and capital formation has taken place without corresponding rate in economic growth.

On the average, growth in real GDP has always been below the average growth rates in wage employment and physical capital formation. This implies low residual difference between the rate of increase in real GDP and the rate of increase in physical inputs. In this paper it is argued that there are other salient factors that have enormous effect on economic growth apart from the inputs of labor and physical capital. The paper seeks to demonstrate that investment in human capital measured in terms of quality of inputs, is influenced by the quality of human capital stock. But the quality of human capital stock is determined by quality education and training provided through HRD programs existing in the organizations and in the entire economy.

Given the low residual and disappointing economic growth rate which is in contrast with the average labor and capital formation rates, it is argued in this paper that higher education institutions and colleges in Kenya do not produce graduates who possess appropriate skills and body of knowledge needed to increase productivity. The higher education system creates job seekers instead of job creators because the graduates lack critical skills and relevant body of knowledge required at the workplace. There is a deficiency of a well-developed entrepreneurial class motivated and trained to organize resources for efficient production. The existing deficiencies in critical skills and relevant body of knowledge have caused the declining economic growth.

Purpose of the Study

The main purpose of this paper is to investigate the contribution of human capital and physical capital to economic growth in Kenya. The paper also seeks to show how institutions of higher education in Kenya need to be re-oriented in order to provide the critical skills needed to fuel economic growth. To achieve the objectives of the paper, theoretical and empirical analysis of the relationships between economic growth, human capital, physical capital formation and higher education and training is conducted.

Research Questions

The following research questions guided the study:

1. What relationship exists between investment in human capital (measured by labor inputs in the study) and economic growth in the Kenyan economy during the years of investigation (1972-2000)?
2. What relationship exists between investment in physical capital and economic growth in Kenya's economy during the years of investigation?

Literature Review

According to Smith (1776), economic growth is affected by availability of natural resources, growth in physical capital, organization (which relates to optimum use of factors of production in economic activities), division of labor and scale production. Economic growth is also affected by structural changes, which imply the transition from a traditional agricultural society to the modern industrial economy. The process involves a radical transformation of existing institutions and social attitudes including motivation. These factors lead to increased employment opportunities, high labor productivity, increased capital stock, exploitation of new resources and improvement in technology. Other non-economic factors that affect economic growth include social attitudes, cultural values, institutions, efficient human endowment, political, administrative and leadership factors.

Technical progress is one of the major factors that affect the rate of economic growth. This relates to changes in the methods of production as a result of new techniques of research or innovation. Changes in technology lead to increase in productivity of labor, capital and other factors of production (Kuznet, 1959, Lewis, 1962, Meier, 1991, Harbison & Myers, 1974, Denison, 1962, Scott, 1981, Solow, 1957, Schultz, 1962). Kuznet (1959) identified patterns in the growth of technology as scientific discovery, invention, innovation and improvement and spread of invention.

Bird (1993) and Bruton (1965) asserted that the stock of applied technical knowledge, availability of natural resources and various social and cultural characteristics affect the level of output through their effects on the stock of available capital and labor force. However, the level of available resources depends largely on the state of technology and technical improvements implemented through formation in physical and/or human capital and organizational changes. The social and cultural characteristics include market organization, the extent and

effectiveness of the price system in allocating resources, the level of institutional development and governance among others. Therefore, growth is an outcome of these increases, which represents a heterogeneous collection of physical capital and workers with different skill levels (human capital). Solow (1957) study established that growth depended on the level and composition of demand in an economy. It was determined that more than one half of the growth in the real output for U.S. from 1909 to 1949 was attributed to technical change rather than growth in the physical quantities of the factors of production. Denison (1962), using data from U.S economy concluded, among others, that about 40 percent of the technical advances were explained by improvement in the quality of labor force. The results indicated the strong role that investment in human capital through education and training can have on the growth process. It became evident that a high priority must be assigned to investment in human capital in addition to stock of physical capital.

Several other studies on economic growth confirm the importance of investment in human capital (Lewis; 1962, Scott; 1981, Harbison & Myers; 1974, Meier; 1991; Schultz; 1962). These studies indicate that output increases at a higher rate than could be explained by an increase in the inputs of labor and physical capital only. The residual difference between the rate of increase in output and the rate of increase in physical capital and labor encompasses many unidentified factors that include improvement in the quality of inputs through improvement in labor qualities. Meier (1991, p.450) noted “capital stock include the body of knowledge possessed by the population and the capacity and training of the population to use it effectively”. Green (1967) concluded that half of the long-term gains in industrial output appeared to be accounted for by improved technology, including labor force skills, rather than by additional physical capital. Green argued that the existing work force could acquire new skills that can improve the use of existing equipment and technology and be critical in the successful introduction of new methods. In Kenya today, human capital with relevant skills is scarce. This calls for an increase in quality of labor and technology.

Myint (1954) and Meier (1991) observed that low economic growth in developing countries is manifested in the form of low labor efficiency, factor immobility, limited specialization in occupation and trade, a deficient in supply of entrepreneurship and customary values and traditional social institutions that minimize the incentives for economic change. Schultz (1962) identified the following activities as those that improve human capabilities: health facilities and services, on-the-job training, formal education, study and extension programs for adults and migration of individuals and families to adjust to changing job opportunities. Kenya has problems in embracing these methods. It therefore relies on imported technology to accelerate its productive capacity. Kenya must develop indigenous technical skills through research, invention and innovation through institutions of higher education.

From the literature reviewed, two major sources of increase in labor productivity can be identified. First, extensive use of technology, which involves imported, automated technology that require a lot of skills and capital, substitution of physical capital for highly skilled labor and the use of heavy equipment in agriculture. The second source is improvement in quality of human resources through education, training and acquisition of managerial and entrepreneurial skills. An economic growth model is developed to capture this phenomenon.

Theoretical Framework

Considering the evidence gathered from the literature review, it is clear that the rate of growth of output over time exceed the growth rate that can be attributed to the growth in conventionally defined inputs. We develop a growth model to capture this phenomenon. Let $y = A(t) f[K, L]$ where y = output and $A(t)$ represents all the influences that go into determining y besides labor hours (L) and machine hours (K). Changes in A over time represent technical progress. Thus particular levels of inputs of labor and capital become more productive over time,

$$\frac{dA}{dt} > 0$$

Taking the first derivative of the production function with respect to time t gives:

$$\frac{dy}{dt} = \frac{dA}{dt} f(K,L) + A \frac{df(K,L)}{dt} = \frac{dA}{dt} \frac{y}{A} + \frac{y}{f(K,L)} \left[\frac{\partial f}{\partial K} \frac{dK}{dt} + \frac{\partial f}{\partial L} \frac{dL}{dt} \right]$$

Dividing by y gives

$$\frac{\frac{dy}{dt}}{y} = \frac{\frac{dA}{dt}}{A} + \frac{\frac{\partial f}{\partial K}}{f(K,L)} \frac{dK}{dt} + \frac{\frac{\partial f}{\partial L}}{f(K,L)} \frac{dL}{dt}$$

Denoting the rate of growth of output y per unit of time $\frac{dy}{y}$ by g_y , the equation becomes:

$$g_y = g_A + \frac{\partial f}{\partial K} \frac{K}{f(K,L)} g_K + \frac{\partial f}{\partial L} \frac{L}{f(K,L)} g_L$$

But $\frac{\partial f}{\partial K} \frac{K}{f(K,L)} = \frac{\partial y}{\partial K} \frac{K}{y}$ is the elasticity of output y with respect to capital input (K), which can be represented as

e_{yK} . And $\frac{\partial f}{\partial L} \frac{L}{f(K,L)}$ is the elasticity of output y with respect to labor input (L), which can be represented as e_{yL} . The

disturbance term (ϵ) is introduced to capture the effects of random variables and the growth equation becomes: $g_y = g_A + e_{yK}g_K + e_{yL}g_L + \epsilon$. Where ϵ is a disturbance term with its usual assumptions. This is the growth accounting equation that was estimated (see also Nicholson; 1992, p.317). The equation shows that growth in output (g_y) can be broken down into growth attributed to changes in labor input (g_L), physical capital (g_K) and other residual growth that represents technical progress (g_A). There are three possible ways that technical change factor (g_A) enters the production function. Namely: Neutral technical progress which affects all the inputs equally, capital augmenting technical progress which affects only capital and labor augmenting technical progress that affects only the quality of labor used in production. Here, workers learn how to do their jobs better.

Methods

Data Collection

To achieve the objectives of the paper, secondary data were collected and analyzed. Time series data for the twenty-eight years from 1972 to 2000, were collected from published economic reports. All the data that were required for this paper were collected from the Kenya Government official published documents. Data were collected on; wage employment, capital formation and growth rate in real GDP

Data Conversion and Analysis

Data on wage employment are given in the Kenyan Statistical Abstracts in numbers while those on capital formation are given in monetary terms. There was a need to convert these raw data into percentage growth rates for the period under consideration. The need arose because the empirical model that was estimated required growth rates in labor, capital and GDP. Data on real economic growth rate were obtained directly from Economic Surveys and Statistical Abstracts. The converted data were analyzed using regression method. From the empirical results, the role of higher education and training in reviving Kenya's economy is inferred and discussed.

Results

Table 1 shows the OLS regression model results of the independent variables Labor and Physical capital on the dependent variable, technical progress (Used in the study to measure growth). All the coefficients are statistically significant at 5 per cent and 10 percent for the intercept.

Table1. The Regression Model Results.

Variable	Coefficients	t-value	p-values
Intercept	1.3	1.9	0.062
Labor	0.43	2.7	0.011
Capital	0.07	2.6	0.012

Note. Adjusted R-Squared = 0.33 DF = 28 F = 7.7

The t-statistics are in the parentheses. The results indicate that 33 per cent of the changes in the economic growth rate in Kenya, from 1972 to 2000, are explained by the percent growth in the physical quantities of capital and labor. This implies that other factors rather than changes in physical inputs explain 67 percent of the changes in economic growth rate within the period under study. More important, technology advanced at the rate of 1.3 per cent between 1972 and 2000. Therefore, only 1.3 percent of the growth in real output in the period under study could be

attributed to technical change and other factors rather than growth in the physical quantities of capital and labor. Table 1 shows further the estimated elasticity figure of 0.43 for labor which implies that a 10 per cent increase in labor will bring about a 4.3 per cent increase in GDP. While a 10 per cent increase in capital will bring about 0.7 per cent increase in output (GDP). This means that labor has relatively a larger influence on output (GDP) than capital. However, both elasticities are less than one (unit) implying that growth in real output (GDP) is less sensitive to changes in both labor and capital inputs. The two factors of production cannot therefore be solely relied upon to generate economic growth to support the development process in Kenya. Technical progress to be generated from the higher education institutions must play an active role in improving the quality of human capital so as to accelerate economic growth.

Discussion

This paper has examined the economic situation in Kenya. It has been determined that deficiency in critical skills and relevant knowledge has caused low economic growth rate. A model was built that captured the contribution of technical progress to economic growth. The empirical evidence shows that changes in physical capital have less, although significant effect on economic growth than changes in labor inputs. This implies that labor input is among the most important factors that determine economic growth in Kenya. Well-qualified and skilled labor is therefore required to turn the economy round. Universities and colleges must provide quality education and training in order to improve the quality of the available labor force. This is because education and training play a crucial role in the growth process.

Advances in knowledge and diffusion of new ideas are necessary in revamping the Kenyan economy. Work competencies and motivations that are favorable to economic growth must be taught. Since effective use of physical capital depends on human capital, priority must be given to growth in the quality of human resources. Otherwise low technical progress, low quality professionals and administrative human resources will limit the rate at which additional physical capital is utilized.

Kenya's economic growth can be accelerated through emphasis on vocational, technical training, distance learning and adult education in addition to increased enrolment of formal education (Nafukho, Amutabi & Otunga, 2005). Priorities need to be established for various forms of education and training through frequent manpower surveys and planning. This will enable planners to meet the set targets of the required manpower. Kenya must realize that unless the right kind of education and training is provided, setting overall educational targets will have little meaning. As Meier (1991) asserted, educated people who are unable to find suitable jobs not only fail to add to the GDP but also become a source of political instability. The existence of surplus labor in Kenya is due to shortage of skills as indicated by the empirical results of this study. Higher education institutions should therefore concentrate on providing informal and functional education, which are less time consuming, less costly and more related to manpower requirements than is a formal educational system.

This paper argues that the declining economic growth in Kenya can be revamped through human capital development that emphasizes specific labor programs targeting adult learners. The critical skills and knowledge needed to increase economic growth in Kenya must be acquired through higher education and training. It is shown in the paper that lack of critical skills and knowledge within the Kenyan labor force has hindered economic growth over time. This is blamed on the present higher education and training system, which does not provide critical skills, that command a premium at the work place. Lifelong learning and various degrees, diploma and certificate programs offered should be emphasized (Nafukho, Amutabi & Otunga, 2005).

The higher education institutions in Kenya under emphasize science, technology and engineering programs due to the enormous cost that must be incurred while pursuing science-based education programs (Ngware & Nafukho, 2002). State universities are unable to offer adequate remuneration and research opportunities that would encourage greater commitment by professors and lecturers. In addition, the institutions are poorly equipped to handle science and technical subjects. In some institutions, equipment, laboratories and other physical assets are outdated. It is obvious that graduates of these outdated technologies cannot be expected to add value to the economy's production system.

Conclusions and Contribution to New Knowledge in HRD Field

Given the findings of this study and the critical value of quality labor to the growth of the Kenyan economy, we conclude that institutions of higher education in Kenya have an important role to play with regard to Kenya's economic growth. Higher education institutions should encourage lifelong learning for those working in both private and public sectors of the economy since technology changes with time. This will allow workers to acquire the state-

of-the-art skills and knowledge needed for economic growth. Universities in Kenya should also address the issue of the mismatch of skills that are currently being provided and the skills needed at the workplace. It is a waste of resources and disinvestment in human capital when an excess supply of university graduates find their knowledge and skills irrelevant at the workplace. Thus, majority of Kenyan University graduates have remained unemployed and/or underemployed and must be re-trained to fit in the labor market.

Given the revolution in technology and the changes at the workplace, universities in Kenya urgently need internal changes and innovations in terms of structure, curricula, teaching methods and redeployment of resources in the production of critical skills. While in the past university professors have always determined the content to be taught, there is need to involve the learners and other stakeholders in designing education programs as suggested by Lovelock and Rothschild (1980). The institutions must learn to respond to market signals and design programs that respond to industry and society needs (Nafukho & Burnnet, 2002). These changes will allow institutions of higher learning in Kenya to allocate their scarce resources to what is needed in the economy in contrast to what is mistakenly considered to reflect economic growth.

The institutions of higher learning in Kenya must avoid duplication of programs, which is costly to the economy and does not add value to the production process. Programs geared towards engineering, science, information technology, medical sciences, and entrepreneurship should be offered besides the arts and humanities. To equip the graduates with the necessary skills, all programs should require internship/attachment components before graduation. Given the important role of adult education and the increased enrollment of adult learners in university programs (Nafukho, Amutabi & Otunga, 2005), andragogical methods of instruction should be employed in combination with the traditional pedagogical methods. Thus, focus should be on meta-cognition (*learning how to learn*). This paper provides pioneering work which utilizes an economic growth model to determine the relationship between human capital, physical capital and economic growth in Kenya. As shown by the findings of the study, investment in human capital is critical to the economic growth process. The empirical findings of the study might constitute the subject of future research in HRD fields in Kenya.

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