# PROSPECTS OF HIGHER EDUCATION IN ECONOMIC DEVELOPMENT: A CROSS STATE EXAMINATION

***Abstract:***

*This paper tries to inspect the linkages between education and economic development. It has been cleared that educational development and economic development has a two way relationship and has a positive relationship. Quality human capital base push the economic development through generating higher productivity and vice-versa. Some selected state wise analysis depicts that, where level of literacy and GER is low the level of life expectancy at birth, GDP, HDI value is also low and the infant mortality rate is high. Kerala recorded highest in literacy rate and GER as well as in GDP and HDI. On the other hand Bihar witnessed lowest in these indicators. These indicators have a positive two way relationships. Finally, this study also tries to formulate the relationship between higher education and innovation. The research and development of any nation is dependent on the higher education. Study based on secondary data and data collected from national and international sources like reports from university grants commission (UGC), economic survey, UNDP reports and other articles and papers which are related to education and development.*

***Keywords-*** *Economic Development, Education*

## 1. BACKGROUND

This study tries to synthesize the linkages between education and economic development. It has now been established beyond doubt that education is the most crucial input for socio-economic development. Education provides strength and resilience to people to respond to changing situations. Education enables people to cause and to contribute to societal development. Education is the tool for ushering in changes in orderly manner. Education has the responsibility to transferring human beings into human resources. Development of human resources is the main function of education (Gopalan, 2001). As a provider of high-quality skills relevant to current and future labour market needs, effective higher education systems improve human capital formation and allow entrepreneurs, managers, and skilled workers to perform well, thus supporting technological mastery, productivity, and competitiveness. These systems also help develop the technological capability of countries by undertaking research, supporting technology transfer, and providing workers with (and promoting) the skills for innovation. Skills and research support longer-run productivity and competitiveness by reorienting, upgrading, and diversifying national economic arrangements.

In 2008 Organization for Economic Co-operation and Development (OECD) has pointed out the contribution of tertiary education on social and economic development via four main channels these are followings:

1. The formation of human capital (primarily through teaching).
2. The building of knowledge bases (primarily through research and knowledge development).
3. The dissemination and use of knowledge (primarily through interactions with knowledge users).
4. The maintenance of knowledge (primarily through inter-generational storage and transmission of knowledge).

There are some recent evidences which suggest that higher education is both a result and a determinant of income and has an ability to produce private and public benefits. It has numerous short as well as long run economic consequences for instances, it can contribute to reduced unchecked population growth, improve technology, create greater tax revenue, increase saving and investment and lead to a more entrepreneurial and civic society. 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). It implies that investment in human capital is more productive in terms of increasing the income of individual as compared to investment on other input like land and financial resources. According to Crawford (1991), compared to physical labor, human capital as broad meaning 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.

Human capital theory suggests that education or training raises the productivity of workers by imparting useful knowledge and skills, hence raising workers' future income by increasing their lifetime earnings (Becker, 1964). In the "standard" conceptualization, higher education constitutes a form of specialized training. What used to be referred to as "man-power planning," higher education provides the knowledge base, skills, and training to perform specific tasks and jobs (Sutton 1998). After have a glance on the linkages between human capital and productivity it has been well recognized that with the increase in investment in the human resources of a nation the productivity in terms of increase in income through training and development also tend to increase. Investment in education is positively contributed on the earning of individual as well as on the economic growth. There are three broad method of measuring human capital, these are as follows:

After reviewing literature it has been cleared that educational development and economic development has a two way positive relationship. Quality human capital base push the economic development through generating higher productivity and vice-versa. There are various studies which emphasizes on the contribution of higher education on economic development through productivity and investment linkages, skilled and qualified labour contributing more in productivity than unskilled and uneducated persons. This study has been going to clarify some questions which are related to higher education and economic development. Firstly, how human capital is linked with productivity? Secondly, how higher education is linked with economic growth? Further, how it is linked with social development of nation and finally how it is connected with innovation?

## 2. CONCEPT OF HUMAN CAPITAL

Human capital is the concept which implies the mixture of human and capital. In the perspective of economics capital refers to factors of production which is useful to create goods and services and human on the other hand is a subject matter to take charge of all economic activities such as production, consumption and transaction. Lucas (1988) and many others have proposed the differences in human capital input as a major source of output differences across countries. The origin of human capital goes back to the emergence of classical economics in 1776, and thereafter developed a scientific theory (Fitzsimons, 1999). Schultz (1961) classified skills and knowledge that people acquire as a form of human capital, and in so doing he sparked the revival of interest in the notion of human capital. A variety of definitions of human capital have since prevailed. For example, the Penguin Dictionary of Economics defines human capital as "the skills, capacities and abilities possessed by an individual which permit him to earn income."

## 3.1 Approach based on Output

The output based approach is the generally try to identified the quantitative human capital in a country through the Scholastic attainments, school enrolment rates, adult literacy, and average years of schooling. In order to examine the correlation between human capital and economic growth, some economists tried to measure the stock of human capital utilizing 'school enrolment rates' as a proxy of human capital (Barro, 1991; Barro & Lee, 1993).

On the other hand, in order to measuring the stock of human capital with school enrolment rates and educational attainment, Romer (1990) tried to link the ratio between skilled-adults and total adults and suggested to measure the stock of human capital in the economy.

In (1986), Psacharopoulos & Arriagada tried to examine the average years of schooling and suggested the average years of schooling to measure the stock of human capital. According to them the average years of schooling is significant to measure the stock of human capital. On the basis of this suggestion, an individual's productivity is increased in proportion to his/her average years of schooling; they represent that productivity of individual with completing twelve years of schooling is twelve times more as compared to productivity with doing one years. The method of measuring the stock of human capital through average years of schooling includes a limitation that the years of schooling of an individual can be related to his/her productivity to some extent.

### 3.2 Approach based on Cost

After understanding the output based approach in respect to assess the human capital, the next approach is depending on the total cost invested in the human resources. It is based on assessing the stock of human capital through summing costs invested for one's human capital. For the purpose of calculating the invested costs. The cost-based approach, measures the cost of human capital investment. This approach provides an estimate of the resources invested in the education and other human capital related sectors, which can be useful for cost-benefit analyses. For an international comparison of the human capital, the most common measure of the cost is the years of schooling. The measurement exercises based on the years of schooling include Kyriacou (1991) and Barro and Lee (1993). According to Kendric (1976) the investment cost of an individual should be consider the element of depreciation, on the other hand Jorgenson & Fraumeni (1989) presented an approach with discounted income in the future. However, this approach is based on indirectly measuring stock of human capital; under this method it is difficult to precisely categorize the gap between investment and consumption in the context of costs for the human capital.

### 3.3 Approach based on Income

Finally, under the income based approach which is depended on the return that an individual acquired from the labor market throughout education investment. According to Mulligan & Sala-i-Martin (1995) describes 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 factors which are not related to human can more influence an individual's income, this approach rarely presents a complete measurement for human capital. The income-based one, uses the labor income differences across workers with various levels of human capital to measure human capital inputs. Income differences across workers are the differences in the market values of their human capital inputs and are largely determined by the differences in their human capital inputs. The change in human capital accumulation and technology through higher education have been thought to play an vital role in order to determine the earning of individual at micro level as well as and economic growth and development at macro level.

States seeking to improve their economic fortune often turn to local institutions of postsecondary education to participate more fully in economic development, and universities are promoting new economic develop agendas while trying to increase state support (Smith and Drabenstott, 1992).

### 4. HUMAN CAPITAL AND PRODUCTIVITY LINKAGES

The quality expansion in human resources is dependent on the investment in human capital which comprises by the growth in university level qualification, increase in enrolment rates in higher education, time invested in education, expenditure per student at different level of education, percentage of gross domestic product (GDP) spent on educational institutions, rate of return to education and labor market outcomes by age, gender and educational attainment. Universities are one of the main and prominent factors which are contributing in nurturing the technology as well as to strengthen the national innovation system. Most of the higher education institutions have been engaged in the research and development that further helpful for developing cost effective technology to industry. Knowledge spillovers and the actual research through university-industry linkages push the researchers in order to developing the technology.

There are two methods available for the purpose of creating human capital. First, is based on the classical economic perspective that the human resource treated as the labor force. It implies that economic added value is generated through the input of labor force like the other production factors for instance, financial capital, and land, machinery and labor hours. Under this perspective the importance of such quantitative labor force is limited only with the creation of 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).

There is availability of much empirical literature which shows that that human capital affects various social components. For instance, (Beach, 2009) considering that the assumption accepts as a premise, the 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 those concepts of the human capital, it tends to be recognized that the latter is more important than the former.

### 5. HIGHER EDUCATION AND ECONOMIC GROWTH

What is the effect of higher education on economic growth of the countries? There is a general opinion that higher education is not necessary for economic growth and development, particularly in developing countries. It is literacy and primary education that is argued to be important. Estimates on

internal rate of return also contributed to strengthening of such a presumption. Conventionally, the contribution of education to economic development is analyzed in terms of education-earnings relationships and, more conveniently, in the form of rates of return. Rates of return show the statistic of the relationship between lifetime earnings and the costs of education.

## 6. HIGHER EDUCATION AND SOCIAL DEVELOPMENT

Most of studies on the relationship between education and economic development are depended on the human development, health, life expectancy, mortality rate, poverty, etc., has been concentrated on literacy and school education. The relationship between economic development and education is well recognized this linkages is in two ways first, the level of development is in terms of income and wealth directly contribute in the growth and development of education system because it contribute high level of the expenditure in education. Secondly, the level of education especially higher education pushed the economy in respect of creating capable human resources and formed the base of human capital in the country. The impact of education on fertility is well-established hypothesis and plays a greater role for population phenomena. TFR for illiterate women were 4.03 and 3.55 in 1992-93 and 2005-06 respectively whereas in the same period TFR for the women educated high school and above were 2.15 and 2.08 respectively. The same pattern on decline fertility is found among the women who have completed middle level schooling (Selected Socio-Economic Statistics India, GoI, 2011).

## 7. INTER-STATE COMPARISON OF INDICATORS OF DEVELOPMENT AND INDICATOR OF EDUCATION

In this analysis the study tries to correlate the some developmental indices with higher education indicator that is GER in Higher Education. The following are the specification of various indicators.

Life expectancy it is the number of years, based on statistical averages, that a given person of a specific age, class, or other demographic variable may be expected to continue living.

Infant Mortality Rate (IMR) is the number of deaths of babies under one year of age per 1,000 live births. The rate in a given region, therefore, is the total number of newborns dying under one year of age divided by the total number of live births during the year, then all multiplied by 1,000. The infant mortality rate is also called the infant death rate (per 1,000 live births).

PPP Income per capita is an average income or income per person is a measure of mean income within an economic aggregate. It is calculated by taking a measure of all sources of income in the aggregate at a particular time period usually one year.

Literacy implies to the ability to read for knowledge, write coherently, and think critically about the written word. The literacy rate is the percentage of people with the ability to read and write.

Gross Enrolment Ratio (GER) is a statistical measure used by the United Nations to measure education index of a nation. In the context of higher education, it measures the total population of all ages enrolled in different education programs to the total population of the country in the age group of 18-23.

Table 1: State wise indicators of Development and GER

| States | Life expectancy at birth (2010-11) | Infant mortality rate (per 1000 live birth) 2008 | PPP Income per capita 2008 $ | State wise literacy rate (2011) census | HDI 2011 (ranks) | GER in HE (2004-05) |
|---|---|---|---|---|---|---|
| Andhra Pradesh | 64.4 | 52 | 3398.76 | 67.7 | 11 | 2 |
| Assam | 58.9 | 64 | 2883.44 | 73.2 | 12 | 3 |
| Bihar (L) | 61.9 | 56 | 2161.80 | 63.8 | 18 | 3 |
| Gujarat | 64.1 | 50 | 3782.87 | 79.3 | 8 | 3 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Haryana** | 66.2 | 54 | 4574.51 | 76.6 | 5 | 2 |
| **Karnataka** | 65.3 | 45 | 3269.76 | 75.6 | 10 | 2 |
| **Kerala (H)** | 74 | 12 | 5262.89 | 93.9 | 1 | 1 |
| **Madhya Pradesh** | 58 | 70 | 2673.76 | 70.6 | 16 | 3 |
| **Maharashtra** | 67.2 | 33 | 3913.14 | 82.9 | 4 | 2 |
| **Orissa** | 59.6 | 69 | 2185.84 | 65.9 | 19 | 3 |
| **Punjab** | 69.4 | 41 | 4885.12 | 76.7 | 2 | 2 |
| **Rajasthan** | 62 | 63 | 3289.27 | 67.1 | 14 | 3 |
| **Tamil Nadu** | 66.2 | 31 | 3835.05 | 80.3 | 6 | 2 |
| **Uttar Pradesh** | 60 | 67 | 2910.58 | 71.7 | 13 | 2 |
| **West Bengal** | 64.9 | 35 | 3414.08 | 77.1 | 9 | 2 |
| **India** | **63.5** | **53** | **3337.33** | **74.04** | | **2** |

Literacy implies to the ability to read for knowledge, write coherently, and think critically about the written word. The literacy rate is the percentage of people with the ability to read and write.

**Source:** Source: Computed from Economic Survey 2011, UNDP 2011, UGC Report 2011

Table 1, indicated the State-wise comparison of social development indicator and higher education development indicator (i.e, GER). From the above table it is clearly stated that where the gross enrolment ratio in higher education is high the level of social development is also high in terms of infant mortality rate, life expectancy at birth, HDI value and literacy rate and these also has good per capita income.

There are six socio-economic and educational indicators in the table 3.2. These are life expectancy, infant mortality rate, and income per capita and HDI value comes under the socio-economic indicator while literacy rate and GER in higher education is the indicator of education. Here, study tries to find out the two way relationship between education and socio-economic development.

Human development index has showed in terms of ranks and coding has been used to display GER in higher education. Code-1 in case of above 15 GER, code-2 for in between 10-15, code-3 for 5-10, and finally code-4 has used for less than 5 GER.

Firstly, from the help of table 1, it has examined and compared the status of Kerala and Bihar, the highest per capita income recorded in Kerala in 2008 ($ 5262.89) and ranks highest in Human Development Index (HDI) on the other side it has also highest in terms of literacy rate among other states. The GER in higher education on the other side Life Expectancy at birth and Infant Mortality Rate (IRR) also is in better position than other states. On the other hand Bihar recorded lowest in terms of income per capita in 2008 with low HDI rank (18) and also has a low in terms of GER in higher education. On the other side life expectancy at birth in 2010-11, Infant Mortality Rate (IRR) has also is in low position.

Secondly, Kerala witnessed highest in terms of income ($ 5262.82), Life Expectancy (74), lowest Infant Mortality Rate (12), highest in terms of HDI ranking and it has also GER in higher education

more than 15. The life expectancy has 10.5 year gap, IMR has 41 gap, income gap ($ 1925.49). Literacy rate gap (19.86) and GER in HE Kerala has above 15 % while India's average comes under 12 to 13.

Thirdly, study Bihar recorded lowest in terms of Life Expectancy (61.9), Infant Mortality Rate (56), income per capita in US $ was 2161.80 in 2008, literacy rate 63.8 and HDI just above than Orissa it stand at 18th rank and finally GER in HE stood in between 5-10. The gap between Bihar and India low by 1.6 years in terms of life expectancy, Bihar recorded high Infant Mortality Rate by 3 than India's average, literacy rate gap by 10.24 and in terms of GER in higher education was in the range of 5-10 while all over India average in GER was in the range of 10-15 in 2004-2005.

## 8. HIGHER EDUCATION AND INNOVATION LINKAGES

Higher education or tertiary education plays an imperative role in socio-economic and human development. Skills are positively related to innovation and productivity and growth. This is one reason why in low and middle-income East Asia, whether playing technological catch-up or moving from catch-up to creation (both parts of a broad definition of innovation in this report), the importance of higher education as a source of technical, scientific, and analytical skills is increasing. A well-trained and highly educated workforce strengthens growth: skilled labor can deploy flexibly, achieve high levels of productivity, apply existing technologies, and engage in innovation as a means to increase a nation's competitiveness and growth. At the same time, East Asian markets are absorbing a larger share of exports from the region itself; thus, adapting technologies while customizing products, processes, and design will be of greater significance and will call for the kind of support higher education can provide.

As a provider of high-quality skills relevant to current and future labor market needs, effective higher education systems improve human capital formation and allow entrepreneurs, managers, and skilled workers to perform well, thus supporting technological mastery, productivity, and competitiveness. These systems also help develop the technological capability of countries by undertaking research, supporting technology transfer, and providing workers with (and promoting) the skills for innovation. Skills and research support longer-run productivity and competitiveness by reorienting, upgrading, and diversifying national economic arrangements.

## 9. SUMMING UP

This study has identified the linkages between education and economic development. It has been cleared that educational development and economic development has a two way relationship and has a positive relationship. Quality human capital base push the economic development through generating higher productivity and vice-versa. There are various studies which emphasizes on the contribution of higher education on economic development through productivity and investment linkages, skilled and qualified labor contributing more in productivity than unskilled and uneducated persons. The analysis on the some educational and economic indicators on some countries (table 3.1) revealed the positive relationship between education and development because it has clearly reflected that where the education index is low, loss due to the inequality in income is high , the GDP, HDI value and gender inequality is also low. It implies that the level of economic development dependent on the level of educational development and vice-versa. Table 1, clarified about the relationship between higher education and socio-economic indicator. Some selected state wise analysis depicted that where level of literacy and GER is low the level of life expectancy at birth, GDP, HDI value is also low and the infant mortality rate is high. Kerala recorded highest in literacy rate and GER as well as in GDP and HDI. On the other hand Bihar witnessed lowest in these indicators. These indicators have a positive two way relationships. Finally, this study tried to formulate the relationship between higher education and innovation. The research and development of any nation is dependent on the higher education. A well trained and highly qualified human resource strengthens the growth via achieving high level of productivity.

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