

## Human Capital Formation in India: An Economic Analysis

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**Abstract:** *The paper overviews the economic development, human development and human capital formation in India and highlights the human capital formation trends in India. The present study is based on secondary data sources and data for education is taken from “Educational Statistics at A Glance,” Ministry of Human Resource Development, Government of India, while data on labour force and employment statistics has taken from “Data-book Compiled for use of Planning Commission,” 22<sup>nd</sup> December, 2014. Simple statistical tools such as percentage, ratio, growth rate and compounded annual growth rate along with graphical analysis used for causal relation and trend analysis of human capital formation in India. The present study examines the education and educational infrastructure, labour force and employment generation trends during post reform period in absolute numbers and growth rate. The empirical shows that over the period higher education in India has been improving and liberalization, privatization and globalization has created competitive market for growing human resource. After sixty-five years of independence, around 55% Indian labours still depended on agriculture sector and only qualitative and skilled labour force has been gaining good jobs in urban area, there is need of drastic changes in quality education in India especially in rural area. Employment generation in Karnataka during post 2008 global economic crisis was stagnant while at all India level it has improved slightly. Human capital formation in India improving much faster in private sector than in public sector due to global level completion in private sector.*

**Keywords:** Human Capital, Economic Development, Education, Labour Force, Employment, Public Expenditure on Education.

### Introduction

India is second largest populated country in the world after China. Indian economy is the third largest economy in the world in terms of purchasing power parity and one of the fastest growing economy among developing countries in recent years. Simultaneously, India is home to one third of the world poor's according 2015 world bank report “World Development Report”. The major challenge for India in twenty first century is eradication of poverty, which is sole reason for socio economic lacuna of inclusive growth in India. In order to overcome from vicious circle of poverty in India, she needed human capital formation rather simply investment. Moreover, Indian economy has been growing much better than any other developing countries except China but still she is unable to fulfill the basic needs of common man. Therefore, human capital formation is the better choice to convert population as human resource and overall development

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of the nation. The present study focuses how education and employment enhances productivity of labour and helps human capital formation.

Human capital is a stock of knowledge, habits, social and personality attributes, including creativity, embodied in the ability to perform labour so as to produce economic value. Alternatively, Human capital is a collection of resources—all the knowledge, talents, skills, abilities, experience, intelligence, training, judgment, and wisdom possessed individually and collectively by individuals in a population. These resources are the total capacity of the people that represents a form of wealth which can be directed to accomplish the goals of the nation or state or a portion thereof. It is an aggregate economic view of the human being acting within economies, which is an attempt to capture the social, biological, cultural and psychological complexity as they interact in explicit and/or economic transactions. Many theories explicitly connect investment in human capital development to education, and the role of human capital in economic development, productivity growth, and innovation has frequently been cited as a justification for government subsidies for education and job skills training. Human capital considers education and health as a means to increase labour productivity. It is a narrow concept which treats human beings as means to achieve an end which is higher productivity, failing which the investment is not considered to be productive. Investment in education and health is unproductive if it does not enhance output of goods and services. Whereas, human development is based on the idea that education and health are integral part of human wellbeing because only when people have the ability to read and write and lead a long and healthy life. It is a broader concept which considers human beings as ends in themselves. Human development occurs when majority of people in the economy are educated and healthy.

### **Literature Review**

Schultz overviewed the basic information and analytical methodologies which are most essential required tools to evaluate the productive returns to investments in public health were only beginning to be assembled. There were strong indications that health limitations were a costly burden on the productive potential of adults in Africa and it was explained in earlier empirical study of Schultz and Tansel in 1993. A third or more of the gains in labour productivity achieved in the last two hundred years in Western Europe were linked to improvements in health, nutrition, and resulting gains in adult height. Several microeconomic studies were used as base then described in more detail which illustrated the magnitudes of private returns to health and schooling in West Africa, some of the consequences of the rationed supply of schooling in South Africa, and evidence of returns to the quality of schooling. The concluding section extracts lessons as to how to conduct country-specific research based on merged household and community surveys to estimate the key parameters describing the private and social returns to marginal investments in health, education, and mobility.

Ojha and Pradhan (1987) examined exclusively on educational capital in India and the study was motivated by the strategic planning of the East Asian Economies. It considered human capital in an economy as the state of health and the educational levels of the people. The study was based on a multi-sectoral neo-classical type price driven CGE model, it incorporated the mechanism of public education expenditure to build human capital which directly and indirectly helps to augment the supply of educated/skilled labour, and in turn increase in tax revenue and economic growth. The simulation results suggest that it is possible to increase investment in human capital in the resource constrained fiscal environment of the Indian economy, and reap the benefits in terms of a faster economic growth and a better income distribution. The results

also suggested that secondary education needs to be accorded higher priority, though, not necessarily, at the cost of higher education. Finally, the study suggested to maximise the benefits in terms of economic growth it is desirable that investment in physical capital be increased simultaneously with investment in human capital

Waldow (2002) considered educational expenditure was an important and widely used indicator for the quantitative development of educational systems and for human capital formation. However, educational expenditure was often difficult to measure accurately, especially in historical studies. The study focussed on the problems of measurement, using the case of Sweden in the second half of the 19<sup>th</sup> and the early 20<sup>th</sup> century as an example. Official statistics used as main empirical basis for data on educational expenditure. Their aim is to register the social, financial etc. conditions in a certain area as a precondition for modern, rational, bureaucratic modes of governing. The collection of data and the application of statistical categories to social reality possesses a structuring force in itself. The main problems discussed in the paper were: incomplete monetarisation of the educational system in the 19<sup>th</sup> and early 20<sup>th</sup> centuries, mainly affecting the collection of data on primary schooling, the existence of a private sector of education, data on which were scarce, and the fact that some public educational institutions possessed sources of income other than the state and municipalities' budgets.

Chani et. al (2012) empirically tested the casual relationship between human capital formation through education and economic development in Pakistan. Keeping in view the endogenous growth theory, the study also tests direction of causality, either human capital formation causes economic development or economic development causes human capital or both of them are causing and supporting each other.

Diana (2013) highlighted the role of education in the growth of economic competitiveness and efficiency of human capital, in accordance with the quality of education and investments in human resources, in order to enhance labour productiveness. The study started by a brief analysis of Romania's educational system, by comparison with the EU countries (27 Countries), analysing the number of high school students and college students per teacher, the percentage of education expenditure in the GDP, the correlation between the labour force's training level and insertion into the labour market. The paper also evaluated the EU countries' ranking related to higher education and professional training, pointing out the importance of lifelong professional training at the place of work. Education, public awareness enhancement and training considered as the processes in which human capital may reach its maximum potential

Shahzad (2015) observed the role of human capital formation on economic growth in Pakistan. The author time series data form the period of 1990 to 2013. The study incorporated education enrolment index (Proxy of human capital), health (IMR) and physical capital (GFCF, IGR) as independent variables which were the major contributor for the economic growth of Pakistan. Data manipulated through least square multiple regression models by using E-view. The main variable human capital (Education Enrolment Index) has a positive significant impact on dependent variable GDP so it established that enrolment in education preferred for growth of the Pakistan economy and results were robust. Gross fixed capital formation (GFCF) has positive significant impact on dependent variable furthermore investment growth rate (IGR) has highly significant and positive impact on GDP. There were negative but significant relationship between Infant Mortality Rate and consumer price index with gross domestic product of Pakistan respectively. These results suggested that both health and education sector should be given more attention to sustain the economic growth of Pakistan.

### Objectives of the study

- 1) To analyze the variations of human capital formation in India.
- 2) To offer policy suggestions for human capital formation in India.

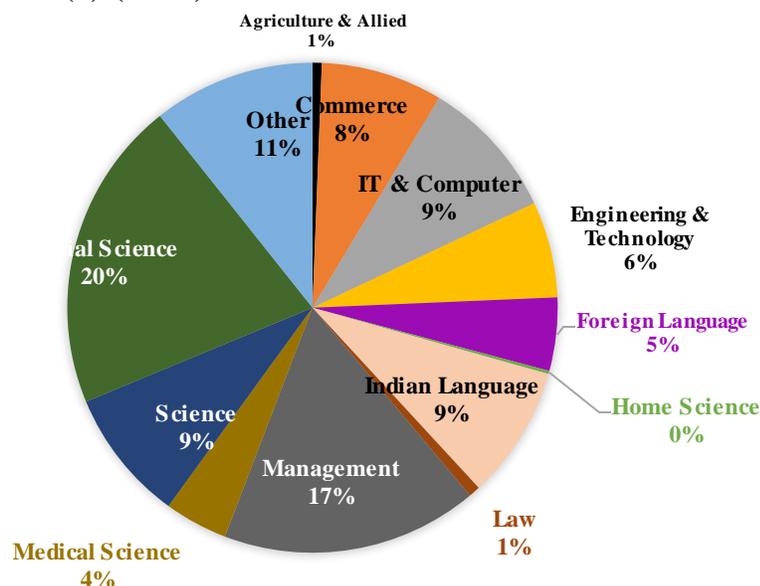
### Research Methodology

The present study is based on secondary data sources at all India level with comparison to Karnataka state. The data on educational improvement in India has taken from “Educational Statistics at A Glance” Ministry of Human Resource Development, Bureau of Planning, Monitoring & Statistics - Government of India, while data on labour force and employment statistics has taken from Data-book Compiled for use of Planning Commission, 22<sup>nd</sup> December, 2014. The study period is post economic reform period while due to limitation of data availability in some variables, hencedecadal and annual data are taken in mixed proportion to make analysis. Simple graphical analysis and statistical tools like percentage, ratio, growth rate year on year, compounded annual growth rate etc. are used for analytical study over the period of time.

### Human Capital Formation in India

Higher education in India has been improving during recent past especially after economic reforms consequence demographic dividend has been converting into human resources more efficiently. Figure 1 highlights the output of different education graduates during 2012-13 where Social Science accounts 20%, second place goes to management with 17% followed by Science, IT & Computer Science and Indian Languages each accounts 9%, Commerce 8%, Engineering & Technology 6%, Foreign Language 5% and others accounted 11%.

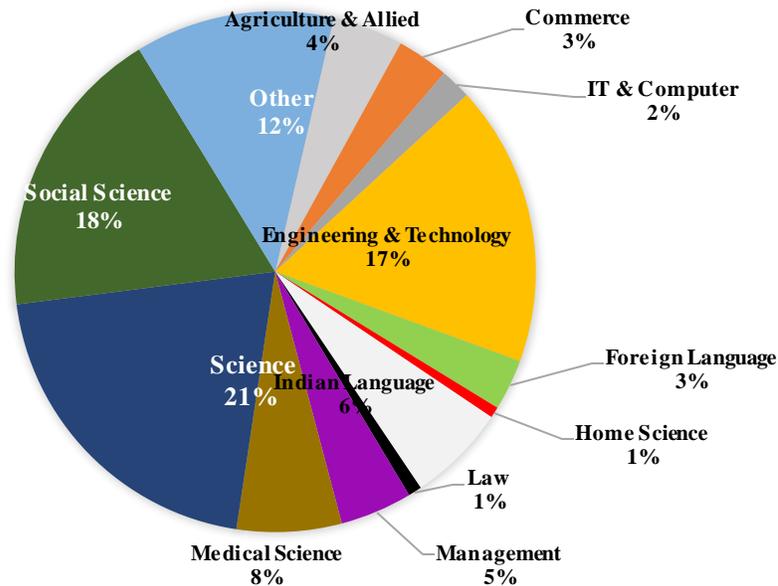
**Figure 1: Enrolment in different Disciplines/ Subjects at Post Graduate level in Higher Education 2012-13(P) (In %)**



**Sources:** Educational Statistics at A Glance, Ministry of Human Resource Development, Government of India.

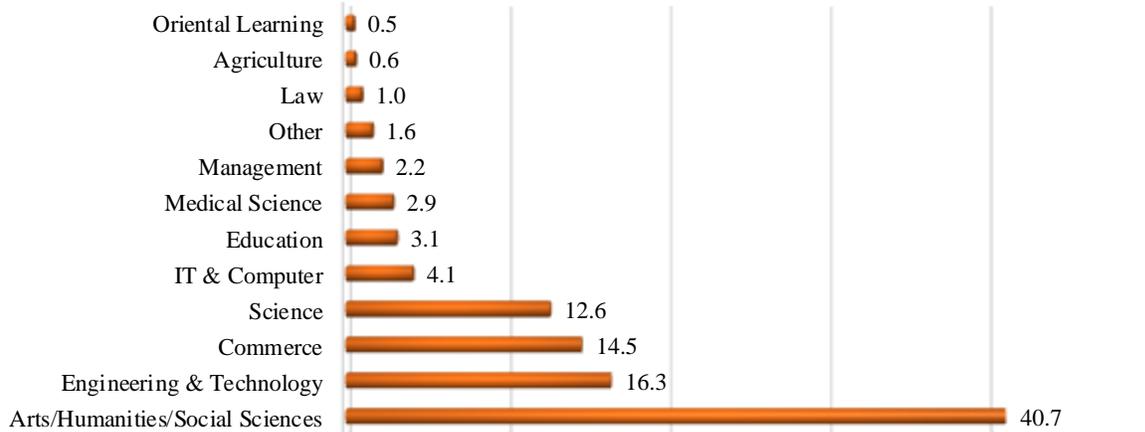
## Human Capital Formation in India: An Economic Analysis

**Figure 2: Enrolment in different Disciplines/ Subjects at Ph.D. in Higher Education 2012-13(P) (In %)**



**Sources:** Educational Statistics at A Glance, Ministry of Human Resource Development, Government of India.

**Figure 3: Enrolment in different Disciplines/Subjects at Under Graduate level in Higher Education 2012-13(P) (In %)**

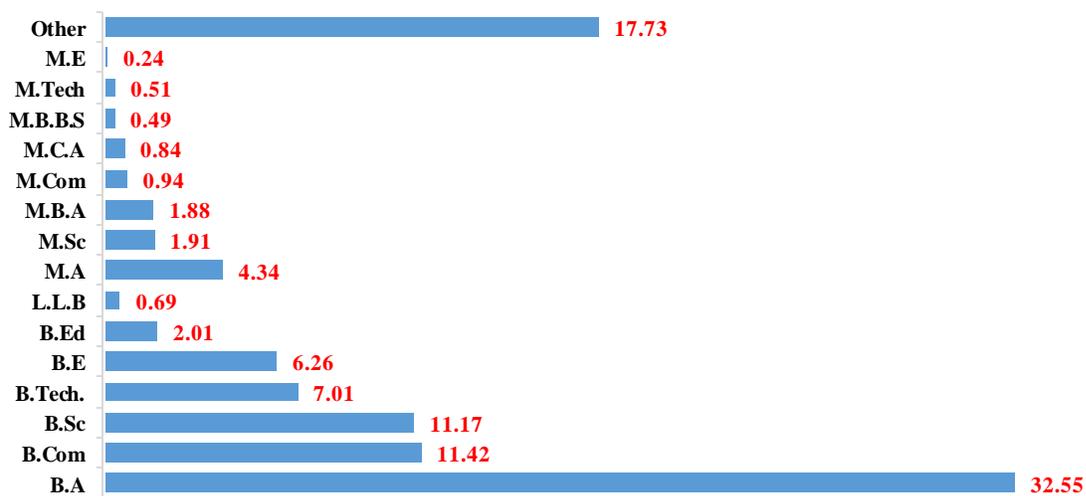


**Sources:** Educational Statistics at A Glance, Ministry of Human Resource Development, Government of India.

The data illustrated in the figure 2 highlights the PhD pass outs in different disciplines during 2012-13. There are 21 % PhD holders are from science background, then 18 % from social science and Engineering and Technology accounts 17 % PhD degree holders followed by others 12%, Medical Science 7%, Indian language 6%, Management 5%, Agriculture & Allied 4%, commerce and Foreign Language 3% each, IT & Computer science 2%, Home science and Law 1% each. It indicates science and technical courses have been getting much importance in recent past due to more job oriented courses and growth prospect in both domestic and foreign knowledge markets.

The enrolment ratio in higher education in India has been increasing and students are choosing different streams of courses for their career advancement. Figure 3 shows that undergraduate enrolment share of different disciplines or subject during 2012-13. Arts or Humanities or Social Sciences course enrolment ratio accounted 40% followed by Engineering and Technology 16.3%, Commerce 14.5%, Science 12.6%, IT & Computer Science 4.1%, Education 3.1%, Medical Science 2.9%, Management 2.2% and others 1%. Science and Technology courses accounted 36% of total under graduate admission during 2012-13. These increasing education level indicates the growing human resource in recent past in India. Moreover, data illustrated in the figure 4 highlights that B. A (Bachelor of Arts) accounted 32.55% among total graduates in India during 2012-13, followed by B. Com students 11.42%, B.Sc. students 11.17% and combined these traditional under graduates account 55% share

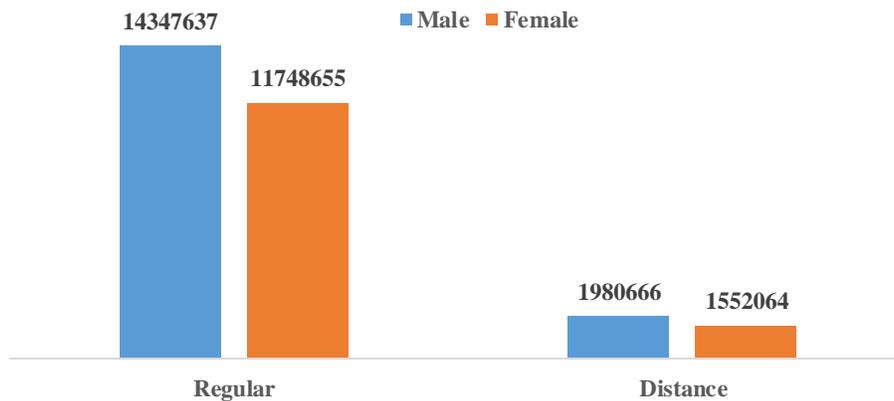
**Figure 4: Enrolment in different Programmes in Higher Education (In %)**



**Sources:** Educational Statistics at A Glance, Ministry of Human Resource Development, Government of India.

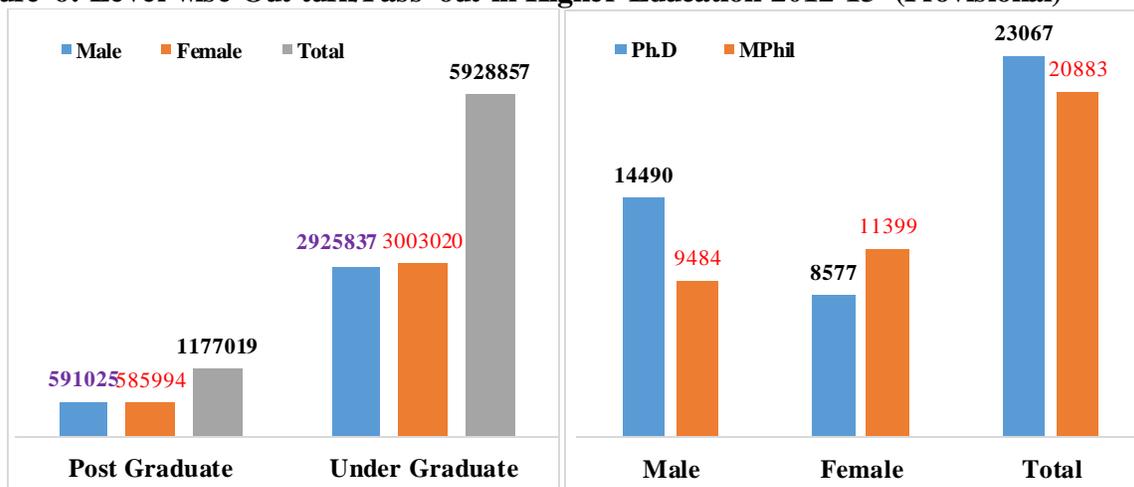
Indian students are getting education through regular and distance mode due to various reasons such as early employment, part time jobs etc. and data illustrated in the figure 5 highlights the mode of education in India during 2012-13. Total regular students are 2,60,96,292 which accounts 86.46% whereas distance students are accounted 13.5%.

**Figure 5: Enrolment in Higher Education through Regular & Distance Mode -2012-13 (P)**



**Sources:** Educational Statistics at A Glance, Ministry of Human Resource Development, Government of India.

**Figure 6: Level-wise Out turn/Pass out in Higher Education-2012-13 (Provisional)**



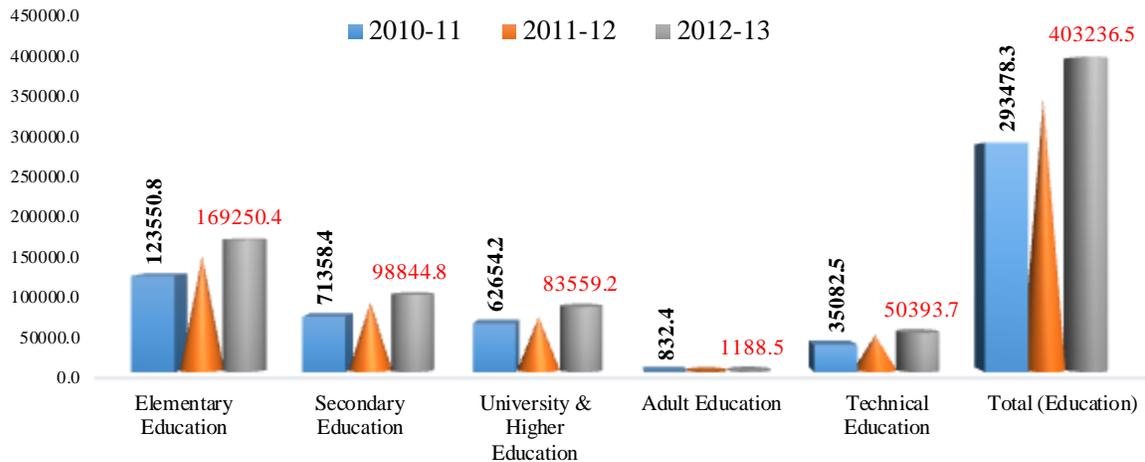
**Sources:** Educational Statistics at A Glance, Ministry of Human Resource Development, Government of India.

The enrolment in higher education in India has been increasing continuously during 2000s where gender gap also slight variation due to various government incentive programmes for girl's education. The data shown in the figure 6 highlights that pass-out in under graduate is higher than compared to post graduate level in absolute terms. In 2012-13 total 59,28,857 Under Graduates were passed and among them 5,91,025 male and 5,85,994 female students, while 11,77019 were passed in Post Graduate level. However, gender disparity in research education is high in India especially in PhD and MPhil courses which is illustrated in the right side of figure 6. There are 23067 PhD holders and 20883 MPhil holders in India during 2012-13 among which 62.8% were male PhD holders and 37.2% were female PhD holders. Similarly, 20,883 students were awarded MPhil degree where female students were 11,399 that is 54.58%.

The public expenditure on different education level has been increasing during post reform period in India while state government's expenditure on elementary education has continuously increasing whereas central government and state government's combined expenditure on higher and technical education slowly increasing in recent past which can be

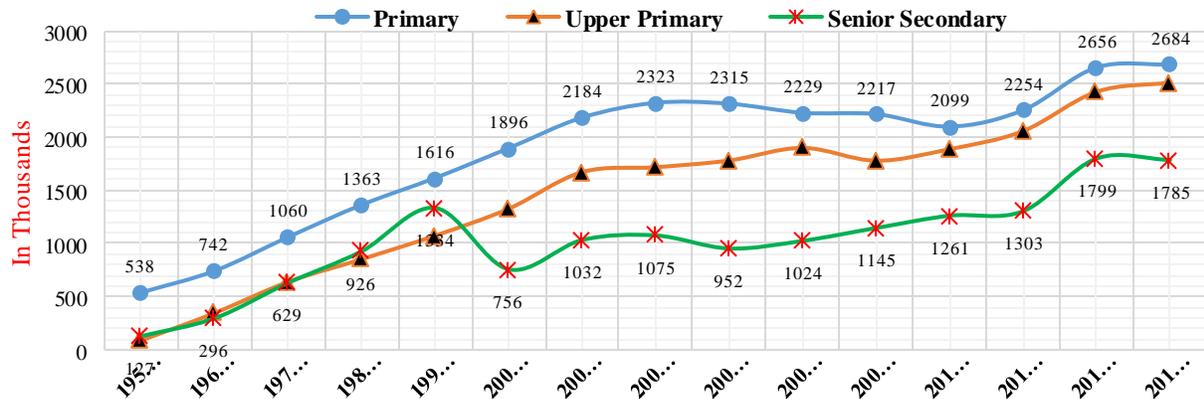
observed in the figure 7. Expenditure on elementary education during 2010-11 was Rs.123550.8 which further increased to Rs. 169250.4 during 2012-13 that is 39.9%. Similarly, University and higher education expenditure increased to Rs.83559.2 from Rs. 62654.2 that is 33.36% growth rate during same period.

**Figure 7: Expenditure (Revenue) on Education by Education & Other Departments, 2010-11(In Rs)**



**Sources:** Educational Statistics at A Glance, Ministry of Human Resource Development, Government of India.

**Figure 8: Number of Teachers by Type of School (in thousands)**



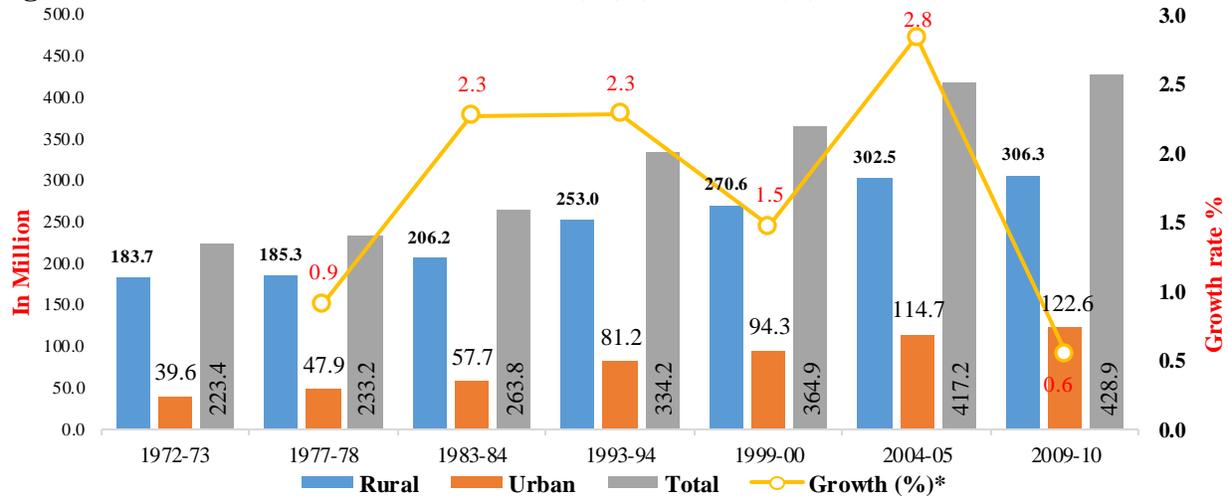
**Sources:** Educational Statistics at A Glance, Ministry of Human Resource Development, Government of India.

The educational enrolment along with skilled labour force in India has been increasing during post reform period while number of teacher who are the real builders of human resource also have been increasing over the period in respect of absolute numbers and trained teachers. The data illustrated in the figure 8 shows that absolute increase in the numbers of primary, upper primary and senior secondary school teachers in India during post-independence period. During 1950 primary school teachers were 538 lakhs and senior secondary teachers were 127 lakhs. Teachers absolute numbers further increased to 1616 lakh primary teachers that is three times and 1334 lakhs senior secondary teachers that is ten times during 1990-91 compared to 1950-51.

## Human Capital Formation in India: An Economic Analysis

After economic reforms private sector took major role in education consequence government teachers recruitment has slowed down especially at senior secondary education level and gradually increased to 1785 lakhs during 2013-14 whereas primary teachers were 2684.

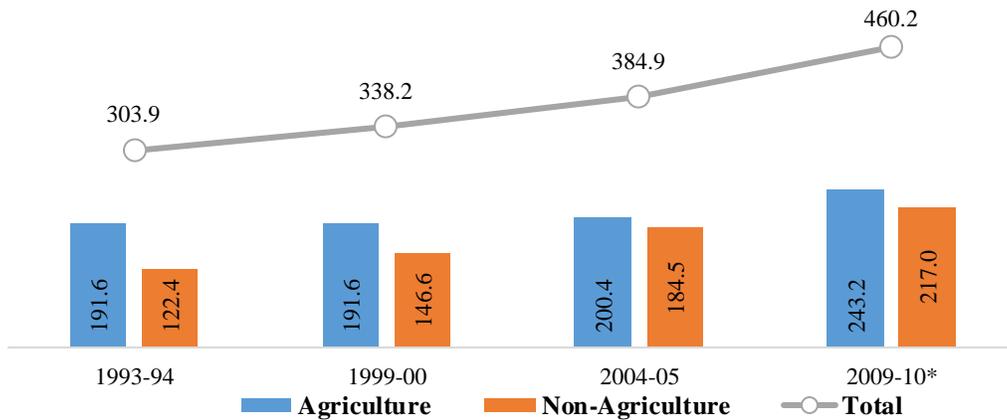
**Figure 9: Labour Force and Growth Rate (%) (CDS basis) (in million)**



**Sources:** Data-book Compiled for use of Planning Commission, 22<sup>nd</sup> December, 2014

India is the second largest populated country in the world after China. The population in India has been increasing along with labour force. The data illustrated in the figure 9 shows that labour force mainly generating from rural area and urban labour force gradually increasing which shows that still India is an agrarian state. In 1972-73 labour force in rural area was 183.7 million whereas in urban area it was 39.6 million. The labour force has dramatically increased after economic reform period during 1990s in both rural and urban area. The labour force in 1999-00 was 364.9 million which increased to 417.2 million during 2004-05 that is 2.8% growth rate highest in any period after post-independence period, while during 2005 to 2010 labour force growth rate was just 0.65 due to global economic crisis in 2008 and later. In 2009-10 the labour force in rural area was 306.2 million whereas in urban area it was 122.6 million and combined 428.9 million. These trends suggest that large pool of labour force in India is located in rural area and need to be shifted to non-agrarian sectors to reduce burden on agriculture and more employment opportunities.

**Figure 10: Employment (Agriculture and Non-Agriculture) in various NSS rounds (CDS basis) (\* in million)**

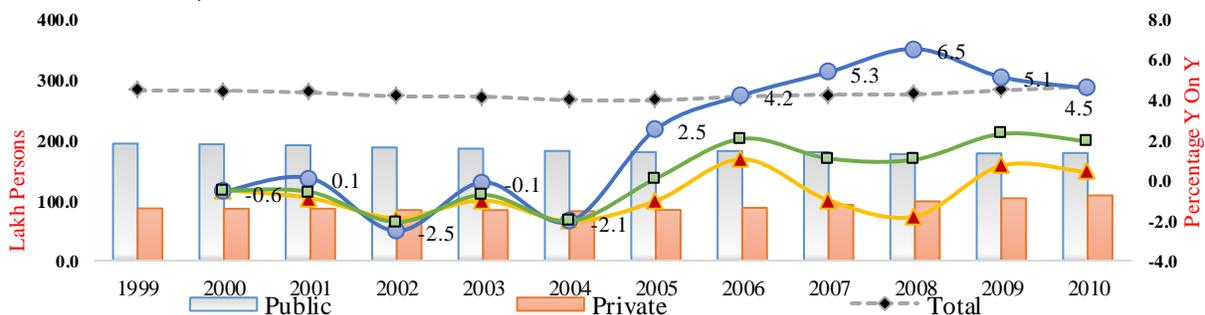


Sources: Data-book Compiled for use of Planning Commission, 22<sup>nd</sup> December, 2014

The employment in India has been mainly contributed from agriculture sector and non-agriculture sector employment has been increasing much faster in recent past. The data shown in figure 10 highlights that in 1993-94 total employment was 303.9 million where 191.6 million employments from agriculture sector and 122.4 million employments from non-agriculture sector which further increased to 243.2 and 217 million during 2009-10 respectively.

The data illustrated in the figure 11 overviews the employment generation in organized sectors between private and public sector during 1999 to 2010 period. Organized employment from public sector still dominated and it's share has been decreasing slowly over the period while private sector employment has been increasing due to globalization effect especially service sector development such as IT & IT enabled services where Karnataka state is the major contributor for IT services in India. After 2004 organized employment from private sector has been growing positively compared to negative growth of public sector which indicates India is moving towards more privatization and giving place for completion hence increasing quality human resource has more opportunity in recent past consequence technical education in India is gaining much importance. During 2005 to 2010 private sector employment average growth rate was 4.7% and reached highest growth rate year on year in 2008 at 6.5% whereas public sector average growth rate was -0.3% that is negative and reached highest growth rate 1% in 2006. These results are enough to say that liberalization, privatization and globalization has major effect on private sector employment generation.

**Figure 11: Estimates of Employment in Organised Public & Private Sectors (Lakh persons as on March 31)**



Sources: Data-book Compiled for use of Planning Commission, 22<sup>nd</sup> December, 2014

**Table 1: Absolute Employment (in Millions) by Major Sectors (2004-05 & 2009-10)**

		Agriculture	Manufacturing	Non-Manufacturing	Services	Total
2004-05	Karnataka	17.6	2.6	1.2	6.0	27.4
	India	236.1	48.1	56.8	110.4	451.4
2009-10	India	262.5	52.7	27.9	107.7	449.6
	Karnataka	15.3	2.7	2.1	6.7	26.8

Sources: Data-book Compiled for use of Planning Commission, 22<sup>nd</sup> December, 2014

The majority of employment source in India is from agriculture sector which accounts around 55% while service sector has been contributing more employment after post reform period and share of employment from manufacturing sector has been decreasing due to technology effect and increasing skills and efficiency among labour force. The data shown in the table 1 highlights the sectoral contribution of employment generation in India and Karnataka state during 2005 and 2010. The absolute employment from agriculture, manufacturing, service and non-manufacturing sector was 27.4 million in 2004-05 which decreased slightly to 26.8 million in 2009-10 in Karnataka state whereas at all India it was 449.6 million and 451.4 million during same time period. It clearly shows that at all India employment slightly improved compared to lower improvement in Karnataka.

### Conclusion

The stock of capital will definitely help economic development of any country but different nations have heterogeneous population, geography and resources, hence different economic strategies are needed for economic welfare. The traditional economics considered economic development on monetary investment but after neoclassical economics human resource took major role in economic development and endogenous growth models supported human resource as the major cause for socio-economic welfare. The present study examines the India economic development and demographic dividend and how population can be utilized as human resource. The study focuses on the role of education specifically higher education and technical education and labour force in human capital formation. It overviews the economic reforms and globalization effect on employment generation in India and India's potentiality in human capital formation and economic development.

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