

**HUMAN CAPITAL FORMATION AND ECONOMIC DEVELOPMENT: A
CASE STUDY IN
LAKHIMPUR DISTRICT OF ASSAM**

Biren Saikia, Dr. Bashanta Mangal Dutta

ABSTRACT

Economic development truly falls on human capital formation. Human capital formation extend competency in terms of knowledge, skills, efficiency, technology adoption, time management, labour mobility of the work force. Even human capital formation increase welfare by reducing interpersonal and interregional disparities. The study on human capital for economic development is much more important in a labour surplus economy like India than a developed nation. Available literature in this area indicates a district level study gap especially in Assam. Therefore, this study is taken to fill the gap to some extent and to focus the importance of human capital in economic development.

Keywords: Human resource, Human capital, Human Capital formation, Economic Development.

I. Introduction

Human Resource means people and man power. Human resources in simple term, explain inherent skills, talents and creative abilities. Human resources in broader term include dependent, working population and aged persons. Human fund is active agent which accumulates capital and exploits natural resources in order to build economic, social and political institutions. But all human resources are not human capital. People need competencies (Knowledge). Knowledge, attitudes, values and skills are treated as Human capital. So, higher degree and quality of work take place, through process of performance, education, feed back training. Preview of performance, job rotation and rewards. Human resource development means to improve the abilities and attitudes of an individual to make better personal growth. In human resource development, education inculcates rational attitudes towards life and work which raise labour utilization and productivity. So, proper planning for education is necessary for human resources development in a particular society. The human capital formation means investing in education, health and training programme of the present and future manpower. F.A. Harbison (1964) defined human capital formation, as the new addition to the existing stock of human capital. According to him, "It is the process of acquiring and increasing the number of persons who

have the skills, education and experience, which are critical for the economic and the political development of a country. Therefore, the present study finding out the human resource development through human capital formation and its contribution to economic development in the context of increasing emphasis about its role in the present day world.

II. Conceptual Framework: About the concept of Human Capital, HRD and Human Capital Formation

A. Human Capital

Human capital refers to the various dimensions of the human being that yields services or income over time and tends to refer to the various qualitative dimensions of human beings, in contrast to their ability to deliver physical labour. These dimensions include education, vocational skills, nutritional status, health, culture and values. More inclusively they also refer to knowledge and institutional arrangements, both of which are sometimes defined as social capital. We prefer to include them as human capital, since they are embedded in the human agent and in the case of institutional arrangements, govern the way individuals in the society relate to each other.

The term human capital was first used by a Nobel Prize—winning economist Theodore W. Schultz in a 1961 article in *American Economic Review*. His basic thesis was that investments in human capital should be accounted for in the same manner as investments in plant and machinery.

However, the concept of human capital was first defined by the World Development Report in 1995. According to the World Development Report (W.D.R., 1995) human capital consider the, “the skills and capabilities embodied in an individual through health, nutrition, education and training,” All these human welfare measures, require for human capital formation. Earlier economist like, Schultz (1961), Harbison (1968), Backer (1966) and others argues that one of the important factors responsible for the rapid growth of the American economy was more expenditure on education. According to Schultz (1960) “a dollar invested in education brings a greater increase in national income, then a dollar spent on dams, project, roads, factories or other tangible capital goods.” Spread of education, knowledge and technical know-how raise the level of skills, improve the efficiency of the people and minimize the use of physical capital in underdeveloped countries. According to him, the process of change from static or traditional society requires very large doses of efficiency in the system of government. Therefore, it is suggested that, there is urgent need for expanding

government services, to introduce new system of land use and new methods of agriculture, to develop new means of communication, to carry forward industrialization and to build the educational system. According to OECD (Organization for Economic Cooperation and Development, 1998) human capital is the knowledge, skills, competences and other attributes embodied in individuals that are relevant to economic activity’.

B. Human Capital Formation

Human capital formation means investing in education, health and training programme of the present and future manpower. F.A. Harbison (1964) defined human capital formation, as the new addition to the existing stock of human capital. According to him, “It is the process of acquiring and increasing the number of persons who have the skills, education and experience, which are critical for the economic and the political development of a country. Human capital formation is thus associated with investment in man and his development as creative and productive resources.” The absorptive capacity for physical capital can be increased by improving the quality of human capital. According to Prof. Schultz, (1961) there are six ways of improving the quality of population - (1) Health facilities and services, (2) Job training, (3) Formally organized education at the elementary, secondary and the higher levels, (4) Study programmes for adults, (5) Migration of individual by changing jobs and (6) Social and economic equity.

Thus human capital is one of the most important assets of a country or a region and important determinant of a country’s economic development. Human capital, though frequently discussed, is difficult to measure. This study aims to review major issues in the measurement of human capital and its contribution to economic development.

C. Human Capital And HRD

There is general agreement that human capital formation is one of the critical causes of economic development. (Todaro, 1994) states that Human capital is defined as the productive investments in humans including their skills and health, that are the outcomes of education, health care, and on-the-job training. The relationship between human capital and human resource development stems from their focus on the use of the labor force in the process of economic productivity, in the broader sense of the term. In his influential book on human competence, Gilbert (1996) states: “The purpose of performance engineering is to increase human capital, which is defined as the product of time and opportunity”.

Human capital theory is an economic theory that addresses the macroeconomics of production and economic development. It views human capabilities—their knowledge, skills, health, and efforts—as integral parts of the capital of a country, along with financial and natural resources. The premise of this theory is that investments made in educating the workforce and developing their skills (among other services such as providing them with nourishment and maintaining their health) would pay dividends for a country in its effort to develop economic viability and contribute to an increase in output per each unit of input (Hogendorn, 1996). The human capitalist approach studies the cost-benefit of such investment in terms of its efficiency in reaching equilibrium in the amount of investment in education, as opposed to investment in other factors of production, for the purpose of maximizing the return on investment.

Similarly, human resource development (HRD) views humans as resources to be trained, educated, and developed within the system of an organization for the purpose of enhancing the productivity of the organization through the expertise of its workforce. Jacobs (1990) and Swanson (1995), among others, have characterized HRD as a multidisciplinary field of study. They identify economics as an important discipline that contributes to the theoretical basis of HRD. Economics and human capital theory have become important foundational ingredients for HRD theory and practice. However, in his first editorial for the commencement of HRD, Swanson (1990) divided the contents of HRD into two components: (1) human development (psychology and education) and (2) human capital (economics and management). Carnevale, Gainer and Villet (1990) taking a human capital approach, place HRD at the strategic level within the organization. They found that employees as a resource that must be trained in order to maintain the competitive advantage of the corporation and increase its value. In this perspective, HRD activities (specifically, training) become utilitarian in the organizational strategy to keep up with economic and technological changes. Therefore linking training with specific job functions and performance requirements becomes the strategy for maximizing the return on investment. It is the economic potential and the economic rationale that provides the impetus for investing in workplace training.

Training is an integral part of the economic system, whether we refer to it as being part of the organizational micro system or a national macro system. The Chart: I show the convergence of corporate strategy and governmental economic development policy, where the decisions are both based in part on issues of efficiency and cost-effectiveness.

III. Review of Literature

A. Theoretical Concept:

According to GARCIA ADRIANO human Capital formation includes the following aspect:-(i) to increase knowledge skills and experiences, (ii) to maximize the rate of utilization, (iii) to provide incentives and records to work, and (iv) to find ways and means to increase the allocative efficiency to make decisions and the ability to lead, and to find ways and means to create working environments for human resources to be as creative or innovative. According to Charles and Berger (1988), investment in Human Capital can take a variety of forms like formal schooling, on-the-job training, job market information, health and sanitation and migration. An improvement in human activities due to which a person prove himself more productive and more beneficial according to the changes in the economy is called human capital formation. In this process humans are the assets and productive as stated by Schultz (1961).

There exists a vast amount of literature on various issues related to human capital and economic development in the international, national and regional levels. In order to review the existing literature this study mainly concentrates on some specific issues namely- Education, as a Producer of Human Capital, Role of Education in Earnings, The Rates of Returns to Education, Education and Productivity and some other issues related to human capital. Literatures relevant to the present study have been reviewed extensively to gain insight into the significance of the study and to provide guidance in designing and conducting the study. Although some studies do not have any direct bearing on the subject of research, the methodology and findings of those works have been quite useful. So, an attempt has been made to highlight some important studies and related work done in these fields in various places at different levels.

a. Education, as a Producer of Human Capital:

There is an enough literature to show education as a producer of human capital. According to Schultz (1961) education may lead to higher labour productivity. Knowledge and modern technique of production can lead to technological development. It increases the productivity by equipping them with necessary skills and molding the aptitude of workers. A starting point of theories, of education as a producer of human capital is the fact that educated worker earn, on average more than uneducated ones. The theories assume that (i) the additional earning results from the fact that the productivity of educated labour is higher than that of the uneducated, (ii) this higher productivity becomes available as a result of the additional education.

Advocating for combining productivity workers with education, Schultz (1960, 1963 and 1979) observes that the decisive factors of production in improving the welfare of poor people are not space, energy and crop land. The decisive factors are the improvement in population, quality and advance in knowledge. He adds "History demonstrates that we can augment resources by advance in knowledge".

b. Role of Education in Earnings:

There is enough literature regarding the role of education in earnings for the conventional theory of human capital developed by Becker (1962) view education and training as the major sources of human capital accumulation that in turn have direct and positive effect on individual's life time earnings. In the Mincerain earning function, the coefficient of school years indicate the returns to education, i.e., how much addition in earnings takes place with an additional school year.

Becker (1967) and some other economists considered allocation of investment in human capital must be concentrated at the younger ages. This is due to the simultaneous operation of two forces-(a) Human beings have a finite working life. (b) Opportunity cost of investing increases as human capital is acquired. Human capital raises an individual's marginal product and consequently opportunity costs of time spent on human investment. Denison (1967) estimated contribution of education to G.N.P in the U.S.A during 1929-56 at 23%. In another work for the period of 1949-73 in U.S.A. in 1979, he estimated that 14% increase in G.N.P resulted from the increased capacity of workers and 37% increase in G.N.P was due to advancement in technology, managerial and organizational knowledge etc. Harbison and Myers (1968) developed a composite index of human resources development using enrolment ratio at the primary, middle and secondary levels of education within the respective age groups and found high correlation between it and other indicators of economic development. Mincer (1974) found that schooling and training as the basic cause of labour income variations. Individuals increase their productivity by learning new skills and perfecting the old ones on the job. Future productivity can be improved only at a cost, otherwise, there would be unlimited demand for schooling and training .He applied the post- schooling model to data from the 1/1000 sample of the 1960 United States Census. Burnhill, et.al., (1990) study in Scotland and find that parental education influences entry to higher education in Scotland over and above the influence of parental social class. Grossman and Helpman (1991) work and propose a model in which the production of human capital not only forms skilled workers, but also generates technological change

and hence growth. Glomm and Ravikumar (1992) establish that majority voting results in a public educational system as long as the income distribution is negatively skewed.

Empirical studies in the literature on education and economic growth also find compelling evidence for the hypothesis that a substantial proportion of the growth of the economies is attributable to the rise in the educational levels of the workforce. Lau, et.al. (1993) attribute almost 25 per cent of the economic growth in Brazil to the increase in the average education of the workforce.

c. The Rates of Returns to Education:

There is a wide range of literature that estimated the rates of returns to education for different countries. Pascharapoulos (1994) provide a comprehensive update of the estimated rates of returns to education at a global scale. He observed high social and private profitability of primary education (18 per cent and 9 per cents respectively) in all regions of the world. The private rates of returns at this level were found highest in Asia (39 per cent) as compared to other regions. He also noted a considerable increase in total earning by an additional year of education in all regions of the world, 13 per cent in Sub-Saharan Africa, 10 per cent in Asia, 12 per cent in Europe/Middle East/North Africa and 12 per cent in Latin America / Caribbean. The estimated the rates of returns to education for different countries are given in Table:1.1

In case of Pakistan, most of the studies, for example, Haque (1977), Hamdani (1977), estimated the earning functions by defining the dummy variables for different levels of education. In order to examine the interprovincial differentials in returns to education, Shabbir and Khan (1991) estimated the Mincerian earning function by using a nationally representative sample, drawn from the Population, Labour Force and Migration Survey (1979) for the literate wage earners and salaried males. Later, Shabbir (1994) estimated the earning function on the extended sample of the same data set. These studies found 7 to 8% increase in earnings with an additional year of schooling.

Bashir (2005) study the relationship of education science and technology, human capital formation and economic development of Pakistan since 1951 to 1998 and said that the earlier economists studies' results are consistent with those of comparable Lower Developing Countries (LDCs) but may not reflect the recent developments in Pakistan economy as these studies are based on the data set, which are 20 years old now. The literacy rate has increased from 26% to 45% and enrolment at primary level has increased by 67%. He used human capital model developed by Becker (1962) and Mincer (1974) where natural logarithm

of monthly earnings are the linear function of completed school years, experience and its square and found that it becomes imperative to re-test the role of human capital as both private and public sectors are moving towards more efficiency and productivity.

d. Education and Productivity:

There is enough literature for education and productivity. The World Development Report (1980) included several studies related to education where four years of primary schooling of the farmers contributed to 18 per cent to 26 per cent increase in farm output in some countries. The countries which made studies and estimated per cent increase in farm output are given in Table:1.2.

Schultz (1994) in his study made systematic approach to examine the allocative efficiency of the farmers in traditional agriculture. He emphasis's that the efficiency of farmers in allocation of inputs in agriculture would bring more output to farmers. Describing the role of fertilizer and such other critical inputs in Agricultural production, Lewis (1969) found that the development in agriculture depended upon the quality of labour or human resources available rather than simple accumulation of physical input. Heyneman (1983) found that the general education in science, mathematics and reading had a significant bearing in the degree of productivity. He identified four basic stages of growth in agriculture productivity and their learning requirements. The first stage is termed as the stage of traditional farming. It is the most elementary stage. Where knowledge and skills are passed from father to son and so little schooling is not required too much. The second stage is the stage of intermediate technology where peasants start using a single modern input like fertilizers. Its utilization is substantially improved with acquisition of rudimentary literacy and knowledge of addition, subtraction and divisions. The third stage is fully improved technology. It requires simultaneous application of several modern inputs such as high yielding varieties of seeds, fertilizer; elementary principles of chemistry and biology are needed in skillful calculation of inputs per unit. The fourth stage is the modern stage, where innovative approach of technology supported by fully irrigation based technology, during the off-season. Proper utilization of researches and new information from printed and electronic sources would enable the farmer to work out in every year his own production function. It requires high reading and skills to decode information in chemistry, biology and physics.

Glaeser (1994) divides the positive effects of education on economic growth into parts and concludes that children in families with educated parents obtain a

better education than children without support. Nordhaus (1996) estimates of a more general savings rate for the United States over the period from 1929 to 1993, including the components associated with human capital. He shows that the 'genuine' savings rate is at least three times the 'conventional' rate. Hanushek (1996) studied the relationship between school expenditure and the effects of complementary factors on different measures of educational outcomes in the United States and his main conclusion was that schools characteristics were relatively unimportant in determining achievement, while family characteristics were found to be the main determinant of student success or failure.

In Canada, few attempts have been made to estimate the stock of human capital. Macklem (1997) estimated human wealth as the present value of aggregate labour income net of government expenditures, while Beach and Bruce (1988) produced a human capital wealth series from 1964 to 1981 by estimating the discounted present value of real after-tax per capita earnings over individuals' lifetime. While these measures are useful tools to assess human and physical wealth, estimates of Canada's accumulated human capital stock are needed to specify accurately growth models and perform growth accounting studies. Estimates of human capital savings (investments) are needed to revise national and public accounts and hence, to perform more accurate policy analysis.

In a recent study, Kirova and Lipsey (1998) estimate a more comprehensive measure of capital formation for the United States, which incorporates, along with physical capital, expenditure on education, research and development, consumer durables, as well as military spending. The authors find that while the conventional measure of capital formation for the United States is below that of OECD countries, the more comprehensive measure shows a higher capital formation to GDP ratio for the United States than for the other OECD countries. More recently, Lee and Barro (2001) and Brunello and Checchi (2003) study in Scotland and find that family characteristics such as income and education of parents enhance student's performance. A reason that is put forward is that parental education elicits more parental involvement (including related private investment) at home.

Matteo Cervellati and Uwe Sunde (2004) study the human capital formation and economic development of western world for using income, life expectancy, education and population and found that there is a positive feedback between human capital accumulation and longevity is eventually triggered when endogenous skill-biased technological progress provides sufficiently high returns

to human capital for large fractions of the population to outweigh the costs in terms of lifetime spent on education.

Daniel Mejía and Marc St-Pierre (2004) study the relationship between inequality of opportunities (in the form of differential costs of access to the educational progress) and the level of human capital and output. The result suggests that a higher level of inequality of opportunities is associated with a lower level of average human capital, lower output per worker and higher income inequality.

In their recent contribution Katz and Rapoport (2005) explore the relationship between economic volatility and human capital formation in a two-country framework. In one country, the rate of return to human capital is certain. In the other country, it is uncertain but of the same expected value. Katz and Rapoport find that increased variability in the unstable country, which they call undeveloped, increases investment in education there. The reason for this is that the exit option provides insurance for those who have sufficiently low migration costs.

The recent contributions in Oketch, (2006) have emphasized that human capital is very important for economic growth in Africa, although they have not dealt with their impact on regional FDI.

Adil, H. Suliman et.al., (2007) used a panel data fixed effect model to identify the determinants of foreign direct investment (FDI) for a large sample of 29 Sub-Saharan African countries from 1980 to 2003. We test whether human capital development (HCD), defined by either literacy rates or economic freedom, and the incidence of war affect FDI flows to these countries. Combining these explanatory variables to several widely used control variables, he find that the literacy rate (human capital), freedom (political rights and civil rights), and the incidence of war are important FDI determinants. The results found that FDI inflows respond positively to the literacy rate and to improvements in political rights and civil liberties, war events, in contrast, exert strong negative effects on FDI. For robustness, we estimate the model for religion groupings of Sub-Saharan African countries.

Family income has been found to have large explanatory power on longitudinal studies of educational outcomes across individuals. However, family income or assets do not only affect the individual's capacity to pay for tuition costs but also many other factors such as the neighborhood where the kids grow up their health, and the capacity to buy complementary factors to the educational

process. Ginther et.al., (2000) hundreds of papers have studied the relationship between school expenditure and the effects of complementary factors on different measures of educational outcomes in the United States. More precisely, his report found that the socio-economic composition of the student body had a significant effect on test scores after controlling for student background, school and teacher characteristics.

Emily Farchy (2009) study the impact of human capital formation in European Union and found that there is a reverse causality between migration and human capital formation using two strategies first is a simple difference in difference estimation, utilizing the disparate timings of accession negotiations with the Czech Republic and Slovakia, and secondly, a panel regression of 13 countries that have joined the European Union and result of these two strategies provides evidences in support of the endogeneity of the human capital investment decision and the potentiality for a net brain gain. The results highlight a significant impact of European Union accession on human capital formation indicating that the prospect of migration can indeed fuel skill formation even in the context of middle income economies. And if accompanied by policies to promote return migration, as well as a functioning credit.

e. Observation and Comments:

Almost all the works reviewed above reveal that the expansion of education and other human capital will lead to economic development. The result of those will be a good base to design the current works. But from the observation of previous studies mostly done in the macro level it is found that these studies had not properly highlighted the major problems of human capital formation relating to economic development in micro level. Although some researcher has attempted to study in micro level but it is very limited. However, it has generated a wide academic interest among the scholars and economists of our period. Therefore, the present study will be addressed to identify all these issues and will provide necessary policy recommendation for the government, particularly in education and other human welfare measures.

IV. Importance of the study

Lakhimpur, a constituent district of Assam, is situated in North Eastern part of the state. The economy of the district is mainly agrarian in nature. According to 2001 census, the population of the district is 8,89,325 of which 4,55,689 males and 4,33,636 are females. There was considerable inter-state and inter district variation in literacy rate. Lakhimpur district is basically a flood-affected region with constraints in transport and communication failed to receive proper

attention for education. The literacy rate was only 28.9% in 1971 and increased further to 58.96% in 1991 and 69.59% in 2001. The lack of awareness in understandings the importance of education, poverty and flood are the main causes of slow progress of literacy rate. Human capital formation is an important determinant in the economic development of a country or a region. It is also an important and interesting topic of study in the discipline of economics in the recent time. It has generated a wide academic interest among the scholars and economist of our period. The human capital formation of Lakhimpur district is also an important factor in the economic development of our state or country. But no works on this topic has been done so far in micro level. From our study and observations that was made on the secondary source materials, it is found that Lakhimpur district is endowed with huge natural resources such as land, forest and availability of water. But the availability of natural resources is not enough to achieve economic development. Manpower with general and technical efficiency alone converts the physical resources for the benefit of the society as a whole. So, effective utilization of manpower is a part of development strategy, which makes economic development. Effective manpower planning in the state needs a highly developed system of collection and analysis of data, which help to find out the present and future requirement of working force. This working force with skills and training promote progress in a state.

Therefore, in the present study, an attempt is made to examine the role of human capital in economic development.

V. Reference period

1971-2001 periods is taken as reference period for the purpose of study. Due to the limitation of available data an attempt have been made to outline the earlier periods before 1971 and the later period after 2001 too wherever the data are necessary.

VI. Objectives of the study

The present study has been pursued keeping in view the following objectives-

- a. To study the size and structure of human resources in the study area in order to examine the human resource development.
- b. To estimate the stock of human capital in the study area as a whole.
- c. To study the relationship between human capital and economic development in the study area.
- d. To identify the problems of human capital formation in the study area.

e. To suggest some measures to promote human resource development through human welfare measures in the study areas.

VII. Working Hypotheses

In view of the above objectives, this study sets the following hypotheses for testing in the process of investigation.

H1: There is a positive relationship between the literacy rates of the different census period and the per capita income during the same period.

H2: Human welfare measures are necessary precondition to improve work efficiency of human capital formation in a region. Human welfare measures such as educational and medical facilities water supply, fair price shops, transport and other facilities are necessary for the growth of human capital.

VIII. Methodology of the study

A. Sample Technique:

The data have been collected using sampling rough purposive strata sampling Method through field investigation using a pre tested questionnaire from urban and rural areas around the Lakhimpur district.

B. Sample Size:

A total hundred and eighty (180) respondents were randomly selected in and around Lakhimpur district for the collection of primary data.

C. Sources and Collection of Data Design:

Relevant data for the study have been collected from both primary and secondary sources of information. The secondary sources include official reports of central and state governments of India, Statistical handbook of Assam, District Statistical Handbooks that are being used for our study. Some other secondary sources such as published books, unpublished research works; newspapers, articles in different journals etc are also used in this research exercise. Information available from various websites also helped to complete the study.

For our study to test our hypothesis we have deliberately selected Lakhimpur district as universe for collection of primary data. The district comprises of two subdivisions namely North-Lakhimpur and Dhakuakhana, which are divided into six administrative circles. North-Lakhimpur sub-division has four administrative circles- North-Lakhimpur, Boginadi, Laluk and Bihpuria, Dhakuakhana sub division has two administrative circles viz. Dhakuakhana and Ghilamara. We have purposively selected three circles-two from Lakhimpur

subdivisions such as—North-Lakhimpur and Bihpuria and one from Dhakuakhana subdivision that is Dhakuakhna. The North-Lakhimpur and Bihpuria administrative circles are selected as these circles are economically developed circles and also these circles bear a high rate of population in comparison to other circles. The population of North-Lakhimpur and Bihpuria are 54,285 and 10,868 respectively. The circles also shows high rate of literacy that is 78.70% in North-Lakhimpur and 85.41% in Bihpuria according to the 2001 census.

Similarly the Dhakuakhana circle is selected as it is highly flood affected and backward region. Again one village is randomly selected from each circle and 20 households are randomly selected from each village for collection of primary data. We have randomly selected two urban centers namely North-Lakhimpur and Dhakuakhana in order to know the development of human resources in urban areas and 20 respondents randomly selected from each urban centre for our study. To study the human capital formation, teachers and other persons who understand the working of the schools are contracted for the study, 20 persons from urban areas and 20 persons from rural areas are asked to give necessary information.

Similarly, to understand the welfare measure for government employees, 40 government employees are selected 20 persons from rural areas and 20 from urban areas. Apart from the primary sources, a field study was made to these places for direct observations through appropriate questionnaire. The questionnaires were designed in such a way that the first part of the questionnaire seeks the general information about the respondents. The remaining part was directed towards finding out the views of the respondents on different areas of the objectives in the study. The sample distribution for the collection of primary data has been presented in Chart II.

D. Pilot Study:

A pilot survey was conducted at 20 households and for reliability of the data a comparison was made with some secondary information such as data from statistical handbooks of Assam, Economic Survey of Assam, and different census reports about the Lakhimpur district.

E. Tools And Techniques For Analysis And Interpretation Of Data Design:

Immediately after collection, data have been organized, tabulated and kept ready for analysis. Separate analysis has been made for quantitative and qualitative data. Objective has been maintained as far as practicable for analyzing the data.

Appropriate tables were prepared based on similarities and dissimilarities of characteristics. The study being of an exploratory nature with no previous studies to be found in a similar line, a descriptive and statistical pattern of analyze was followed. Moreover, since the data dealt with happened to be nominal and categorical by attribute, sample collection of percentage were found to be best fit in carrying out the analysis and interpretations.

The field survey was conducted in the period of February-March 2010. For relevant statistical techniques like –

- (i) Co-efficient of correlation 'r' is calculated for assuming two variables likes literacy rate and per-capita income in order to test the hypotheses.
- (ii) Descriptive analysis techniques like mean values were worked out to study the human welfare measures and work efficiency in order to test the second hypotheses.

For detail analyses of co-efficient of correlation between literacy rate and per-capita income and collected data kept for tabulation of the computer based Microsoft office Excel 2003 and SPSS statistical package version 13 was used.

IX. Indicator of the study

A. To study the size and structure of human resources in Lakhimpur district from 1971-2001 in order to examine the human resource development, the size and composition of population with socio-economic background are taken as indicator.

B. To estimate the stock of human capital in Lakhimpur District from 1971-2001 as a whole the trend of literacy rate, the number of educational institution, number of employment, number of government hospitals, number of births and deaths etc. are taken as indicator.

C. To study the relationship between human capital and economic development in Lakhimpur District literacy rate and agriculture development, literacy rate and state per-capita income, literacy rate and district per-capita income, literacy rate and area under fertilizer use and literacy rate and productivity are taken as tools for this study.

X. Major Findings

(a) Examining the relationship between literacy rate and state per-capita income, it is found that there is a high co-relation of $r = 0.762$ between the two variables, such as literacy rate and state income. A significant rise of per-capita income at current price, increasing from Rs. 1221 in 1970-71 to 10,198 in 2000-

2001, was noticed during this period along with the progress of literacy from 28.10 per cent in 1971 to 52.89 per cent to 64.28 per cent in 2001. Similarly, there is positive relationship of $r = 0.763$ between literacy rate and per capita income of the studies district. A significant rise of per-capita income at current price, increasing from Rs.1219 in 1970-71 to 10158 in 2000-2001 was noticed during the period along with the progress of literacy from 28.90 per cent in 1971 to 58.96 per cent to 69.59 per cent in 2001. Thus it became evident that there is a positive relationship between literacy rate and the per capita income during the period under study thus the first hypothesis of this work cannot be rejected.

(b) The family type among the surveyed households found to joint family, as more than 63 per cent of the families belong to this category.

(c) The standard of education has been found to be poor in the rural areas as more than 12 per cent population are illiterate among the surveyed household whereas 3.21 per cent in urban areas. However, only 11.59 per cent population has received up to Bachelor degree of which 19.91 per cent are from urban areas.

(d) The information regarding the status of occupation reveals that more than 20 per cent of the surveyed rural households are directly engaged in agricultural and allied activities. Its rate appears to be 6.25 per cent in urban areas. Moreover, 10 per cent of the rural surveyed households are daily wage earners. In urban area it is 1.25 per cent.

(e) The analyses of income show that more than 27 per cent of the surveyed households earned annual income from 5,000 to 10,000. However, around 16.66 per cent of the households' average annual income is less than 5001. Only, 5.56 per cent of the surveyed households earn an average annual income more than 30,0001.

(f) In order to test the hypotheses of our study about human welfare measures extended to people by government, it is found that Human welfare measures as an average is found to be 41.66 per cent in rural areas and 76.87 per cent in urban areas. Therefore, human welfare measures are necessary pre condition to improve work efficiency in a region. It is observed that 45 per cent of the rural area respondents find that there is impact in improving work efficiency with 41.66 per cent access to human welfare measures. Similarly, about 76.87 per cent accesses to human welfare measures in urban areas improve their 53.33 per cent work efficiency. Thus, our hypothesis is proved and it is applicable to our study area.

(g) While examining the problems of education in study areas it is found that almost 30 per cent rural respondents and 35 per cent of the urban respondents reported over expansion in education system; about 35 per cent in rural and 55 per cent in urban respondents are found lack of employment oriented.

(h) To examine human welfare measures extended to government employees with specific indicators such as working hours, housing, power, water supply and retirement benefits etc., it is found that human welfare measures for government employees are 46 per cent in rural areas and 51 per cent in urban areas.

(i) The field survey gives findings on human capital and its contribution to economic development. The percentage is derived in favour of some economic indicators, which highlight economic development through education and training etc in Table-1.3.

It is found from our survey that education is an influencing factor in the improvement of agriculture, economic and social changes which increase the quality of life. Summing the respondents' view it is found that human capital contributes an average 59.99 per cent to economic development in rural areas and 73.75 per cent in urban areas. It signifies that there is significant role of human capital in urban areas in comparing with rural areas.

XI. The Problems of Human Capital Formation and Human Welfare Measures in Lakhimpur District

A. General Problems Related To Education:

(a) Lack Of Adequate Basic Infrastructure : Lack of adequate basic infrastructure such as transport and communication, power supply and housing facilities prevent the progress of human capital.

(b) Limited Linguistic Ability: Limited linguistic ability restricts the students' horizon and forces them to rely on guides and notes. It limits the qualitative improvement in human Capital.

(c) Technical Subjects And Vocational Oriented Studies Are Inadequate : To attain quality in technical skills, there is lack of professional institutions such as agriculture, engineering, medicine, veterinary and allied subjects.

(d) Less Attention On Agriculture And Adult Education: A very little attention is paid to agricultural and adult education. Both of these are needed to change

the outlook of farmers regarding the new methods of production and to adjust to new working conditions. But it will require a huge amount of investment, which is not properly available in these economics.

(e) Problems Of Primary, Middle, Higher Secondary And College Education: In the district a large number of primary, middle, high, higher secondary and colleges have been set up in order to expand the higher education, but they have failed to maintain the standard of higher education. For want of limitations of higher education, the proportion of failures both at high secondary and college levels is very high. This leads to wastage of human capital. Besides, the mass failures and third-class career holders tends to reduce the efficiency of undergraduates and graduates, employed both in the private and the public sectors, do not promise well for the formation of a dynamic leadership for economic development.

(f) Lack Of Investment In Education: Lack of investment in education is one of the major problems for increasing the human capital formation in the district. Most of the families are living below poverty line and they do not have enough money to provide the basic educational facilities for the son and daughters in his families etc.

(g) Seasonal Floods And Soil Erosion: Occurrence of flood is a regular problem, which causes a lot of damages in the district. Poor infrastructure like lack of roads connectivity in the interior areas, non-availability of cold storage facility, inaccessibility of a large part of the district during rainy season (as this district acts as drainage area for a number of rivers originating in Arunachal Pradesh) etc. are affecting the whole economy of this district.

(h) In view of the existing problems of low participation and high drop out rates in the education system, the current policy reshuffled its priorities and reset its goals with a major thrust on the promotion and development of basic education.

(i) The low educational quality can be attributed to a number of factors, among which is the relatively high level of teacher absenteeism. An official survey of 14 states has confirmed these low attendance rates, suggesting that absence rates were 20% in primary schools and 13% in upper primary schools (Ministry of Human Development, 2007). So, the low attendance of teachers has been a longstanding problem and seems linked to weak performance incentives and poor teaching conditions.

B. Problems Related To Medical Facilities:

(a) Most of the primary health centers do not function effectively and the general standard of services is poor. Primary health centers often do not have adequate supply of medicines and other related equipments etc.

(b) There is shortage of doctors in many hospitals in this district.

(c) There is lack of awareness about health and hygiene amongst the people etc.

XII. Suggestions for improvement of Human Capital

(a) The district is affected heavily by flood in every year and hence communication becomes a major problem. For solving this problem the government should set up adequate agencies before implementing any plan. They must be strict in the loopholes in the process of implementation of plans and financial allocations. Therefore, the government construct of a good number of bridge over the rivers in such a situation, awareness of the people are also essential.

(b) The quality of education depends upon proper building, modern equipment, adequate supply of textbooks and teaching aids etc. Adequate steps must be taken for the development of infrastructure facilities as early as possible.

(c) Past time learning system is necessary to minimize illiteracy, in the society. The use of non-formal education for drop-outs and left outs is to give them learning opportunities in accordance with their preference and needs, and at times suitable to them, as is being done in the case of adult literacy programmes in the evening hours.

(d) The quality of teacher is one of the axioms of educational planning. Educational qualification, personal qualities and professional training will determine the position, he occupies in school and in community and appointment of qualified teachers according to the requirements of the schools is need of the hour.

(e) Teachers must do counseling and guidance to parents about the functional value of education in sending their children to schools.

(f) To motivate teachers in rural areas, their enrolments accommodation needs and other perks must be taken care off.

(g) The government should provided necessary equipment needed for health centers and supply of adequate medicines in the hospitals and sub-centers in all places of the district.

(h) Adult education, education for handicapped and education for women are to be given due share in the system of education.

(i) Teacher should use proper techniques of teaching as their guided in different training programmes.

(j) In consistent education policies and reforms and inadequate level of local capacity for programme formulation and its implementation have resulted in low achievement with respect to literacy and primary education. So, there is an urgent need to adopt radical measures and policy instruments.

(k) There is needed to increase the political will and level of commitments to improve the school participation and reduce drop out rates.

(l) Intervention of politicians in the recruitment and transfer of teacher, construction of schools without proper assessment of need and location are often held responsible for delays in the implementation of projects and the emergence of under utilized or ghost schools. To deal with these issues and to raise the over all level of achievements it is necessary.

(m) Syllabus for all levels may be revised according to the coming socio-economic needs and equivalent to the international slandered.

(n) Highly qualified teachers i.e.,Ph.D & M.Phil, may be appreciated in teaching, research and curriculum development instead of Administration.

(o) A quantitative and qualitative improvement of student and teacher manpower requires efforts to improve the quality of science and education starting from the secondary level. The Science mathematics and computer should be made compulsory at the school level.

(p) One technical trade must be compulsory at matric level and at least one our practical/on-the job training, so that after matric a student may be earning hand rather than burden on the economy. Admission must be based on aptitude and attitude tests after Matric and majority of the students compulsory be admitted in vocational, technical and commercial institutions instead of arts education

keeping in view the manpower planning and socio-economic needs of the economy.

(q) Technology, business education and commerce education may be introduced in all the colleges of the districts rather than Arts education.

(r) Argo technical based education must be compulsory for all the rural students, so that they may be useful for their parents and states or country after getting education etc.

(s) For reducing the low attendance of teachers, the government should adopted more recent inspections, and better infrastructural facilities should be provided and one such programme should be used a time and date-stamp tamper-proof camera to monitor attendance, with a portion of the teacher's wages linked to such verified attendance.

(t) Lastly, the government should provide two scanning committee, one from each districts and other from their own side, for proper inspection of educational progress in the school and college levels, but these comities should have not interlink or interdependence. They should inspect separately without depending each other. This will reduced the loopholes and unfold the real educational scenario in the district levels etc.

XIII. Limitations

(a) In the absence of previous research in the area, the access to and availability of associated print material happened to be very negligible. This leads to lesser number of references being quoted or acknowledged in the final write-up of the research work.

(b) Again the first part of the study is based on the data collected from the government officials or publications. As far the data collected during specified period of time it was found that most of the information provided by the government through its different sources is inconsistent with each other. The obvious reasons for such inconsistency are either because of inaccuracy in the method of data collection or because of unconsciousness of government officials in the time of investigation. Now if it happens really then how can a government published work be taken as a good source in the research methodology or what will be the basis of acceptability of such a source in the practical field.

(c) The government should appoint some experts to review its various works before going to publish so that the published works can be used as a genuine source in some further works.

(d) Required data are not available in some areas. For example, plan expenditure in education, progress of colleges and enrolment of students for age groups, educational qualifications of various grades in government services are not available in any form, either published or unpublished.

XIV. Scope for Future Research

Assam is a state characterized by multi-religious, multi-ethnic, and multi cultural, multi-lingual and high-income inequality. The human capital may be studied among the different religious groups of the state, viz., Hindu, Muslims, Christians; Social classes like Schedule Castes (SC's), Schedules Tribes (STs) and Other Backward classes (OBC's) etc. at different district level.

XV. Conclusion

For the ongoing analysis of the findings it can be concluded that human capital is vitally important for a nation's success (Crook et.al.,). The human capital increases through education and experience. In 2010, the OECD (the Organization of Economic Co-operation and Development) encouraged the governments of advanced economics to embrace policies to increase innovation and knowledge in products and services as an economical path to continued prosperity. It was also observed that there is a positive relation between human capital formation and welfare of the society. But due to some natural calamity expansion of human capital formation becomes neutralize in the study area. Thus to reap up the benefit of the human capital formation these natural climatic conditions like flood and erosion are needed to be controlled.

Today, it is urgently need an inclusive social security program for every section of society at grass root in school and college level while utilizing tools like value-based education, awareness generation, research and development in order to improve the human capital and human capital formation.

Lastly, in spite of having limitations of the study for human capital formation, enough care is taken to use the data in relevant places properly. As it is a pioneer study in the field of human capital the findings remain as an input for further studies and give some ideas for government and policy makers, planners and decision makers to formulate some policies so that a standard framework could

be developed particularly for education and other human welfare measures in the studied district.

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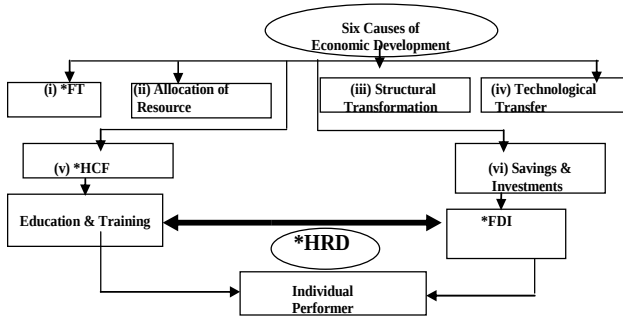
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Abbreviations

FT-Foreign Trade, HCF-Human Capital Formation, FDI-Foreign Direct Investment, & HDR-Human Resource Development, HWM-Human Welfare Measure etc.

Charts and Tables

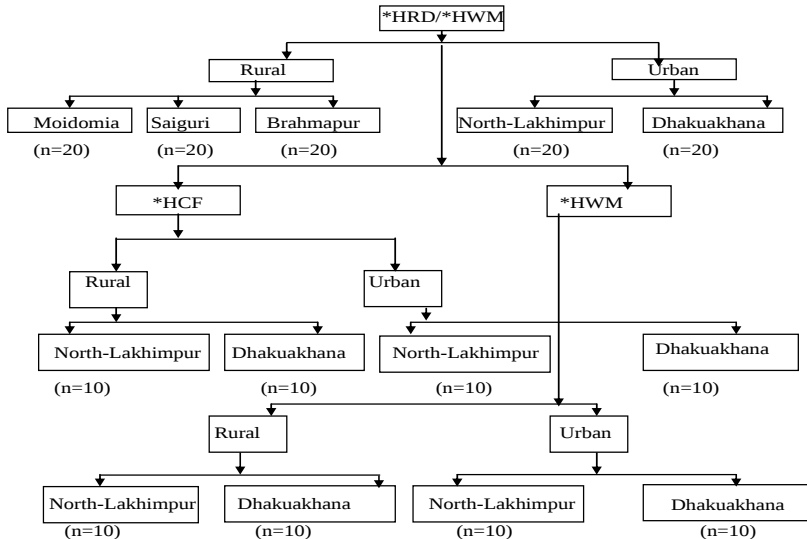
Chart-I: Convergence of HRD and Economic Development



Note*: FT-Foreign Trade, HCF-Human Capital Formation, FDI-Foreign Direct Investment, & HDR-Human Resource Development.

Source: Chart-I made by author.

Chart-II: The sample distribution for the collection of primary data



Total sample, n=180, (Rural, n=100, Urban, n=80)

Note*: - HRD - Human Resource Development, HWM - Human Welfare Measures and HCF - Human Capital Formation.

Table –1.1 Social Returns to Investment in Education

By region	Primary	Secondary	Secondary
Asia	19.9 %	13.3 %	11.7 %
Sub-Saharan Africa	24.3 %	18.2 %	11.2 %
Latin America & the Caribbean	17.9 %	12.8 %	12.3 %
Industrial Countries	14.4 %	10.2 %	8.7 %
World	18.4 %	10.9 %	10.9 %
By Income Group			
Low income	23.4 %	15.2 %	10.6 %
Lower middle income	18.2 %	13.4 %	11.4 %
Upper middle income	14.3 %	10.6 %	9.5 %
High income	NA	10.3 %	8.2 %

Source: - i.) Psacharopoulos, 1998; ii.) Haq, 1999, p. 27

Table - 1.2 Influence of Education on Farm Output

Country	Year	Estimated % increase in farm
Greece	1963	25.9 %
Colombia	1969	24.4 %
Nepal	1969	20.4 %
Brazil	1970	18.4 %
Malaysia	1973	20.4 %

Source:-World Bank (1980 b) World Development Report, Washington. P-40.

Sr. No.	Particulars	Rural (%)	Urban (%)
1	Adoption of new methods of cultivation	50%	55%
2	Education and employment modify the customs, food habits, dress and thinking in positive form	61.66%	80%
3	Influence of education on social changes	70%	72.5%
4	Education gives quality of life	58.33%	87.5%
5	Total	239.99%	295%
6	Average	59.99%	73.75%

Source: -From Field Survey.

Biren Saikia - Qualifications : M.A, M.Phil., (Dept. of Economics Dibrugarh University, Assam) and Ph.D Research Scholar Dept. of Economics in C.M.J University, Shillong Meghalaya. He has published about 8 research papers in national and International journals. He has got 6 years of research experience and more than 15 national and International conference presentations. He is presently a lecturer in PGT in Economics in Royal International School, Itanagor, Arunachal Pradesh. He is interested to involve himself as a social research with the society and wants to participate in the national building activities etc. He can be contacted at birensaikia38@yahoo.in.	
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	Dr. Bashanta Mangal Dutta - Qualifications: M.A, Ph.D. Dept. of Economics and HOD, Machkhowa Degree College Dhemaji. He has published five books and seven papers in national and international journals and also he has got seven years of research experience. He has got the Sikha Bharati Award in 2011 by All India Business Congress.
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