Stock of Human Capital and Economic Development of Assam: An Analytical Proxy Tail

Biren Saikia, and Dr. Sangeeta Borthakur Tamuli

Abstract

The overall development otherwise known as all round development of a state or nation primarily depends upon its economic development. Thus, an economic development means the development or progress in all sectors of an economy. The economic development or various sectors in the economy can sustain only when its crore elements are fundamentally strong and sustainable. Hence, in order to make the human resources more strong, productive and employable, a nation ought to stock of human capital is very much essential. It is the various human earned quantities over the years which enhance his choices, creativity and productivity on income over time. It shows several qualitative lengths of human activities in contrast to their capacity to carry physical labour. It is that type of typical stock of skills, knowledge, understanding, technical know-how, managerial skills, ethics, personal characteristics and creativity embodied in an individual which can be used to performing as a labour to produce some economics goods or values. These attributes or characteristics gained by a worker through education and experience from different relevant fields. Thus to understand the stock of human capital and economic development a case study has been conducted for covering the three districts of Assam namely- Lakhimpur, Dhemaji and Sonitpur by using primary and secondary sources of information. The primary data are collected through multi-stage random sampling of the districts. Each district are stratified into development blocks which are also further stratified into villages. All total six development blocks are randomly selected two from each districts and in the next phase, 30 villages (5 from each block) are randomly selected from 6 blocks. From these 30 sample villages in the six development blocks, households are selected on the basis of proportionate sampling method. In all the 30 villages, overall 423 households are randomly selected considering 10 percent of the each villages and data are collected through personal interviews using standard questionnaire. The study reveals that the stock of human capital has the direct relationship in economic development of Assam in general and the studies districts in particular.

Key words: skill knowledge, education, training, human capital and economic development etc.

I INTRODUCTION:

The overall development otherwise known as all round development of a state or nation primarily depends upon its economic development. An economic development means the development or progress in all sectors of an economy. Again

the progress in various sectors can sustain only when its crore elements are fundamentally strong and sustainable. Since human beings are the agents of all activities, they are to be basically strong and more creative. Hence to make a state economically developed and sustainable, its human capital formation and development is the pre-requisite. Human capital is the various human earned quantities over the years which enhance his choices, creativity and productivity on income over time. It shows several qualitative lengths of human activities in contrast to their capacity to carry physical labour. Several dimensions of human capital supplies education, knowledge, vocational skills, nutritional status, physical fitness, cultural knowledge and moral ethics etc. It is that type of typical stock of skills, knowledge, understanding, technical know-how, managerial skills, ethics, personal characteristics and creativity embodied in an individual which can be used to performing as a labour to produce some economics goods or values. These attributes or characteristics gained by a worker through education and experience from different relevant fields. We may aggregate, maintain and increase human capital in various ways; through education, job training, work experience in indoor and outdoor, life experience, expenditure in health, etc. However, as we know that the development of human capital indicates the increasing capacity of people to influence and control their future. This can only be achieved through proper education and health care. The level of education i.e., literacy is one of the constituents of human capital that helps to promote economic development in a country. The low levels of literacy among the people have always been a matter of concern to policy makers and planners. Thus, the initiatives taken by the government, voluntary organizations and private institutions have contributed towards the progress of literacy rate in the state. The following flow-chart shows that the human capital as the influencing factor for high productivity and eradication of absolute poverty in the society and enhancing economic development.

CHART-I: Human capital as the influencing factor in economic development of the society.

Since, human capital is one of the most important assets of a country or a region and important determinant of a country's economic development. Therefore, in this paper an attempt has been made by researcher to study the relationship between human capital stock and economic development in the state of Assam and the study districts in particular.

II REVIEW OF LITERATURE:

There are adequate amount of research works and study on related topic i.e., related to education as a producer of human capital. Schultz (1961) studies education as the factor for production of a human capital. He had argued that higher education helps to increase in efficiency and in achieving higher labour productivity. He had also

observed that the information, knowledge and up-to-date technique of production can lead to technological development and technological development increases the productivity by preparing themselves with necessary skills, knowledge and ability. His theories had also highlighted that higher educated workers earn on an average more than uneducated ones. Firstly his theories assume that those who have an additional information, knowledge and creative ability they can earn higher income than that of the uneducated one and secondly, this higher productivity becomes possible due to the additional education, knowledge and skills.

Schultz (1979) studies related to education, poor people and productivity in underdeveloped countries. He had observed that the key factor of production is the enlightenment of knowledge regarding farming activities in the poor farmer plays a vital role in terms of output. He had also observed that the significant factors are the improvement in population quality, advancement of information and knowledge related to modern technique. He adds "History demonstrates that we can augment resources by advance knowledge".

Denison (1967) had argued that the increased in Gross Domestic Product (per capita) of a state or country is the result of the improvement of the skills, knowledge and competences of a population. He had emphasized that human capital is the necessary input for economic growth and it provides the direct benefits to the individuals as well as it also provides positive externalities in the economy to create a skilled population in one hand and build up to make ready for democratic participation leading to make good policy for the governments, social cohesion, and better health etc.

Aronsson, T. (1996) in his theoretical work of Social Accounting and Welfare Measurement in his growth Model had found that human capital is the important factor for determining the social justification and welfare of an economy. He had opined that social accounting and welfare measurement in an economy needs human capital.

Weitzman, M. L. (1976), had made a scientific research to find out the crucial factors for welfare measurement through Net National Product (NNP). He had highlighted that in a perfect foresight inter temporal economy with a stationary technology and perfect competition, he had observed that NNP is directly proportional to the present value of upcoming utilities. His study result implies that welfare can be measured from different variables that are observable or recoverable at the time when the measurement is conducted.

Scope and Significance of the study:

The state of Assam has multi-ethnic groups of population living together. Assam has the rank of 14th in size of population among the 35 states of India. For high growth

population state the education is an important social indicator for reducing inequality in the society. It helps the individual to raise its social status in various ways. Knowledge, skill, values and attitude one acquired through education. It helps one lead to a better quality of life. Beyond being basic need, education especially vocational, technical, professional is necessary for job placement and hence acquiring a higher social status. It thus acts as a catalyst in improving in many other aspects of life. However, the literacy plays a major role to develop a nation. It spreads awareness among the people and provides good employment opportunities. If literacy rate is high in a nation then there will be more number of entrepreneurs and flow of money will be huge and it finally puts a great impact on nation's economy. The total literacy rate in the state of Assam has increased from 52.89 percent in 1991 to 63.25 percent in 2001, and further it has increased to 73.18 percent in 2011. Moreover, it is the matter of question for the government, policy makers and researchers that whether increasing literacy rate in the state of Assam has direct relations with changed economic development or not. Therefore, it is an important and interesting topic of study in the recent time. It has generated a wide academic interest among the scholars and economists of our period.

III RESEARCH METHODOLOGY

The present work is mainly based on primary and secondary sources of information covering the three districts of Assam namely- **Lakhimpur, Dhemaji and Sonitpur**. The primary data are collected through **multi-stage random sampling** of the districts. Each district are stratified into development blocks which are also further stratified into villages. All total six development blocks are randomly selected two from each districts and in the next phase, 30 villages (5 from each block) are randomly selected from 6 blocks. From these 30 sample villages in the six development blocks, households are selected on the basis of proportionate sampling method. In all the 30 villages, 10 percent of the total households are randomly selected for our study.

Apart from that, to supplement the primary data, secondary data and information were collected from various sources like the official reports of the central and state governments, statistical handbooks of Assam and district statistical hand books, etc. Some other sources such as published books, unpublished research works, newspapers, and articles in different journals etc. are also explored for the said purpose. Information's available from various websites are also used to precede the study. The collected data are scrutinized, organized and tabulated as per the set objectives of the study. Appropriate statistical tools have been used for data analysis and interpretation.

Objectives of the study:

The present study has been shadowed custody in the following objectives-

- To estimate and analyse the stock of human capital in the state of Assamand sample districts during 1991 - 2011.
- To examine the relationship between human capital and economic development in Assam during the same period.

Hypotheses of the study:

In view of the above objectives, this study sets the following hypotheses-

H_1: The size and structure of Human capital has not been affected much in the state of Assam and sample districts during the study period.

H_2: The stock of human capital has not affected in per-capita income generation and economic development significantly in the state of Assam and sample districts during the study period.

Indicators of the study:

The development of a society is reflected in its level of literacy and attainment of education. So, to estimate the stock of human capital, the trend of literacy rate is considered as a prime indicator. The concept of literacy in this study is 'the ability to both read and write any language. In every census, this definition is recognized as indicator by the Indian Government to measure the human capital. So to estimate the stock of human capital the percentage of literacy in Assam and sample districts, growth of literacy in male, females, growth of literacy in rural-urban, stock of literacy rate among SC and ST, stocks of teachers and their growth, enrolment of doctors and engineers, enrolment of students in various higher education institutions and the stock of doctors and other medical staff are taken as indictors in this study.

IV RESULT AND DISCUSSION:

Stock and Growth of Literacy Rate in Assam and sample districts:

The table-1.1 shows the growth of literacy rate in Assam and its sample districts with their ranks from 1991-2011.

It is revealed from the table-1.1 that the decadal percentage variation of literacy rate in all the sample districts shows the insignificant result as compared to state and national level excluding the sample district of Lakhimpur. The literacy rate in Lakhimpur district has been increased from 58.96 percent in 1991 to 68.56 percent in 2001 and further it has increased to 78.39 percent in 2011. It is also evident from the table that although the literacy rate increases in the sample district of Lakhimpur to the state and all India level but the overall rank has been declining from 7th to 8thposition during the same decade as compared to other 27 districts of Assam. It is also revealed from the table that Assam ranks sixteenth in the case of literacy among all the states of India. As per available census statistics reported that the literacy rate

in Assam has increased from 52.98 percent in 1991 to 63.25 percent in 2001 and further it has increased to 73.18 percent in 2011.Although the literacy rate in the state of Assam shows the increasing trend but which is also lower than national average and the overall rank has been declining from 24th to 26th position among the states of India in 2001 to 2011. (Economic Survey Assam 2001 and 2011-12p-9)

Growth of Literacy Rate in Assam and sample districts from 1991-11:

The table-1.2 shows the growth of Literacy rate both for male and female in Assam and sample districts from 1991-11.

The table table-1.2a shows growth of Literacy Rate on the basis of Gender in Last 3 Decades in Assam and India from 1991-11

It is evident from the table-1.2 that the coefficient of variation of literacy rate between male and female is quite high in Dhemaji district i.e., 0.08 for males and 0.20 for females during the last three census decades, but these variation is quite lower than the all India level i.e., 0.12 for males and 0.25 for females. The table-1.2 and 1.2a also shows that the gap between male and female is gradually decline towards the census year 2011. It indicates the equal rate of development all over the three sample districts of Assam.

It is also evident from the table-1.2a that the literacy rate of the state is 73.18 percent an increase of about 9 percent over the last 10 years. Similarly, male literacy has increased from 71.93 percent in 2001 to 78.81 percent in 2011, while the female literacy has increased from 56.03 percent in 2001 to 67.27 percent in 2011 showing a significant increase of about 11 percent.

The table-1.3 shows the growth of urban and rural literacy rate in Assam and sample districts.

It is revealed from the table-1.3 that the percentage of literacy rates in rural area in the study districts of Lakhimpur and Dhemaji are higher than the state and national level during the last two decades. The literacy rate in rural area has increased from 27.9 percent in 1991 to 67.62 percent in 2001 in Lakhimpur district, 22.5 percent to 55.15 percent in Sonitpur district and 28.1 percent to 63.19 percent in Dhemaji district whereas it has increased from 25.2 percent to 59.73 percent in the state of Assam during the same decades. It is also revealed from the table that in Sonitpur district the percentage of increases in rural literacy rate i.e., (145.11 percent) from 1991 to 2001 which was higher than the other sample districts as well as state (137.02%) and National Average (112.90%). Similarly, the percentage growth in urban literacy rate (53.56%) was also higher than the national (33.38%) and state level (46.38%) during the same decades.

Literacy Rate among the SC and ST population in Assam and Sample Districts:

The table-1.4 shows the stock of Literacy Rate among the SC and ST population in Assam and Sample Districts in 2001

It is evident from the table-1.4 that the percentage of literacy rate in SC and ST population in Lakhimpur district was 69.65% and 62.48% in 2001 whereas 69.29% and 54.96% in Sonitpur district and 57.62% and 59.99% in Dhemaji district during the same year. It is also revealed from the table that the literacy rate among the SC and ST in Lakhimpur district was higher than the Sonitpur and Dhemaji and which is also higher than the state level. In case of literacy rate in SC, Lakhimpur district occupied rank 8th followed by Sonitpur district rank 9th and Dhemaji District 23rd position out of 27 district in Assam, whereas for ST, Lakhimpur district 14th, Dhemaji 18th and Sonitpur 20 position respectively.

No. of Teachers in Various Schools and Colleges in Assam and Sample Districts :

The table-1.5 shows the stock and Growth of Teachers Enrolment in Various Schools and Colleges in Assam and Sample Districts from 2001-2011

It is revealed from the table-1.5 that the teacher's enrolment in the sample district in high, higher secondary and junior college was insignificant during the last two decades excluding the teacher's enrolment in high schools level in Lakhimpur district. It also evident from the table that teacher's enrolment in various schools was shows unsatisfactory result during the decades 2001 to 2011. The percentage growth of teacher's enrolment in the state of Assam in primary schools and higher secondary schools was negative i.e., -6.05 % and -14.61% during year 2011 over 2001.

The table-1.6 shows the stock and growth of Female teacher's enrolment in various schools and Colleges in Assam and Sample Districts from 2001 to 2011.

It is revealed from the table-1.6 that the percentage growth of female teachers enrolment in middle, High, higher secondary and junior college levels in Dhemaji district was found to be insignificant as compared to Lakhimpur and Sonitpur districts. The highest enrolment in female teachers was found in high schools (197.63%) and primary schools (85.63%) in Lakhimpur district whereas -2.57% and 7.26% in Sonitpur district for the same respectively.

Progress of Student enrolment in Medicine and Engineer courses in Assam from 2000-01 to 2009-10:

The table-1.7 shows the Progress of Student enrolment in Doctors and Engineer courses in Assam from 2000-01 to 2009-10.

Table-1.7 and fig-1.1 shows that the number of student's getting admission in doctoral course had been reducing from 2556 in 2007-08 to 1026 in 2009-10 while

the number of student's getting admission inB.E (Engineering) had increasing from 3810 to 5132 during the same year.

Growth of student's enrolment at various levels of higher education in Assam:

The table-1.8 shows the growth of student enrolment in other higher courses in Assam from 2003-04 to 2010-11

It is revealed from the table-1.8 and fig-1.2 that student enrolment in various courses of higher studies such as M.A, M. Phil/Ph.D, M.Sc, M.Com, B.A, B.Sc, and B.Com in the state of Assam was shows marginally increased during the year 2003-04 to 2010-11.

Stock of Doctors and other medical Staff in Assam:

The table-1.9 shows the stock of doctors and other medical Staff in Assam till 2010.

It is revealed from the table-1.9 that the state of Assam has the 2423 Number of MBBS doctors and 1400 special doctors till the year 2010. Out of 2423 doctors' 1031 number of doctors are appointed under National Rural Health Mission by the government.

The table-1.10 shows distribution of Literacy According to Level of Education among the Surveyed Households in Sample districts of Assam, 2016-17

It is observed from the table-1.10 that for all the three districts combined together, 39.22 per cent of total literate population was educated upto the primary level, 16.32 per cent studied upto the middle school level and 16.56 per cent of the literates studied upto the secondary level and less than 4 per cent are found illiterate. It is also observed that 11.49 per cent of the literates pursued their education upto the higher secondary level, 10.46 percent were graduates and only 1.50 percent was post-graduate. It was observed during the course of the survey that the people in the surveyed household preferred the private schools as compared to the govt. schools upto class ten. Less than 2 percent of the literates were professional degree holders. They included MBBS (1), homeopathic physician (1), nurses (5), pharmacist (3) Advocates (3) and executive engineer (2) etc.

The figure1.3 represents the number of various training holders during the last three decades 1991-2011.

The figure-1.4 represents number of Medical training holders in sample districts of Assam during 1991-2011

The figure -1.5 represents number of Agriculture training holders in sample districts of Assam during 1991-2011

The figure-1.6 represents number of Industrial training holders in sample districts of Assam during 1991-2011

It is evident from the figure-1.3, 1.4, 1.5 and 1.6 that the number of various training holders in sample districts of Assam has been marginally increasing during the last three decades 1991-2011. The number of teachers training holders in Lakhimpur district was marginally higher than the Sonitpur and Dhemaji during the last two decades. The similar trend was also found in case of agriculture and industry after the year 2001. During the course of survey it was also observed that the number of medical training holders in Sonitpur district was higher as compared to Lakhimpur and Dhemaji. There are 10 number of ASHA workers, 4 pharmacist, 7 Nurse, 1 MBBS doctor and 1 MPW workers are found in the respondent households of the Sonitpur during the time of survey.

Therefore, the first null hypothesis outline in this paper is that-**"the size and structure of human capital has not been affected much in the state of Assam and sample districts during the study period"** is **rejected.**

Human Capital and Economic Development :

Economic development is a process of change plus growth in a particular region. A change can be achieved through human capital formation such as education, training, health care etc., and cultural development whereas growth is the return for this services or ultimate result in it. A number of researchers and economists have conducted several studies about the relationship between human capital and economic development based on certain parameters. The present researcher assesses the status of economic development by examining the various sectors such as the growth of the production in agriculture, industry, and education. The growth of workers in the study periods and the number of employment are taken as an indicator.

Growth of productivity Index of Agriculture for food and non-food grains in Assam:

The land in Assam is quite suitable for the production of Agriculture. The major portion of the total cropped area, e.i., and 80.2 percent in 2000-01 is being utilized for the production of agriculture food grains in Assam. The various types of food grains produced in Assam includes rice, wheat, maize, other cereals and pulses.(The economy of Assam, Dr. PK Dhar^{p-129}). The table-1.11 and figure 1.7 reveals the trend in agriculture production in the state of Assam as well as in all India level as a whole which reflects the movement of the index of agriculture production for the last few years.

From the available statistics revealed from the table-1.10 and figure-1.7 that the index of agricultural production (base triennium ending 1981-82=100) for the state has been showing a steady upward trend over the last couple of years from 138 in 1990-91 to 166 in 2003-04 for all commodities and again it was declined from 153 in 2004-05 to 142 in 2006-07 and then further increased to 201 in 2010-11 respectively.

For searching the reasons for declining the agriculture products during this period it was found that due to the advent of natural calamity like flood, siltation and soil erosion etc, leads to decrease in the agricultural production. According to the *Potential Linked Credit Plan (PLP)* (2006-07) reported that due to the occurrence of floods during April-to August, which adversely affected the cropped area under cultivable land. It is also observed from the table that the index of agriculture production in the state of Assam was lower than the all India level for the last couple of the year but after 2009-10 it was higher than the all India level.

However, the annual growth of percentage change over the previous year for the production of all commodities in Assam was higher than the all India level for the last few years. During the year 2008-09 annual percentage growth in Assam was 11.1 percent as against -6.7 percent in all India level. Similarly, the percentage change over the previous year for the production of all commodities in Assam which was 9.4 percent in 2009-10 gradually declined to 8.0 percent in 2010-11 whereas in all India level registered a decline of -6.7percent to -0.5 percent during the same decades. Thus, it is observed that the pattern of change in the index of agricultural production in Assam is not uniform that of all India level.

The fig-1.8 shows the growth of agriculture to the contribution of Gross State Domestic Products in Assam from 2005-06 to 2010-11.

It is observed from the figure-1.8 that the contribution of agriculture sector to the state economy that is GSDP at constant (2004-05) prices has been gradually declining during the period 2005-06 to 2008-09. But after the period 2008-09 the contribution of GSDP for annual growth of agriculture increases from 5.9 percent in 2009-10 to 7.5 percent in 2010-11 respectively.

Growth of Industrial production and Employment in Assam:

The SSI sector have also played a vital contribution in employment generation, and fulfilment of socio-economic development of Assam. The average number of production and average number of employment per unit of MSME shows a positive trend during the last ten years.

The table-1.12 and figure-1.9 shows the growth of production and their employment during the last ten years.

The figure 1.10 represents average number of employment MSME per unit in Assam

It is revealed from the table-1.12 and figure-1.9 that average number of production in per units of MSME in Assam reflects gradually increasing. The average number of production per unit have been increased from 6.33 lakh in 2001-02 to 26.43 lakhs in 2007-08 and then 34.84 lakhs in 2009-10. However, from the figure-1.10 it is found that the average number of employment per units of MSME in Assam also shows

significant result. The average number of employment per unit of MSME increases from 4.6 persons in 2001-02 to 6.2 persons in 2007-08 and then 7.6 persons in 2009-10 respectively. Thus, the average number of productivity and their employment per units of MSMEs in Assam shows the positive contribution towards economic development.

Relationship between Literacy Rate and Per Capita Income in Assam and Sample Districts:

According to Meir (1984) 'Economic development is a process, where by real per capita income of a country increases over a long period of time'. Michael P. Todardo (1977) stated that, "Development must therefore be conceived of as a multidimensional process, involving major changes in social structures popular attitudes and national institutions as well as the acceleration of economic growth, the reduction of inequality and the eradication of absolute poverty." It is believed that the spread of education have greater impact on the aggregate earnings of the people in the state as well as in the studies districts. Educational attainment and lifetime earning determine individual's earning capacity. Higher education has more scope to earn more income. Spatial spread of literacy is a factor for increasing per–capita income. In the present analysis, it is our endeavour to identify the degree of association between the literacy rate and state income and sample districts. The required data are presented in the table and co-efficient of correlation between these two variables with probable error, co-efficient of determination and coefficients of non-determination are also estimated.

The table 1.13 represents Relationship between Literacy Rate and PCI from 1991-2011 in Assam and Sample districts

The finding r =0.949 or r^2=0.900 in Lakhimpur, r =0.988* or r^2=0.976 in Dhemaji and r =0.991* orr^2=0.982 in Sonitpur districts have been revealed that 1% increase in higher, technical and vocational education literate people will have the probability of having increase the per-capita income by 98.2% in Sonitpur district followed by 97.6% in Dhemaji and 90% in Lakhimpur districts whereas in Assam 94.2%respectively. The value of r>6×P.E(r) therefore coefficient of correlation (r) between the two variables are significant.

The table 1.14 represents relationship between Literacy Rate and PCI from 1991-2011 in India

In the state of Assam the finding r=0.971 and coefficient of determination (r^2=0.942) reveals that 94.2% increase in per-capita income will have dependable on the probability of having the increase in 1% of higher, technical and vocational education literate peoples and coefficient of non-determination (k^2) =0.058 indicates that 5.8% depends on other variables. Similarly, in India 82.4% increase in per-capita income will have dependable on the probability of having the increase in 1% of technical, higher and vocational education literate peoples and coefficient of non-

determination (k^2)=0.176 indicates that 17.6% depends on other variables. The value of r> 6×P.E(r) indicates that the value of (r) is significant. Therefore there is a positive and high co-relation between technical, higher and vocational education and state per-capita income.The estimated result shows that the people's education is found to be significant and it has influenced positively on the increase in per-Capita income. It can be inferred that with every thousand increase technical, higher and vocational literate people will increase the probability of having Per-Capita income. Therefore, the second null hypothesis as outlined in this paper i.e., **"The human capital has not affected in per-capita income generation and economic development significantly in the state of Assam and sample districts during the study period"** is **rejected**.

V CONCLUSION:

The state of Assam is one of the economically backward states in India, suffering from various socio-economic problems. To overcome these problems the contribution of human capital is very much essential. Human capital is the active agent who accumulates and redistributes the skills and knowledge to the public through providing education and training which will enhance the society as well as the whole economy. It plays a premium mobile role in promoting industrial and economic development of an economy. Therefore, the stock of human capital is very much essential for economic development it not only increase the Gross Domestic Product or State Domestic Product, per-capita income, infrastructure development and it also tends to reduce the intra-regional or intra-personal inequalities which will make the people better economic gain in one side and also make the people better standard of living. In this direction we can say that human capital are the 'Spark Plug' who transform the economic extract of an economy. The confluence of rapid technical change, globalisation and economic liberalisation in recent years has promoted governments in developed and developing countries alike to prioritise skills development as key strategy for economic competitiveness and growth. Therefore, the demand for human capital in the global market has been increasing rapidly. So, the development of human capital is very much essential. The govt. must provide adequate support and facilities in education, health, agriculture and industry sectors through creating and improving different infrastructure like road, health, electricity, irrigation, transportation etc. to ensure the all-round development of education and better household income and living standard in specific and achieving economic development in the state of Assam in general and the sample districts in particular.

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List of Tables

Table-1.1: Growth of Literacy Rate in Assam and its sample districts with their ranks from 1991-2011

Year	Sample Districts						Assam	*Ranks	India
	Lakhimpur	*Ranks	Sonitpur	*Ranks	Dhemaji	*Ranks			
1991	58.96	5	48.14	15	53.84	11	52.89	16	52.20
2001	68.56	7	59.07	17	64.48	12	63.25	24	64.80
2011	78.39	8	69.96	18	69.07	20	73.18	26	74.04

Source: Census of India

Table-1.2: Growth of Literacy Rate on the basis of Gender in Last 3 Decades in sample districts of Assam from 1991-11

Year	Sonitpur			Lakhimpur			Dhemaji		
	M/F	Male	Fema	M/F	Male	Femal	M/F	Male	Femal
1991	48.14	56.7	36.6	58.96	68.28	48.85	53.84	65.43	41.12
2001	59.07	67.64	52.43	68.56	78.26	60.47	64.48	75.15	56.11
2011	69.96	76.98	62.53	78.39	84.66	71.91	69.07	75.66	62.13
Range	21.82	20.28	25.93	19.43	16.38	23.06	15.23	10.23	21.01
* Std. Dev.	10.91	10.15	13.07	9.72	8.26	11.53	7.81	5.76	10.82
* Mean	59.06	67.11	50.52	68.64	77.07	60.41	62.46	72.08	53.12
Variance (σ^2)	119.03	103.03	170.82	94.38	68.14	132.9	61.03	33.23	117.06
* C.V.	0.18	0.15	0.26	0.14	0.11	0.19	0.13	0.08	0.20

Source: Census of India *column calculated by author.

Table-1.2a: Growth of Literacy Rate on the basis of Gender in Last 3 Decades in Assam and India from 1991-11

Year	Assam			India		
	M/F	Male	Female	M/F	Male	Female
1991	52.89	61.87	43.03	52.20	64.13	39.28
2001	63.25	71.93	56.03	64.8	75.3	53.3
2011	73.18	78.81	67.27	74.04	82.14	65.46
*Range	20.29	16.94	24.24	21.84	18.01	26.18
* Std. Dev.	10.14	8.52	12.13	10.96	9.09	13.10
* Mean	63.10	70.87	55.44	63.68	73.85	52.68
Variance (σ^2)	102.9	72.5	147.15	120.2	82.6	171.6
* C.V	0.16	0.12	0.21	0.17	0.12	0.25

Source-Census of India *column calculated by author.

Table-1.3: Urban and Rural Literacy rate in Assam and sample districts from 1991-2001

Year	Lakhimpur		Sonitpur		Dhemaji		All Assam		All India	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
1991	27.9	57.3	22.5	58.3	28.1	NA	25.2	58.3	27.9	60.2
2001	67.62	79.84	55.15	89.58	63.19	81.52	59.73	85.34	59.40	80.3
**	142.36	39.33	145.11	53.65	124.87	-	137.02	46.38	112.90	33.38

Source: Census of India, RGI ** % increase in 2001 over 1991calculated by author

Table-1.4: Literacy Rate among the SC and ST populations in Assam and sample districts

Districts	2001								Combi-ned
	SC			*Rank	ST			*Rank	
	Male	Female	Total		Male	Female	Total		Total
Lakhimpur	80.12	58.71	69.65	8	73.37	51.22	62.48	14	66.06
Sonitpur	78.31	59.61	69.29	9	64.47	44.99	54.96	20	62.12
Dhemaji	69.29	44.86	57.62	23	70.70	48.79	59.99	18	58.80
All Assam	75.74	57.14	66.78		72.34	52.44	62.52		64.65

Source: Statistical Handbook of Assam, 2003,* column calculated by Author.

Table-1.5: No. of Teachers in Various Schools and Colleges in Assam and Sample Districts from 2001-2011

Institutes	Lakhimpur		*% Growth	Sonitpur		*% Growth	Dhemaji		*% Growth	All Assam		*% Growth
	2001 Total	2011 Total		2001 Total	2011 Total		2001 Total	2011 Total		2001 Total	2011 Total	
Primary	3907	4925	26.05	3908	4038	3.33	2174	2189	6.89	86810	81554	-6.05
Middle	3979	7900	98.54	1964	4196	113.64	1766	4005	126.78	57059	100477	76.09
High School	1672	4193	150.77	2302	1906	-17.20	2726	2079	-23.73	45503	63175	38.83
Higher Secondary	1045	600	-42.58	1056	432	-59.09	807	189	-76.57	19143	16346	-14.61
Junior College	76	175	130.26	90	90	00	79	56	-29.11	1166	2913	149.82

Source: Statistical Handbook of Assam, 2001p-197 and 2011p-250 * column calculated by Author.

Table-1.6: No. of Female Teachers in Various Schools and Colleges in Assam and Sample Districts

Institutes	Lakhimpur		%* Growth	Sonitpur		%* Growth	Dhemaji		%* Growth	All Assam		%* Growth
	2001 F	2011 F		2001 F	2011 F		2001 F	2011 F		2001 F	2011 F	
Primary	1065	1977	85.63	1212	1300	7.26	608	841	38.32	25777	30340	17.70
Middle	407	609	49.63	316	426	34.81	738	237	-67.88	11621	9805	-15.63
High School	422	1256	197.63	506	493	-2.57	661	499	-24.50	11921	16809	41.00
Higher Secondary	269	197	-26.76	191	210	9.95	194	31	-84.02	5101	5451	6.86
Junior College	24	60	150	29	30	3.45	25	16	-36	368	992	169.56

Source: Statistical Handbook of Assam, 2001p-197 and 2011p-250 * column calculated by Author.

Table-1.7: Progress of Student's enrolment in Professional courses in Assam

Course	2000-01	2003-04	2007-08	2008-09	2009-10
Medicine	2415	2556	2556	1026	1026
B.E (Engineering)	3457	3810	3810	2998	5132
LLB	7165	7165	7177	7243	7253

Source: Statistical Handbooks of Assam, 2001p-1922005p-1902009p-2682010p-278,2011p-266

Table-1.8: Growth of student's enrolment in General courses in Assam

Course	2003-04	2007-08	2008-09	2009-10	2010-11
Ph.D/M.Phil	752	751	779	1207	1213
M.A	7531	7535	7587	7945	7960
M.Sc	3994	3995	4028	4165	4190
M.Com	1094	1095	1109	1271	1273
B.A	144605	144492	145572	148431	148485
B.Sc	31507	31509	31542	32388	32396
B.Com	16696	16590	16708	16825	16829

Source: Statistical Handbooks of Assam, 2001p-1922005p-1902009p-2682010p-278,2011p-2662012p-266

Table-1.9: Stock of Doctors and other medical Staff in Assam up to 2010

Post	Government	NRHM	Total
MBBS Doctors	1392	1031	2423
Special Doctors	1137	263	1400
Ayurvedic Doctors	322	252	574
Dental Surgeon	44	45	89
Homeopathic Doctors	61	0	61
MBBS Doctors for 1 year Rural posting	0	808	808
ANM	5672	4212	9884
GNM	1866	2406	4272
Pharmacists	12637	194	12831
Lab. Technician	1107	498	1605
Radiographer	0	39	145

Source-Statistical Handbook of Assam, 2011p-234

Table-1.10: Distribution of Literacy According to Level of Education among the Surveyed Households in Sample districts of Assam, 2016-17

Level of Education	Lakhimpur			Sonitpur			Dhemaji			Combined		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Illiterates	10 (3.13)	7 (3.76)	17 (3.36)	5 (1.75)	6 (4.41)	11 (2.61)	5 (2.08)	8 (8.42)	13 (3.88)	20 (2.37)	21 (5.04)	41 (3.24)
Up to primary	110 (34.37)	45 (24.19)	155 (30.63)	125 (43.86)	50 (36.76)	175 (41.56)	135 (56.25)	30 (31.57)	165 (49.25)	370 (43.78)	125 (29.97)	495 (39.22)
Middle	55 (17.18)	25 (13.44)	80 (15.81)	45 (15.78)	24 (17.64)	69 (16.38)	35 (14.58)	22 (23.15)	57 (17.01)	135 (15.97)	71 (17.02)	206 (16.32)
High	70	40	110	40	24	64	25	10	35	135	74	209

	(21.87)	(21.50)	(21.73)	(14.03)	(17.64)	(15.20)	(10.41)	(10.52)	(10.44)	(15.97)	(17.74)	(16.56)
Higher Secondary	40 (12.5)	30 (16.13)	70 (13.83)	30 (10.52)	15 (11.03)	45 (10.69)	20 (8.33)	10 (10.53)	30 (8.96)	90 (10.65)	55 (13.19)	145 (11.49)
Graduation	25 (7.81)	33 (17.74)	58 (11.46)	34 (11.92)	13 (9.56)	47 (11.16)	15 (6.25)	12 (12.63)	27 (8.05)	74 (8.75)	58 (13.91)	132 (10.46)
PG	5 (1.56)	4 (2.15)	9 (1.78)	3 (1.05)	2 (1.47)	5 (1.18)	3 (1.25)	2 (2.11)	5 (1.49)	11 (1.30)	8 (1.91)	19 (1.50)
professional	5 (1.56)	2 (1.07)	7 (1.38)	3 (1.05)	2 (1.47)	5 (1.19)	2 (0.83)	1 (1.05)	3 (0.89)	10 (1.18)	5 (1.19)	15 (1.19)
Total	320	186	506	285	136	421	240	95	335	845	417	1262

Source: From field survey

Table-1.11: Growth of productivity Index for food and non-food grains in Assam and India from 1991-2011

Year	Assam			India			*% change over the previous year all commodities	
	Food Grains Assam	Non-Food Grains Assam	Assam All Commodities	Food Grains Assam	Non-Food Grains Assam	Assam All Commodities	Assam	India
1990-91	144	131	138	144	156	148	7.0	3.5
1991-92	142	143	142	138	159	146	2.9	-1.4
1992-93	144	142	143	144	164	152	0.7	4.1
1993-94	148	149	148	150	170	157	3.5	3.1
1994-95	146	154	150	156	181	165	1.4	5.1
1995-96	150	157	153	146	185	161	2.0	-2.4
1996-97	148	157	153	161	201	176	0.0	9.3
1997-98	149	161	155	156	183	165	3.3	8.7
1998-99	143	170	157	165	200	178	1.3	7.9
1999-00	168	163	166	170	189	177	5.7	-1.1
2000-01	174	162	168	161	178	167	1.2	-6.8
2001-02	169	160	164	172	186	177	-2.4	5.9
2002-03	164	166	165	140	166	156	0.6	-11.9
2003-04	170	162	166	172	201	183	0.6	17.3
2004-05	152	154	153	160	206	177	-7.8	-3.2
2005-06	155	148	153	169	230	192	0.0	8.4
2006-07	128	156	142	176	241	200	-7.1	4.1
2007-08	145	161	153	187	247	207	7.7	3.5
2008-09	174	167	170	190	221	193	11.1	-6.7
2009-10	192	180	186	177	206	180	9.4	-6.7
2010-11	218	184	201	172	164	179	8.0	-0.5

Source: Economic Survey Assam 2003-04p18and 2011-12p-53 * column calculated by author.

Table-1.12: Growth of Industrial production and Employment in Assam

Year	Production value (Rs. In Lakh)	Average Per unit production	No. Of Employment	Average No. Of employment per unit
2001-02	16013.81	6.33	11538	4.6
2002-03	16379.60	7.29	11115	4.9
2003-04	18976.90	8.03	11795	5.0
2004-05	19698.20	9.53	9396	4.5
2005-06	22940.86	11.02	10780	5.2
2006-07	25514.67	11.75	11852	5.5
2007-08	44720.97	26.43	10471	6.2
2008-09	49635.10	29.00	12914	7.5
2009-10	58456.80	34.84	12787	7.6

Source: From economic survey of Assam

Table-1.13: Relationship between Literacy Rate and PCI from 1991-2011 in Assam and Sample districts

Year	Sample Districts						All Assam	
	Lakhimpur District		Dhemaji District		Sonitpur District			
	Literacy Rate	Price#	Literacy Rate	Price#	Literacy Rate	Price#	Literacy Rate	Price#
1991	58.96	1538	53.84	1432	48.14	1545	52.89	1524
2001	68.56	10158	64.48	9123	59.07	11105	63.25	10198
2011	78.39	12560	69.07	15097	69.96	17041	73.18	30569
Mean ($\overline{x}$)	68.64	8085.33	62.46	8550.67	59.06	9897.00	63.11	14097.0
Std. Dev.(σ)	9.72	5795.95	7.81	6850.45	10.91	7818.31	10.15	14909.89
C.V	14.150	71.68	12.51	80.11	18.47	79.00	16.08	105.77
r	r =0.949		r =0.988*		r =0.991*		r =0.971	
(Probable Error) $P.E_{(r)}$	Probable Error of Coefficient of Correlation $P.E_{(r)}$=0.0387		Probable Error of Coefficient of Correlation $P.E_{(r)}$=0.0093		Probable Error of Coefficient of Correlation $P.E_{(r)}$=0.0071		Probable Error of Coefficient of Correlation $P.E_{(r)}$=0.0226	
(r) Significant	*Correlation is significant at the 0.05 level (1-tailed).		*Correlation is significant at the 0.05 level (1-tailed).		*Correlation is significant at the 0.05 level (1-tailed).		*Correlation is significant at the 0.05 level (1-tailed).	
r^2	r^2=0.900		r^2=0.976		r^2=0.982		r^2=0.942	
Coefficient of Non-Determination (k^2)	k^2=0.1		k^2=0.024		k^2=0.018		k^2=0.058	

#PCI at Current Price (in Rs.)

Table-1.14: Relationship between Literacy Rate and PCI from 1991-2011 in India

Year	All Assam		All India	
	Literacy Rate	PCI at Current Price (in Rs.)	Literacy Rate	PCI at Current Price (in Rs.)
1991	52.89	1524	52.20	4983
2001	63.25	10198	64.80	14396
2011	73.18	30569	74.04	54527
Mean ($\overline{x}$)	63.1067	14097.000	63.6800	24635.3333
Std. Dev.(σ)	10.14576	14909.88454	10.96299	26311.30830
C.V	16.07715	105.76636	17.2157	106.8031351
r	r =0.971		r =0. 908	
(Probable Error) $P.E_{(r)}$	Probable Error of Coefficient of Correlation $P.E_{(r)}$=0.0226		Probable Error of Coefficient of Correlation $P.E_{(r)}$=0.0685	
(r)Significant	*Correlation is significant at the 0.05level (1-tailed).		*Correlation is significant at the 0.05 level (1-tailed).	
(r^2	r^2=0.942		r^2=0.824	
Coefficient of Non-Determination (k^2)	k^2=0.058		k^2=0.176	

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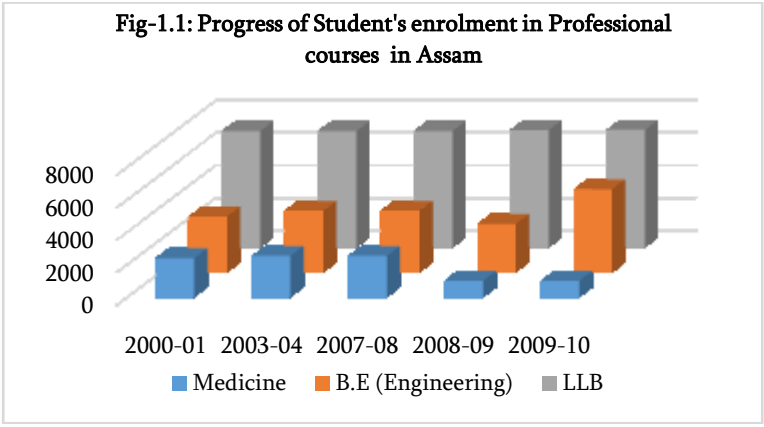
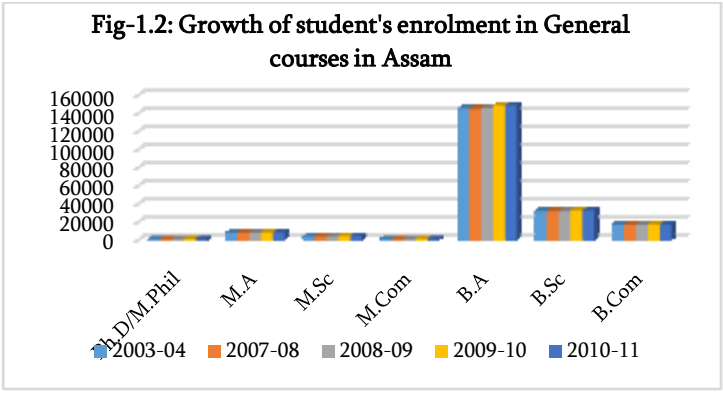
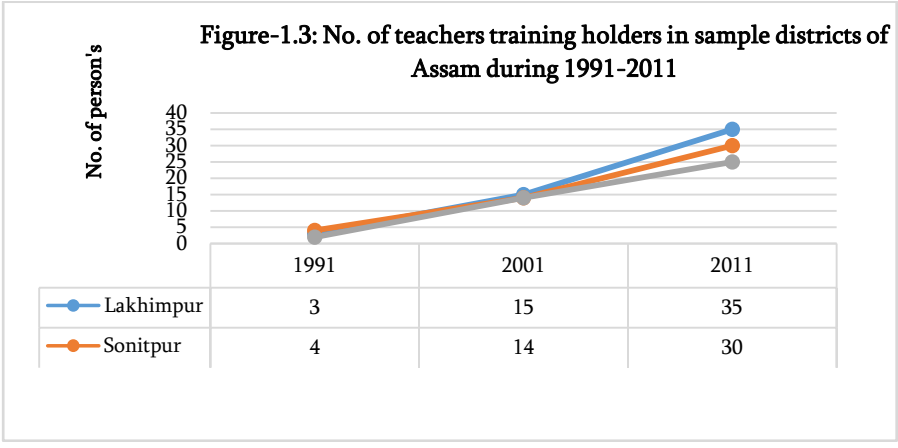
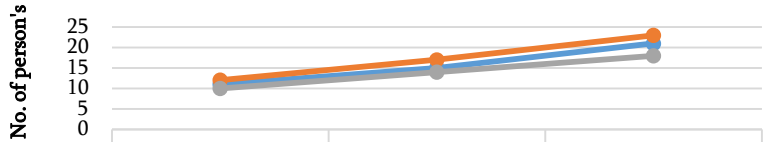






Source: From field survey

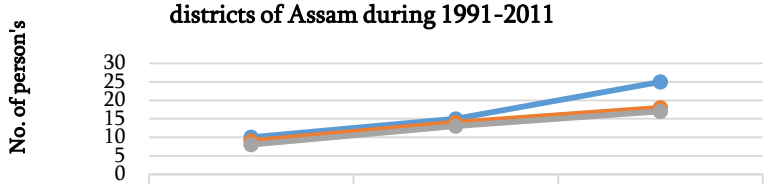
Figure-1.4: No. of Medical training holders in sample districts of Assam during 1991-2011



	1991	2001	2011
Lakhimpur	11	15	21
Sonitpur	12	17	23
Dhemaji	10	14	18

Source: From field survey

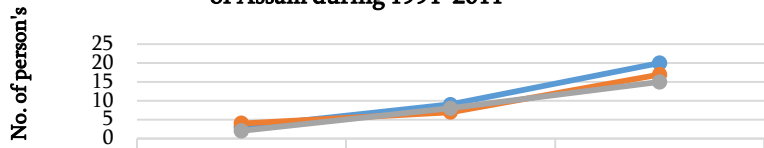
Figure-1.5: No. of Agriculture training holders in sample districts of Assam during 1991-2011



	1991	2001	2011
Lakhimpur	10	15	25
Sonitpur	9	14	18
Dhemaji	8	13	17

Source: From field survey

Figure-1.6: No. of Industrial training holders in sample districts of Assam during 1991-2011



	1991	2001	2011
Lakhimpur	3	9	20
Sonitpur	4	7	17
Dhemaji	2	8	15

Source: From field survey

Fig-1.7: Growth of Agriculture production Index in Assam and India for all Commodities from 1991-2011

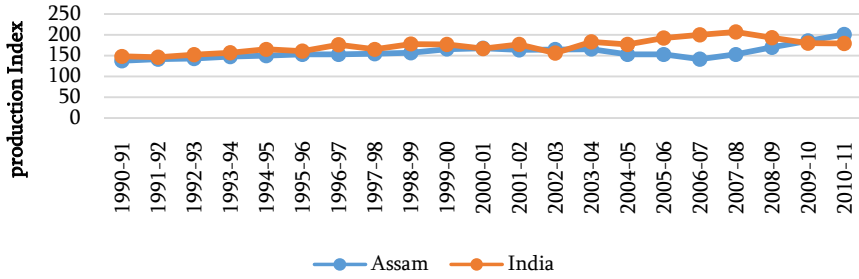
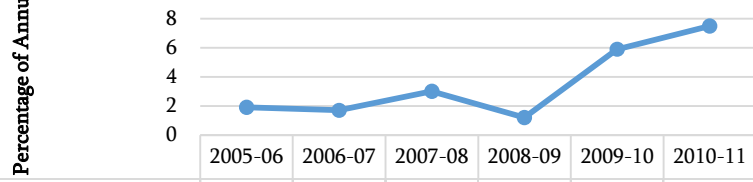


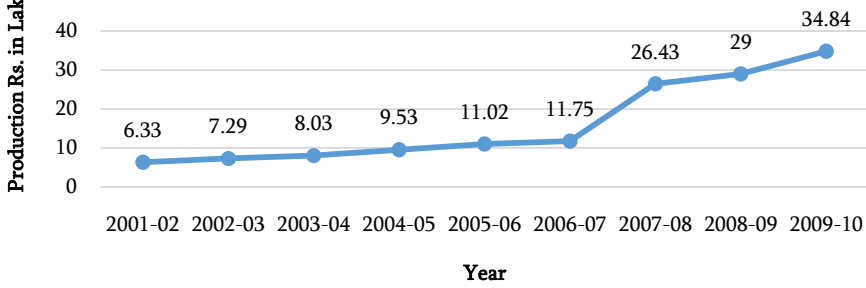
Fig-1.8: Growth of Agriculture to the Annual contribution of GSDP over the previous year in Assam



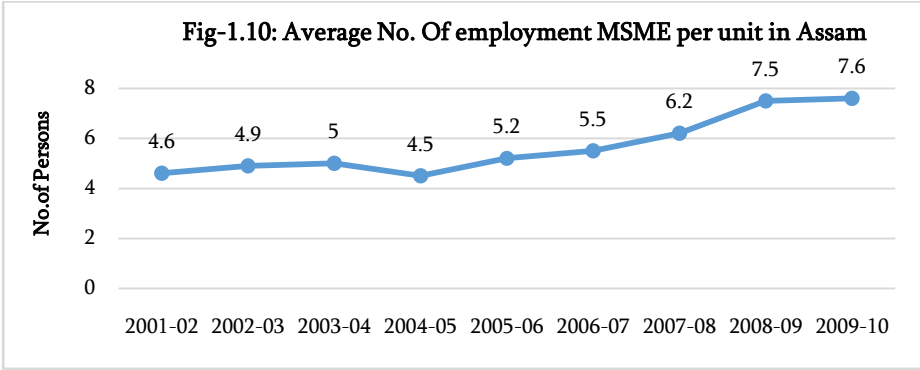
	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
Contribution of GSDP of Annual Growth over the previous Year	1.9	1.7	3	1.2	5.9	7.5

Source: From Economic Survey, Assam 2011-12[p-45]

Fig-1.9: Average Per unit production of MSME in Assam (Rs.in Lakh)



Source: From economic survey of Assam



Source: From economic survey of Assam

AUBOUT AUTHORS

Mr. Biren Saikia, M.A., & M.Phil (Economics) from Dibrugarh University, Assam. He is currently pursuing Ph.D. from North Eastern Regional Institute of Science and Technology (NERIST) Arunachal Pradesh. He has published 6 research papers in international and 4 papers in national journals. He has also published in 3 research papers in reputed ISBN books. He has presented many papers at national and international conferences. His doctoral research is to examine the relationship between human capital formation and economic development. He has been actively involved in research activities in the diverse area of social science since last five years.	
Dr. Sangeeta BorthakurTamuli, M. Sc., Ph.D. is presently working as a Senior Assistant Professor in the Department of Economics in Lakhimpur Commerce College, Assam, India. She has done her graduation from Cotton College, Guwahati, Assam and masters from Gauhati University, Guwahati, Assam. She completed her Ph.D. from Rajiv Gandhi University, Arunachal Pradesh. To her credit, she has published one book, "Eco-tourism in Assam- A Study of Travel Cost Methodology in Kaziranga National Park of Assam". She also edited one book "Women Empowerment in North-east India". Dr.BorthakurTamuli has published several research papers in various national and international journals and also presented many research papers in national and international seminars. Two M. Phill students have completed their degree under her supervision. She is the Coordinator of the Women Cell, Lakhmpur Commerce College. Her areas of interest are eco-tourism, environmental studies, women studies etc.