CHAPTER 1
INTRODUCTION
1.1 INTRODUCTION
Economics of education made a foray into mainstream economics since the 1960s. But the beginnings of the subject can be traced to a much earlier period. Adam Smith, Alfred Marshall and John Stuart Mill have all delved into the sphere of education as an investment (Woodhall, 1987). However, it was the pioneering work of T W Schultz and Gary S Becker, during the 1960s, in the area of human capital and its relevance to economics that intensified interest in economics of education. In subsequent periods, the world has seen substantial amount of important work related to the sphere of economics of education. The success of economists in the developed countries of the world like Australia, USA and UK in making economic analysis of education, as reflected by contemporary research studies carried out by National Centre for Vocational Education and Research (NCVER), UNESCO, World Bank et al, prompted the developing and underdeveloped countries of the world to venture into the field of economics of education. Education, being a primary need of the society, is vital to human capital development and requires a multi-disciplinary approach. The economists’ emphasis on “human capital” facilitated the entry of economics into the domain of education. The World Bank has given a great deal of emphasis on determining outcomes to educational investment as a way of enriching human capital. The relationship between education and economics has evolved through the ages. And, today, economics of education has made a successful penetration into mainstream economics.

Population quality can be viewed as being derived from two sources: genetic endowment and acquired abilities and education is a major source of acquired abilities (Schultz, 1987). The contribution of education to economics comes by way of its ability to increase human capabilities, thereby increasing their productivity, employability and income. The challenge of education in a dynamic economy is to equip the human resource with greater employability, versatility and adaptability. Skills education enables education to meet these challenges of a dynamic economy. Imparting vocational education is seen, as a way of restructuring the skill needs of the economy, making its population more employable, leading to their effective utilization. In this backdrop, Vocational Education has often been used as a pathway for enhancing those acquired abilities in human capital, which would make them more relevant to the dynamic world
of work. Investing in such an education would enrich human beings by infusing work skills in them that will positively impact their employability and income. Following Woodhall (1987) it may be maintained that like any other investment project, the investment in education and training is capable of measurement with the use of sophisticated methodologies that evaluate the returns to investing in it.

1.2 STATEMENT OF THE PROBLEM:
In India, the National Knowledge Commission (NKC, 2009) regards a skilled labour force as the backbone of India’s economy. The possession of skills that match employer’s needs will facilitate early entry of labour into employment terminals and thus expedite the development of the economy. Across the world economy, countries that have experienced a faster growth have been observed to be those with a sufficient skill base that is vital to the growth process in the country. But, a close look into the present economic infrastructure in the country reveals that only a fraction of the manpower possess the quality demanded by an economy aspiring to face global competition. The vast majority of the manpower is outturn of hundreds of educational and training institutes without the benefit of specific skills endowment. This is accentuated by the fact that most of the educated manpower acquires knowledge which is not compatible with the applicable skills demanded in the workplace. The quantitative and qualitative gap arising out of the existing system results in mismatch between the jobs that the education outturns aspire for and what the economy offers. This leaves a significant proportion of human resources in a state of un-utilisation or under-utilisation. The employability gap arising due to the unemployability of a majority of the labour force must be bridged if unemployment has to be erased from the economy.

Assam finds itself in a precarious position due to the inefficient utilisation of its human resource. The picture of unemployment in Assam as reflected by the Assam Development Report 2003 is as shown below:
Table 1.1 Unemployment Rate in Assam & India

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<thead>
<tr>
<th></th>
<th>1983</th>
<th></th>
<th>1999-2000</th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
<td>Persons</td>
<td>Men</td>
</tr>
<tr>
<td>Assam</td>
<td>2.2</td>
<td>2.4</td>
<td>2.2</td>
<td>3.7</td>
</tr>
<tr>
<td>All India</td>
<td>2.3</td>
<td>1.3</td>
<td>2.0</td>
<td>2.5</td>
</tr>
</tbody>
</table>

Source: GOA, 2003

Note:

\[
\text{Unemployment rate} = \frac{\text{Number of unemployed}}{\text{Labour force}} \times 100
\]

Thus, unemployment in Assam is a cause of great concern and its eradication poses the greatest challenge to the government and policymakers. Given this backdrop of unemployment in Assam, as shown by the Assam Development Report (Planning and Development Department, 2003), vocational education in Assam may be seen as a way of utilizing the human resources of the state by enhancing their employable skills, making them more relevant to the needs of the economy. In recent times, Assam’s economy has seen rapid structural changes in the midst of which the scope and nature of available employment has altered. Assam today is witness to an emerging industrial structure. The services sector in the state has also widened its horizon. But the diversification and growth of the industrial and services sector has been constrained by inadequate and quality available skills pre-requisite to these sectors. Given the structural nature of unemployment in Assam, the education system of Assam needs to equip its out-turns with specific skills that would make them responsive to the emerging needs of the economy and aid in their effective utilization.

The Tenth Five Year Plan, 2002-2007 (Planning Commission, 2002) asserts that secondary and higher secondary education are important terminal stages in the system of general education because these points influence youth decision to pursue higher education or enter the labour force. Policymakers have consistently recommended that education should be given vocational education at these stages. The Assam Chief Minister, in the 54th meeting of the National Development Council urged the Planning
Commission to help the state to set up institutions for skill development according to the needs and opportunities available in the state (Gogoi, 2007).

The Ministry Of Human Resource Development (Department of School Education and Literacy, 2012) maintains that the vocational education and training system in India develops human resources through a three-tier system

- Graduate and Post graduate level specialists trained as engineers and technologists
- Diploma Level graduates trained at Polytechnics as technicians and supervisors
- Certificate level higher secondary students in the vocational system and craft people trained in ITIs as well as through formal apprenticeships as semi skilled and skilled workers.

The National Knowledge Commission of India (2012) also indicates a three-way formal vocational education and training system in India, which is presented in the following table:

<table>
<thead>
<tr>
<th>Type of Source</th>
<th>Institute</th>
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<tbody>
<tr>
<td>Mainstream Education System</td>
<td>Centrally Sponsored Scheme of Vocational Secondary Education run by the Ministry of Human Resource Development</td>
</tr>
<tr>
<td>Training Institute outside the school and university systems</td>
<td>Industrial Training Institutes (ITI) and Industrial Training Centres (ITC) including public and private ITI and ITC</td>
</tr>
<tr>
<td>Diploma Level</td>
<td>Polytechnics</td>
</tr>
</tbody>
</table>

Presently, the state has the existence of these various sources of vocational education and training. Assam has schools, polytechnics, private vocational education providers and twenty-eight government sector ITIs that imparts vocational education in various courses. The state has also witnessed the emergence of a few career-oriented educational institutes in the private sector, catering to the emerging needs of the
students. Moreover, with the introduction of Vocational Education at the first-degree level by UGC from 1994-95, as a strategy for preparing the student community for meeting the challenges of a dynamic employment market, select colleges in Assam have also included the facilities for a vocational education. Various government departments have also tried to forge a pathway towards employment by imparting skills training to the people.

In recent times, as the concept of Vocational Education has evolved, the focus of vocational education has extended to diverse areas. The widening of the horizon of vocational education and the importance being given to it has helped in reducing some of the stigma attached to it, thus leading to an increase in private demand for vocational education. With the National Knowledge Commission of India considering vocational education to be an important element of the nation’s education initiative and acknowledging its role in human resource development, the concept of using vocational education in building human resources has become strengthened. This has kindled interest in investment in vocational education.

Investment in education can be viewed like any other form of investment, which generates a return to the investment made on it. Therefore, the economic evaluation of education becomes imperative. From economic perspectives, vocational education and training is always an investment in human resource and it pays to have a worthwhile return from such an investment. Thus, the economic analysis of vocational education in Assam in terms of the impact of the years of schooling of the vocationally qualified people on their earnings will help in reflecting the rate of return to vocational education in Assam and point to its viability as a strategy for effectively utilizing its human resources. The evaluation of the rate of return to vocational education will facilitate student decision regarding vocational education and government decision regarding allocation to vocational educational expenditures. Such decisions will impact human resource utilization. The aim of this research work is to calculate the average private rate of return to vocational education and thereby, to assess whether vocational education in the state can be used as a strategy for effectively utilizing its human resources. Empirical studies show extensive country-specific work being done on the
economic evaluation of different types of education in different parts of the globe and a few across different places in India. However, a review of contemporary literature has not unearthed the study of economic aspects of vocational education in Assam, especially using methodological tools.

Under these circumstances, given the existing educational structure of Assam and its human resource picture, a case study in Assam on using vocational education as a strategy for effective utilization of human resources will have relevance.

1.3 REVIEW OF LITERATURE
The unemployment scenario in Assam as revealed by the Assam Development Report 2003 (Planning and Development Department, 2003) and the sixty-first round of NSSO data on employment/unemployment (Directorate of Statistics and Economics, 2008) reflect a high incidence of unemployment in Assam vis-à-vis the all-India situation. The problem is largely structural in nature. Assam has witnessed a spurt in economic activities in recent times. Assam, too, has reaped the benefits of globalisation and liberalization regarding the proliferation of its secondary and services sector. The Planning and Development Department (2003) have identified a few emerging areas in the state which require specific skills adaptable to the changing technological and employment structure of the state. But the out-turns of its education system have not been able to adjust themselves to the changing situation, primarily due to lack of employable skills in them. This is substantiated by the existing empirical studies which articulate that there is an over-supply of non-technical graduates and post-graduates who, it is feared, will fail to find suitable work even when the state manages to attain a higher rate of growth (Barua, 2000). The gap between skills requirement and skills availability has also led to frictional unemployment in the state.

Agarwal (2006) puts forward the opinion that since higher education itself cannot create jobs, a mismatch between demand and supply of quality and number of graduates would lead to unemployed graduates. The harsh reality that he points out is a growing unemployment among graduates that co-exist with skill shortage in many areas. The crisis in the employment market arises today because of greater emphasis on general education. This is authenticated by Rao and Singh (2007) when they pinpoint to the gap
between the need of the employment terminals i.e. industry and the academic institutions. Through job-oriented courses, attempt is being made to develop skills likely to be demanded in job-situations (D'Souza, 2007). Reddy and Mythili (2007) maintain that the receiver of a program must be benefitted in winning their bread and butter through the skills they acquired or was provided by the university. A government of Assam report also reiterates that to generate employment and stimulate the economy, one pre-requisite is to kick start areas like manpower skills development which will aid in establishing long term viability and growth (Madhav, 2005). Manpower skills can be developed, to some extent, by extending vocational education among the mass youth.

In a growing economy, the shortage of skills in the country threatens to slow down the growth process. Sanyal (2005) points out that the emergence of new sectors has created skill shortages in specialized areas in the country. Pawar (2007) has also reflected on the acute shortage of manpower in emerging sectors of the country such as retail, banking, financial services and insurance industries. Continuing in the same vein, in the meeting of the National Development Council Assam’s Chief Minister has stressed upon introducing job-oriented subjects relevant to the employment market that would obliterate skills shortage (Gogoi, 2006). In this backdrop, vocational education is perceived to have an important role in closing the qualitative mismatch. Tilak (2007) reflects that the Asian experience has shown that vocational education contributes to economic growth and given this experience of many Asian countries, the government has to play a dominant role in supporting career-oriented education.

Vocational Education has been defined by United Nations Educational, Scientific and Cultural Organisation (UNESCO) as “a comprehensive term embracing those aspects of the educational process involving, in addition to general education, the study of technologies and related sciences and the acquisition of practical skills, attitudes, understandings and knowledge relating to occupation in the various sectors of economic and social life. Such an education would be an integral part of general education and a means of preparing for an occupational field as well as an aspect of continuing education” (Sharma and Sharma, 1996). UNESCO (2011) defines vocational education as an educational programme that is designed for learners to acquire knowledge, skills
and competitiveness specific for a particular occupation, trade or class of occupations or trades. It states that “successful completion of such programmes lead to labour market relevant vocational qualifications which are acknowledged as occupationally oriented by the relevant national authority and the labour market”. Vocational education is, thus, an asset for the economy by way of its contribution to preparation of the human resources for employment. Vocational Education and Training, also called “Career and Technical Education” prepares learners for careers that are based on manual or practical activities, traditionally non-economic and totally related to a specific trade, occupation or vocation, in which the learner participates (Wikipedia, accessed, 2007). The OECD (2011) also upholds the concept of “vocational education” as an employment enhancing skills education.

In recent times, the vocational education sector has been offering varied programmes to its students through different delivery mechanisms at different levels. There are different kinds of organisations that constitute the providers of this education system. UNESCO (2011) maintains that education providers are organisations associated with the provision of education and may be a public educational institution, a private enterprise, NGO or non-educational public body.

Stern (1988) in his paper reviews the public proposals of vocational education and these are postulated among others to increase the employment of under-represented groups in occupations to which they have been denied access. He views the process of matching people to jobs as a strategy for reducing frictional unemployment. The pathway to balancing skills, according to Stern, is scripted via the shift in employer’s demand for labour to the right caused by an increasing productivity brought about by skill acquisition. A survey conducted by Smith, Oczkoswi and Hill (2009) highlights the fact that employers require vocational qualifications for skill-related reasons and vocational education raise the demand for labour by employers and thus facilitate the utilization of human resources.

Evans and Herr (1978) reiterate that vocational education has the objectives of meeting societies’ needs for workers while at the same time opening options and motivating
students for different types of learning. They identified different pathways for acquiring vocational education but in the modern employment market situations, they do not uphold family-based informal learning systems as a satisfactory process of enhancing and disseminating learning. According to them, in the past, it was possible to attain full employment even with unskilled workers. But they believed that long-term trends point to the fact that if workers need to be in employment, they must prioritize on skill acquisition. In the same vein, they maintain that without work-preparedness, the workers would find it difficult to adjust to the open competitiveness of the employment market after they step out of the protected environs of their school. In the face of increasing unemployment, they regarded vocational education as a mitigating factor. However, Evans and Herr do maintain that if vocational education has to be relevant and make a significant contribution to the world of work, it has to break away from the shackles of obsolete instructional methods and irrelevant education content.

An H M Government (2011) report highlights that vocational education is one amongst those steps incorporated by the government in UK to combat the barriers to unemployment. It regards the low skills of the people as being a structural problem associated with unemployment and hence, prioritise on vocational education and training to enhance skills that would aid in increasing youth employment and competitiveness at the global economy. It has, in this context, also emphasized upon reforms in the vocational education sector that would prepare the youth to stand up against global recession tendencies in the employment market.

Contemporary research in the U.S shows skills shortage as threatening the American competitiveness and stresses that skills make or break worker employability and business productivity. In the U.S, in the final report on the “National Assessment of Vocational Education” submitted to the Congress, Silverberg et al (2004) has highlighted the objectives of post-secondary vocational education. According to them, vocational education has a clear objective of providing or improving job-related skills that would enable individuals to enter the labour market, to switch jobs or to advance in their current field. Another important fact highlighted in this report is that vocational education students are more likely to attain a credential that requires fewer years of
schooling. Richardson (2007) maintains that the normal operation of the market, though deal satisfactorily with some kind of shortages yet, will not cope well with the situation of few people with required skills who are not already using them. Acknowledging the long time required in acquisition of such skills, Richardson regards vocational education as being important in smoothening the gap between employer needs and skills availability.

Following in the footsteps of Sue Richardson, Woods (2007) maintain that the factors, which impact on the pathways to employment, include the level of vocational education and training that students undertake. Her findings point to the important role that vocational education and training plays in young people’s transition to work.

Richardson and Woods are amongst those who, in recent times, have conducted a lot of research pertaining to the vocational education system, as it stands in Australia while at the same time keeping their gaze fixed on the global situation. The National Centre For Vocational Education and Research (NCVER) has undertaken many studies of vocational education and its economic analysis in the light of Australian as well as global context. Karmel, Beddie, Cully, Nguyen Thi etc have all forwarded their insights into the vocational education- employment nexus on behalf of NCVER. The World Bank which is the single largest source of international financial support for skills training has a number of policy papers looking into the issue of vocational education as a policy measure in different countries of the world. World Bank policy researchers include among others Middleton et al (1993).

Referring to the demand for vocational education, Karmel & Cully (2009) reiterates that individuals undertake vocational qualifications for employment related reasons while from the employers’ point of view, the demand for skills is attributed to its impact on skills and productivity.

However, the growing interesting in the design of an effective vocational education system for effectively utilizing human resources is not limited to the developed countries of the world alone. The developed countries, by their practical experience with
employment dynamics have shown the way to fostering a well-equipped labour force in the developing and under-developed countries of the world. NCVER’s extensive research on the subject has pointed to the significance of the use of vocational education as a policy matter in the developing countries. The World Bank’s funding initiatives in these countries highlight the importance of vocational education in expediting the developing countries’ efforts to close the skills gap. A World Bank Policy Paper (Middleton et al, 1991) reflects that to compete globally in the face of rapid economic and technological changes, the developing countries require both sufficient capital investment and an able workforce infused with specific skills to meet the challenges of new occupational outcomes generated by these changes.

Making a comparative analysis between Australia and India, Beddie (2009) comments that despite structural differences in the level and stages of development, both Australia and India face the challenge of churning out skilled people who have employability and the ability to build economies that can cope with rapid change.

However, the vocational education system in developing countries needs to address many different objectives. Dutta (2007) points out that when students come out of the university, certain capacities are required to be built in them to face the challenges in the real world, in their professional career and also facilitate their participation in the task of national development. Reducing youth unemployment, creating a reserve of skilled workers to attract new capital investment and diversion of youth from aspirations of higher education are among the objectives identified by Middleton, Jiderman and Adams (1991) in a World Bank Policy Paper. Karmel & Nguyen (2006) perceives that the motivation for carrying out VET is varied and covers from wanting to get a job or effect a career change to wanting a promotion or improved skills and hence better pay. The two authors regard wages as the most important indicator of the value of qualifications.

The restructuring of the Singaporean economy towards a more “capital intensive economy” called upon the education system to respond to the manpower needs of a capitalist economy. Singapore’s march from an “early-industrialised” to a “globalised
and diversified economy” was aided by a vocational system that responded to its manpower needs. This has been substantiated by Seng (2007) who regarded the employability of the graduates as the most important test of a vocational system.

In pursuance of the Millennium Development goals of poverty and hunger, utilization of human resource is seen as a pathway as has been proved by African countries like Ethiopia and Cameroon. These countries in their quest for removing poverty envisioned a policy of equipping their human resources with market relevant skills in a bid to making them employable and effectively utilized to participate in the growth process of their country. (Bureau of the Conference of the Ministers of Education of African Union, 2007)

An International Finance Corporation (2011) study, while recognizing the high unemployment among the Arab Youth, maintains that the way out of this precarious unemployment situation would be a blend of employment creation in the economy and equipment of skills in the individual. While not undermining the importance of economic development in removing unemployment, the paper dwells on the importance of education and training in alleviating youth unemployment. Education provides the skilled labour required by the economy and hence, education and economic development move hand-in-hand. And in this important role that education has to play in generating skills, the role of private sector can be enhanced. The study therefore calls upon private players to enter into the vocational education scenario in the Arab world, train youths and prepare them for the world of work, forging ahead by providing relevant skills and adequate industry linkage. At the same time, it calls upon the youth not only to see themselves as beneficiaries but to be informed, involved and avail the best of these opportunities.

The World Bank (2010) treatise on the employment challenges in India maintains that the active labour market programmes of the government should comprise of public works programme, social insurance for workers, employment exchanges and training workers to increase their employability. The provision of skills training to the workers enhances the efficiency and flexibility of the labour market and helps by reducing skills
bottlenecks. This World Bank exposition also reiterates that the mobility and absorption of skilled workers is enhanced. It, therefore, regards that in a country like India, where a significant part of the workforce is devoid of skills and stuck in unproductive activities in agriculture, it becomes necessary to work on skills acquisition so as to enhance mobility of these workers to productive sectors of employment. Discussing the status of Indian school children, it maintains that close to 5 million Indian children drop out of school between Class VI and Class X and another 3 million drop out by classes X and XII. Therefore, the World Bank (2010) study of employment challenges in India recommends that accessibility to secondary education and vocational education and training can facilitate effective school to work transition and improve the employment prospects and lifetime earnings of the people.

A Planning Commission (2001) report stressing on the need to increase vocational content in courses to enhance the marketable skills of the students, talks of upgrading of the ITIs as a way of contributing to the enhancement of skills in the labour force. The report summarizes that the rate of growth of the economy cannot accelerate especially in labour intensive sectors if there is a general lack of skills among the labour force. Thus the relevance of vocational education is not unfounded. However, it is necessary to link vocational education to the labour market. It must be “demand driven” rather than “supply-driven”. Providing more education is not enough; quality and labour market relevance is crucial. Otherwise, vocational education would only issue passports to unemployment. The Planning Commission (2002) Report on Employment Opportunities over the Tenth Plan envisages that the development of skill building institutions would meet the skill development in future. The report articulates that any programme for skill building has to take note of the emerging nature of occupations in the economy. Among the policies to influence the supply side of labour, the report emphasizes on policies and programmes that would enhance the skill and competence of the labour force to match those required for satisfying the new emerging jobs. Changing technology requires an adaptable labour force (Kaufman, 1975) and the success of vocational education lies in making skilled labour force absorbable by the existing employment structure. Eveson et al (2009) recommends a better understanding of the demand and supply mismatch in skills in order to develop strategies for achieving the
goal of human resource utilization. But the frustrating element in vocational education system for employers has been the failure of vocational education and training to teach skills relevant to the market (Rittie and Awodeyi, 2009).

The need to possess relevant skills arises due to its greater contribution to productivity and growth of the economy. The OECD (2011) treatise on skill strategies regards skills as an important component of policies to integrate people into the labour market. It reiterates that skills policies must be conceived within a framework that has both a short-term and long term perspective. The OECD paper therefore stresses that in designing policies that influence the supply of skills, it is essential to have knowledge about the skills demanded in the economy.

In India, a Ministry of Human Resource Development (Department of School Education and Literacy, 2012) report on vocational education, while recognizing the emerging shortages in the reservoir of skilled and trained manpower in the country, recalled that one of the goals of the Kothari Commission (1964-66) was to vocationalise education. To achieve this goal, the country has a number of vocational education providers at various levels. Education is a concurrent subject in the country and provision of vocational education constitutes the responsibility of both the centre and the state. The MHRD identifies a three-level vocational education and training system in India. On the issue of Vocational Education in India, the Ministry of Human Resource Development in India has maintained that vocational education in the country is imparted in the formal sector through a three tier network of institutions comprising of specialist technical institutions, Polytechnics and ITI s. It has also recognised the important role played by a number of government departments and ministries in the dissemination of vocational knowledge and training and in the funding of formal and non-formal vocational education. The National Knowledge Commission has also identified three pathways determined by the mainstream education system, ITI/ITC and polytechnics in the formal vocational education system in India.

The MHRD acknowledges that seventeen ministries and departments have been associated with the funding of formal and non-formal vocational training education.
programmes in the country. In the vocational education sector, the MHRD acknowledgement of the non-formal vocational programmes along with the formal sector vocational programmes is justified, given the importance being given to non-formal vocational education globally. Yadav (1987) dwells on Harbison’s (1973) description of non-formal education as one that would aid in generating skill and knowledge that would prepare the youth for work and employment. He regards non-formal education as a learning opportunity that is provided in an organized setting, outside the periphery of a formal education system. He reiterates that this learning system has flexibility in that it can be provided according to “specific needs and situations”. Rogers (2004) maintains that formal education by itself cannot respond to the challenges faced in a modern society and so, called for a non-formal educational support system. Rogers puts forward Coombs and Ahmed (2004) explanation of non-formal education as being a learning system outside the formal network of education that provides selected learning to specific groups of population. Rogers, however pointed out that the country-specific definition of non-formal education varied. UNESCO (2011) views non-formal education to be an institution–based education provided by an education provider and regards it to be an addition, alternative or complement to formal education. It maintains that this type of education is characterized by short-duration courses that may be accessed by the unemployed and the inactive and is often supported by formal educational qualifications. Having accessibility to people across ages, non-formal education does not necessarily apply a continuous pathway (UNESCO, 2011). In India, the various rounds of the National Sample Survey Organisation (NSSO) on Employment and Unemployment Situation in India have incorporated the concept of vocational education and determined its periphery. The 61st, 66th and 68th NSSO Round on Employment and Unemployment Situation in India has dwelled on the issue of formal and non-formal vocational education. Biswas (2008) while discussing India’s vocational education points out that the National Sample Survey Organisation dichotomises vocational education into two types. He upholds the NSSO definition of formal vocational education as a structured training programme that culminates into certified degrees and diplomas recognised by government and public bodies. Biswas also puts forward the NSSO non-formal vocational education to be one that aids marketable expertise which helps people to carry out their family trade
received through hereditary services. However, he maintains that the NSSO also includes, under non-formal vocational education, training received through other sources and that which facilitates the pursuance of a vocation.

Investigating into the importance of non-formal education to human resource development in Nigeria, Egbezor and Okanezi (2008) have maintained that non-formal education is also effective in provision of practical skills. They identified various educational programmes given to unemployed youth in the non-formal system that prepares them for employment through the provision of skills. They point out that non-formal education, helps the industrial sector by training manpower, aids employment and improves efficiency and effectiveness of people already employed. Singh (1985), while looking into the impact of non-formal education in Manipur, maintains that this type of education focuses on improvement of individual and social living, occupational capability and vocational competency of the people of Manipur. A middle path between formal and informal education, Singh pointed out that non-formal education comprises a target population comprising different categories of population including educated learners who could not successfully cope with the changing circumstances of life.

The MHRD (2012) report also speaks eloquent about the National Vocational Education Qualifications Framework (NVEQF) set up by the Central Advisory Board of Education (CABE) in order to set common principles and guidelines for a nationally recognized qualification system covering schools, vocational education institutes and institutions of higher education ranging from secondary to doctorate level. This MHRD (2012) document maintains that the NVEQF would facilitate vertical and horizontal mobility of students across different tiers of vocational education and training systems available in the country.

A report put forward by Ernst & Young-FICCI (2009) while discussing India’s higher education system maintains that Indian education system also comprises an “evolving vocational education and training system”. The report regards vocational education and training as a game changer of the Indian Higher Education system. It identifies vocational education institutes as those institutes and polytechnics that award
certificates and diplomas after a course duration ranging from 3 months to 3 years. The report also acknowledges the new vistas in the horizon of vocational education in the areas of Aviation, Hospitality, and Travel & Tourism along with the conventional vocational education delivery mechanisms like ITIs and ITCs. It also calls upon private players’ entry into the vocational education scenario in India so as to capitalize on this game changer.

The University Grants Commission (UGC, 2012), on the issue of inclusive and qualitative expansion of higher education, acknowledges the need for a firm relationship between post-secondary education including university education and vocational training. It accepts the fact that the need in the country is for both market-driven knowledge as well as for a holistic and creative education. Therefore, it emphasizes on a blend of vocational education and a conventional knowledge intensive education so that education out-turns can make a right choice between entrance into the job-market or to forge a path towards further education. The UGC paper has pointed to the limitation of the Indian students in being absorbed in the markets of United States. Europe and Germany for lack of proper certification of skills recognized there. Given this situation, it reiterates that India needs to train students to prepare them for jobs in these markets, which otherwise will remain closed to them. Referring to the National Vocational Education Qualifications Framework, it maintains that a high quality in NVEQF can ensure that Indians become qualified for these jobs in the developed markets of those countries. Among those sectors that need vocational education, the UGC 12th Five Year Plan document identifies sectors like Manufacturing, Medical and Hospital Testing and Diagnostic services, Hospitality and Tourism services and Media and Communication services.

At the 44th session of the Indian Labour conference, employment and employability constituted one of the primary discussions. This has been put forward by a Press Information Bureau (2013) release. The conference laid stress on matching skills with openings in the labor market. While discussing the issue of ITI education, it maintained that ITIs should emphasise on demand-driven trades that would cater not only to the manufacturing sector but also to the services sector. The conference advocated the
certification of traditional skills and the need for sensitizing the rural population about
skills acquisition, particularly, the traditional skills. The conference also emphasized on
the need for skill development of women and the differently-abled people.

An International Labour Organisation (2009) paper maintains that while devising an
employment strategy for the country as a whole the International labour Organisation
and the Ministry of Labour and Employment, Government of India diagnoses that the
lack of skills and employability as being the foremost challenge in the employment
process in the country. The country faces a twin problem of a low proportion of
vocational skills and a lack of marketability of skills produced. It also reiterates that the
country lacks of coordination amongst various vocational educations deliver systems. It
views the lack of a common policy on skills development as aiding that coordination
gap. The paper therefore talks of closing the gaps in employment and employability
through accessibility, equity and quality assurance of training, strengthening of the
private sector, emphasis on public-private partnership and a common skills development
policy for the country. McGrath(2013) in his enquiry into the concept of
“Employability” put forward Hillage and Pollard’s (1998) definition of employability as
“an individual’s ability to gain employment, maintain employment, move between roles
within the same organisation, obtain new employment if required and (ideally) secure
suitable and sufficiently fulfilling work”. Employability of an individual is also depicted
by their ability to switch jobs and stay in employment (Silverberg et al, 2004).

Indian Institute of Entrepreneurship (2003) put forward a diagnostic study on youth
employment strategy and capacity development in the North-Eastern Region. While
dwelling on the need for increasing employment in the country, it specified a greater
need for increasing employment in the North-Eastern Region. It explored the causes of
unemployment in the country including the north-eastern region. The report maintains
that to combat the unemployment problem of the region requires fulfilling the objectives
of both greater industrial growth as well as capacity development of the youth so as to
increase their employability. And on this issue, it upholds the necessity of skill
intervention at various levels. It specifically stresses on the important role that ITI s can
play with respect to skill generation and skill enhancement. The report thus talks of skill
initiatives as being an important pre-requisite to capacity building of the youth and making them employable.

In a study conducted by Indian Institute of Entrepreneurship (IIE), Bhuyan, Deka and Dewan (2009) recognised the need for skills generation amongst the lower end of the workforce in order to accommodate them in a dynamic employment market. In this regard, they stressed on an assessment of skills needed for potential economic activities of the region. To achieve the goal of skill generation and enhancement, they put emphasis on the role to be played by training institutes, the linkage between business and placement of skilled force and called for a coordination between various promotional and support agencies with regard to skills provision.

Responding to global and national perspectives on the issues of skill formation and vocational education and training vis-a-vis their relation with employability and employment, in the state of Assam also, the importance of skill generation and skill acquisition for enhancing employability and thus utilizing human resource has been deeply perceived in recent times. The Employment Policy of Assam (Department of Labour, 2011) looks at the present labour market in Assam in the context of these global and national perspectives. Mittal, in the preface to the Employment Policy of Assam, 2010, reiterates that the labour market can no longer be viewed as a naturally evolving phenomenon. Guided by this idea, the policy document on employment has highlighted the inputs required for promotion of employment in different sectors and has identified and recognized the important role of skill development in promoting employment. The government emphasis in the current context has been on increasing employment through skill development. The policy emphasizes on skill enhancement of the labour force in order to enable their entrance into “regular employment” category particularly in the rural areas. However, the Employment Policy of Assam (Department of Labour, 2011) maintains that a majority of the state’s workforce in both rural and urban areas lack identifiable marketable skills. Recognising the huge deficit in formally acquired skills, it, therefore, regards skill development as an important component of labour market policies. And, it reiterates that the medium for skill development would be the
vocational education system, with a greater emphasis on rural areas and disadvantaged social groups.

The Telegraph (2011), in an online edition, has focused on the Assam Government’s roadmap of extending vocational education for skill formation of the youth population. The paper reiterates that the National Council on Skill development and the State Government initiatives in the area of skill development in the state would help in enhancing skills of the youth.

Countries across the world are now gearing up to reap the benefits of the demographic transition process being experienced by them. This benefit, referred to as the “Demographic Dividend”, arises on account of the changing population dynamics of the country in the form of falling birth rates, increase in average life expectancy, increase in labour supply and consequently, increase in savings. It is a ‘window of opportunity’ which, if not captured, will not facilitate the reaping of the benefit brought about by it. Wikipedia (2012) defines “demographic dividend” as a window of opportunities that a nation comes across as a result of the coordination between its fertility decline and certain effective policies that leads to economic growth and human development. It also maintains that the fertility rates decline due to decline in infant mortality rate and increase in average life expectancy. But the demographic window of opportunity does not continue indefinitely. It is necessary for nations to reap the dividend with the help of effective policy measures before the opportunity is lost.

Chandrasekhar, Ghosh and Roychowdhury (2006) maintain that what matters is not the size but the age structure of the population. To them, a bulge in the age structure is an advantage and is characterized as the demographic dividend. They believe that India, with its bulge in the working age has the advantage of experiencing that demographic dividend. However, the authors raise the question of employability of this ‘boom” population in the context of a persisting unemployment situation. They therefore bring into focus the relevance of the education being provided to this bulging population and point to the futility of the vocational education being provided as a very small percentage of population received any sort of vocational education.
In the words of Bloom, Canning and Sevilla (2003), if a nation has significant proportion of population in the working ages, the added product of this group can produce a “demographic dividend” of economic growth, provided the right policies are in place to take the advantage of this benefit. Among the policies that can aid in reaping this benefit, they have also identified human capital policies. According to them, the transition from high vital rates to low vital rates has created a “boom” population in some countries of the word and education has been recognized as one of the policy areas critical to reaping the benefit. They reiterate that a right type of education can help to reap the benefit of a swelling productive sector by increasing their employability through skill enhancement. Failure to live up to this challenge would have a damaging effect upon the economy by increasing unemployment and putting a strain on the state’s resources.

The UGC (2012) document maintains that much of the East Asian per capita GDP growth in the late 20th century can be attributed to demographic dividend which has also now begun to appear in the Indian economy. It, however, acknowledges that the demographic dividend being a short window of opportunity, does not guarantee automatic growth. Hence, the paper stresses that the success of reaping this benefit depends on investment in education and job creation during the existence of demographic dividend. Commenting on the role of education in inclusive growth and reaping the benefit of demographic dividend, it stresses on setting up of vocational training institutes and courses that would fill up the shortage of skilled labour in many sectors. The paper calls upon the participation of the private sector in contributing to this sector and in ensuring that the benefits of the demographic dividend are captured.

Debroy (2006) also witnesses a lack of limited skills in India. He, therefore, stresses on a greater private sector participation in providing skills. Since the public sector lacks synchronization with market needs, he believes that there should be greater private sector partnership. Without this, the demographic dividend may turn out to be a demographic drag (Debroy, 2006).
Ernst & Young-FICCI (2009) also point to the fact that India may lose out on the demographic dividend if training is not provided to meet the skills needed by its industries. It, therefore, emphasizes on a thrust on vocational education in order to create the pool of resources that would help the country to capitalize on its demographic dividend.

Ingle & Suryawanshi (2011) while discussing India’s demographic dividend maintains that by the year 2025, India will experience a wonderful window of opportunity brought about by its fertility decline, increase in average life expectancy and slowing of its population growth rate. They explore the benefits that can be reaped and the policies that need to be structured in order to help India to take advantage of this demographic opportunity. They believe that among the challenging tasks before India, are ways and means of converting the human potential into an engine of growth. And, to be transformed into human capital, the youth need to possess the right skills and attitude that would increase their productivity and their employability. This would need greater government participation in terms of policy making that would enable greater utilization of the demographic opportunity reflected by the changing age structure and “bulging” of the productive ages. In this regard, Ingle and Suryawanshi highlights the challenges facing the country in the form of matching industry requirements and youth capabilities through skill enhancement and improving technical capabilities of the youth in general and the poor and marginalized in particular.

A Deutche Bank Research paper (2009) has looked into the issue of demographic dividend as experienced by the BRIC countries comprising of Brazil, Russia, India and China. The paper, examining the existence of demographic dividend in India, asserts that the working age population in India will increase in the following two decades, which, together with a lower dependency ratio will reap great benefits for the country. Forecasting an extension of the demographic window in India for another three years, the Deutche Bank study on this issue calls for policy measures that would strongly capture the benefits.
Bloom (2011) also asserts that the window of demographic opportunity does not open up automatically and that to allow demographic changes to impact economic growth favourably, appropriate policies need to be called for. He calls for policy measures that would erase unemployment because demographic dividend cannot emerge in a nation that has widespread unemployment. He views investment in education and training as one of those policy measures that would aid in India’s use of the window of demographic opportunity brought about by an increase in the proportion of working age population to total population as a consequence of a declining fertility.

However, there exists conflicting opinion in this debate of a correlation of demographic dividend and increasing youth skills and capabilities. Aiyar and Mody (2011) opines that the process of demographic transition in India began four decades ago and will continue for three decades more, reaching a peak with India being the greatest contributor to the world’s workforce by 2040. They believe that India’s experience of a demographic dividend would catapult it towards greater growth and development. But, contrary to most opinion, they do not subscribe to the view that the capturing of benefits of demographic dividend is related to effective policy measures undertaken.

With the recent demographic transition experienced by India in the form of decline in birth rate and a bulging population in the productive ages and an increase in the average life expectancy of the people, the “window of opportunity” has opened up in India too. Much of the literature on the issue of “Demographic Dividend” maintains that this window of demographic opportunity in India will continue for another three decades. But it has also been asserted that this opportunity needs to be experienced by putting in place, effective policy measures, a few in the sector of education and training and creation of human capital. Dev and Venkatanarayana (2011) maintain that the poor employability of the workforce would hamper their employability and nullify the advantages of demographic dividend if measures are not taken for skill development of the youth. The authors maintain that the employability of the youth has to be increased through skill development.
A McKinsey (2009) report also maintains that with 50% of population under 25 years and a mean age of 24 years, India can be a supplier of global talent. On a comparative note, it points out that in UK and USA, only 30% of the population constitutes those less than 25 years. Therefore, the report recognises that the challenge before the country now, is to sufficiently equip this enormous talent with skills that would fulfill both the domestic as well as global demand for manpower. It however, reiterates that the employability of this talent depend on the relevance and quality of the vocational programmes and employer participation in vocational education providing mechanisms. Employer participation in skill development will ensure employability and income for the out-turns due to their awareness about market skills requirements. In harnessing skills, the paper calls upon skill development initiatives to cut across formal and unorganized employment, public and private sector and rural and urban landscape. It also acknowledges the role of public-private partnership in creating jobs in critical areas.

Assam, being a part of mainstream India, can also benefit by actively participating in this process of skill building and skill supply. In the context of Assam also, the idea of capturing the window of opportunity and reaping in the benefits of demographic dividend has emerged. In a regional conference held at Guwahati in 2010, Jadhav has stressed on the need to harness the potential of demographic dividend with the joint efforts of the centre, the state and the private sector. The problems faced in Assam and the North-eastern region, at large, can be solved through the provision of skill development. However, the conference highlighted that the enrolment in vocational education in the state is dismally low at 0.04% (Planning Commission, 2010).

There exist a number of rationales for advocacy of vocational education across countries and regions. But in Assam, a review of literature on this topic has not pointed towards existence of sufficient research studies exclusively on the area of Vocational Education. A few theses while dwelling on other issues, gives a cursory glance on the issue of vocational education. A few others relate to the educational aspects of a vocational education programme but not much light has been thrown on its economic aspects by way of its effect on work, employment and utilizing human resource. Bhagawati (2006),
in his research work, looked into the issue of vocational education amongst the scheduled caste and scheduled tribe population in the industrial training institutes of Assam. Bhagawati’s work traces the history of vocational education in Assam and India and is an explicit work on various aspects of vocational educational programme of the ITI s relating to governance, funding, courses and evaluation. Moreover, it also gives insight into certain aspects of the scheduled caste and scheduled tribe population of the state. He, however, advocates the need for imparting market-driven courses in the ITI s and hence, calls for a restructuring of the curricula of the ITI s, guided by local needs. He also acknowledges the favourable impact that this would have on the self-employment of the local youth.

Hatibaruah (1991), in his treatise on the problems of the educated unemployed in Assam, reiterated that the high rate of educated unemployment in Assam is traceable to its education system. He therefore suggested a revamping of the educational system on the basis of the Kothari Commission’s recommendations for vocationalisation of education at the higher secondary stage. Hatibaruah maintains that this would help in lowering the pressure on institutes of higher education and simultaneously increase the employment potential of middle-level technicians. He emphasized upon training programmes that would increase employability and supported an education system that was job-oriented and catered to the demands of the job-market.

In order to meet the demands of the employment market for employable skills, it is therefore imperative to lay emphasis on the development of human resources. Mozumdar (2005) stresses that industrially developed nations have been emphasising on the development of their human capital. Mozumdar’s findings from the case studies on four organizations in Assam have projected the importance of human resource development. In the context of Assam, he raises the issue of manpower planning and training of manpower and recognises the role of formal educational institutions in shaping and preparing human resource.

However, not all organizations and employment terminals in Assam have sufficiently given emphasis on education and training to generate skills and effectively utilize the
human resource. Datta (1993) conducted his research work on the education and employment of the tea garden labourers in Assam. His study reflects that the training process of workers in tea gardens is mostly carried out on-the-job. According to him, the workers are assigned their work either directly or after some on-the-job training. This therefore speaks of the absence of adequate training facilities for the workers in tea gardens. But, Datta stresses on the importance of training in tea gardens in order to facilitate the use of certain machinery and also for the upward mobility of the workers. This research work, therefore, gives only a fleeting insight into the vocational education scenario in the tea gardens of Assam. The limited availability of literature on this subject makes it apparent that vocational education has not been a dominant subject in research literature of the state of Assam.

Questioning the relevance of vocational education system, Karmel et al (2009) concludes that training increases the job prospects for most, but not all the groups on whom the exercise is carried out. The need of the hour is not only to create skills but such skills, as would have relevance to the market. Vocational Education is always an investment in human resource and as reiterated by Van Lith (1988), it pays when the costs are at least covered by its returns. Viewed from these perspectives, an economic analysis of vocational education becomes imperative. Lee (2010) maintains that identifying, quantifying and reducing the costs and benefits of vocational education to monetary terms do provide a method of evaluation of vocational education. Regarding cost-benefit analysis of education as one of economic returns analysis of education, Lee maintains that when educational planning is to be made in concurrence with educational expansion, cost-benefit analysis is the natural tool for planning. His observations are the outcome of his glimpses into the Chinese education system His analysis of cost-benefit studies done in education has identified the works of Blaug, Taussig, Weisbroad, Bowman which gives the conviction that cost-benefit in education is generally understood as only a technique for making decisions within a framework which has to be contemplated in advance. These works made him believe in the justification of using an economic evaluation technique for vocational education.
As maintained by Knight & Mlotkowski (2009), the efficiency of a skill-based education can be measured in terms of the chances of being employed, accepting the view that vocational education is predominantly about acquiring skills to be used at work. Psacharopoulos (1981) asserts that researchers around the world have resorted to various evaluation techniques to find out the profitability of investing in human capital and that returns to schooling are a useful indicator of the productivity of education and an encouragement for individuals to invest in their capital. Viewing education as a production system, Tsang (2010) placed educational cost studies into three categories: a) educational costing and feasibility studies b) studies analyzing the behavioral and c) cost-benefit and cost-effectiveness studies. Brauchla (2004) attributes cost-benefit analysis to be a well-known method among a number of methods used to assess the monetary benefits of training.

Simison, Shergill & Holmes (1981) identifies numerous mechanisms like Benefit-Cost Ratio, Net Present Value and Rate of Return analysis to relate costs and benefits in a cost-benefit analysis. In the same vein, Westphalen (2010) while studying about investment in human capital viewed the returns from vocational education as a source of information to decision makers regarding the economic viability of a vocational education. Weale (1993) also regards the rate of return analysis to be an important tool of analysis for educational planning. Blum, Damsgaard & Sullivan (2008) reiterates that though there is no consistent methodology for conducting a cost-benefit analysis, yet, it is not of much concern because as a decision making tool used in diverse areas, cost-benefit analysis requires flexibility. If Cost-Benefit Analysis is defined less as an exercise to calculate one figure such as an IRR or NPV that defines the criteria for selecting an investment and more as a rigorous augmentation that the benefits of an investment outweigh the costs, even some unquantified, they can greatly improve policy making (Jimenez & Patrinos, 2008). The two authors assert that cost-benefit analysis though cannot always be done robustly, yet some form of competently done cost-benefit analysis has better outcomes than those, which do not.

Regarding the use of the “short-cut” method, the opinions and findings of researchers have indicated satisfactory results while using it as a tool of educational planning.
Menon (1997) maintained that the method might serve as a good substitute for the traditional method when the data required for the traditional method are not readily available. Moreover, Mingat and Tan (1988) compared the pattern of rates of return in both the traditional method and the short-cut method. Their findings indicate that both the methods have the same order of magnitude and the structure of return is basically the same. The rates may not be completely accurate but for assessing investment priorities in education, precise figures are not essential.

A well-planned cost-benefit analysis can acquaint a policy maker about detailed information on the costs and benefits involved in a project. However, Woodhall (2004) does not regard the Cost-Benefit Analysis as the sole criterion for educational planning but considers it to be an important element in decision making. Woodhall, in her study, expresses that the cost-benefit analysis makes a systematic comparison of the magnitude of costs and benefits of investment in order to assess its economic profitability. However, she also identifies the use of earnings function along with the “short–cut method” in recent times, in the estimation of the rate of return to education. Woodhall states that Mincer used the concept of an earnings function in 1974 to explain the pattern of individual earnings in the USA and regard it as being useful to cost-benefit calculation. Kingdon and Theopold (2010) also opine that the measurement of the economic benefits of education has a long and rich history starting with Mincer (1974) estimating the monetary returns from an additional year of education using a semi-logarithmic framework. They acknowledge the wide use of this measure in spite of the methodological difficulties involved in it. The authors glanced into the influence of local returns to education, as measured by Mincer earning function, on educational decisions. While analyzing Mincer’s earning function, Heckman et al (2003) maintained that the model emphasizes on two concepts. It reflects on the skill prices by revealing how years of schooling are rewarded by the labour market and it also reflects the rates of return to investment in schooling.

The Mincerian Earnings Function is, thus, a useful tool for economic evaluation of education. An OECD (2011) treatise on the indicators of education acknowledges the existence of two main approaches to estimating financial returns to education. While
one of the approaches is a finance-based investment theory, the other is labor-economics based econometric specification. It identifies the Mincerian Earnings Function as the economic approach used to calculate the financial returns to education. This OECD document regards the econometric approach as being an attempt to establish the actual contribution of education to gross earnings. But it does not advise comparison between various approaches and studies due to existence of divergence between various approaches.

Psacharopoulos (1987) maintained that the human capital specification of the earnings function has been fitted in a large number of countries and the $b$ coefficient gave results similar to those obtained by the “elaborate method” of estimating the rate of return to investment in education.

Saxton (2000) emphasizes that increasing the years of schooling, training and experience of workers has a significant effect on the earnings of the individual and the society at large. He states that most estimates show rates or return in education to rates of return on investment in physical capital and that there is an increasing wage premium paid to workers with high levels of human capital attained through skills, training and education.

Yurtsever (2005) views the Mincerian Earning function as the first analytical innovation in human capital model. He attribute the popularity of the model partly, to the fact that the equation is based on the formal model of investment in human capital and partly, to the fact that the Mincer equation provides an economic specification that fits the data remarkably well in most contexts.

Polachek (2007) reiterates that one of the important implications yielded by the Mincerian function is that earning levels are related to human capital investment. He is of the opinion that the Mincerian function reflects that the more human capital investment an individual makes, the higher will be the earnings. He further regards the coefficient on the schooling variable to reflect the rate of return to schooling. In the same vein, Brauw and Rozelle (2006) maintain that a model most commonly used to
estimate the returns to education is Mincer’s model and regards it as a simple model relating years of completed schooling to lifetime earnings that gives an indication of the returns to education.

Heckman et al (2005) maintained that the coefficient on schooling in a regression of log earnings on years of schooling is often called a rate of return and the justification for interpreting it as a rate of return is derived from a model by Becker and Chiswick. However, they point out that it was popularized and estimated by Mincer in 1974 and is now called Mincer model. In recent times, there has been considerable use of the Mincerian equation in various studies that focused on the estimation of returns to education. Chiswick (2003) maintains that the attractiveness of Mincer’s “human capital earnings function” is on account of its distinguishing characteristics. He points out that the model uses measurable parameters like years of schooling and years of labour market experience and points to the versatility of the model in terms of its ability to incorporate other variables that affect an individual’s earnings. Chiswik acknowledged that the model brings forth economic interpretations which can be compared across diverse situations.

The Mincerian Earnings Function has been adapted in different countries to estimate the private returns to education. Lauer and Steiner (2010) analysed the development in the returns to education in West Germany for the period from 1984 to 1997, based on simple Mincer type wage equations. The estimation of standard wage equations provides the basis for bringing out the trend in the returns to education in West Germany since the mid-eighties.

Leigh (2010), while estimating the returns to education in Australia, used a standard OLS regression of earnings on educational and demographic characteristics, based on Mincer's model. He emphasizes that in estimating returns to education, a common approach is to convert all forms of education into years of education and then to estimate the effect of an additional year of schooling on earnings or labour market participation. Nour (2011) examined the rate of return to education at the micro level in Sudan using the Mincerian Earnings Function. He estimated the rate of return to
education by using primary data at the micro level. Nour confronted a practical problem of availability of accurate data and therefore, based his estimation of the rate of return to education in Sudan on a relatively small number of samples. He, however, pointed out that though this has the limitation of making generalizations, yet, the results would improve understanding and provide useful insights from analytical and policy perspectives.

Periera and Martins (2001), in their discussion paper, also made use of Mincer’s Equation in finding the returns to education. While conducting their study they put forth the belief that an individual decision about the amount of education to be pursued is preceded by the understanding that it would lead to a better paid job. They supported the use of the Mincerian equation to study the total returns to education and used it to study the wage rise in Portugal using cross-sectional data. In estimating the returns to education for the year 1995, they used the Mincer equation with hourly wages as the dependent variable and education in years and computed experience (age-years of education-6) and its squared as the explanatory variable. Kifle (2007) regards the linkage between education and earnings to be an important factor that guides decisions about efficient resource allocation. Kifle applied an extended Mincerian equation to the calculation of the returns to education using wage and salary of the formal sector of the economy in Eritrea. His findings helped in providing valuable suggestions with regard to public expenditure on education and shifting of the cost burden from the government to the individual.

The use of Mincer’s Earning function is particularly useful in the estimation of the private rate of returns to education. A study conducted by the Centre for Public Policy Studies, Linguan University in association with K K Yeung Managements Consultants Limited (1999) acknowledged the availability of various methods for calculation of rates of return to education. However, they point to the efficacy of Mincer’s Earning Function in calculating the private rate of returns to education. The study, therefore, made use of Mincer’s Earning Function to calculate the private rate of returns to education. The study does acknowledge the fact that the private rate of returns to education may underestimate the rate of returns to education. But, it perceived that this
rate of returns would give an insight into individual perception about education as well as worth-whileness of public investment in education. This particular study was conducted for estimation of returns to various educational programmes in Hong Kong.

Silverberg et al (2004) in their report on the national assessment of vocational education in the US has also taken up the issue of earnings benefit of vocational education. According to them, earnings are the most important long-term indicator of the effectiveness of vocational programmes. To them, taking early vocational education raises early earnings of those students who work. The report concludes that vocational education improves earnings and regards earnings as a measure of success of vocational education.

The National Knowledge Commission’s emphasis on quantifying, monitoring and evaluating the impact of vocational education is not a matter of debate. The importance of the rate of return to education cannot be denied. What is important is the choice of a particular methodological tool for estimating the rate of returns. Carne (2007) also acknowledges that vocational education may be taken for consumption or investment purposes. When undertaken for investment purposes, determinants of demand include the expected returns on investment along with the other determinants such as the extent of a student’s present and future orientation, awareness of the availability of training opportunities and student’s incomes or capacity to borrow. Viewed in the backdrop of current discussion, estimating the rate of returns by the use of the earnings function seems a logical decision regarding the study of the feasibility of an educational project. Education, being a public investment project, a study of its feasibility will be incomplete without an analysis of its returns. No longer are returns to education seen as prescriptive but rather as indicators suggesting areas of concentration (Psacharopoulos and Patrinos, 2002).

In spite of the immense importance being given to vocational education in different countries of the world and the involvement of international organizations in the economic evaluation of education, there still exist gaps in research and use of methodological tools in vocational educational planning. Empirical studies point out
that mostly, the difficulty lies in the choice of an effective tool for analysis. Due to the difficulties in the form of a proper evaluation technique, there is hesitation among researchers in venturing into this area. Some studies relating to vocational education research exist in India. In spite of a growing trend in the enrolment of students in vocational education in Assam, no known attempts have been made to analyze the economic aspects of a vocational education. This research is an attempt to fill up that gap in vocational educational planning in Assam.

1.4 CONCEPTUAL FRAMEWORK:

“Effective utilisation” of human resource through imparting of vocational education as envisioned in this research study, implies the decisive effect that vocational education will have on the employability of the people who constitute the labour force in the economy. The labour force in an economy is constituted by those who have entered into the working categories in the economy as well as those looking for work. Thus, human resource in this study is represented by those who are working as well as those who are available for work. The present study views effective utilisation of the human resource from the point of view of whether the type of education acquired by an individual commensurate the work done in employment positions (Stern, 1988). Therefore, the synchronization between skills acquisition from the education system and skills application in the employment terminal is regarded as an indicator of the effective utilisation of the human resource in this particular study.

Employability is the ability of an individual to find employment and to be in employment. There are various factors that may act as a guide to the employability of labour. Employability, in this work, is viewed from both the employees’ perspective as well as from the employers’ perspective. The concept of employability is based on Hillage and Pollard’s definition of employability as put forward by McGrath, 2013. Silverberg et al, 2004 also regards employability of an individual to be depicted by their ability to switch jobs and stay in employment Therefore, from the employees’ perspective, this research work regards the waiting period of the vocational education out-turns between acquisition of their vocational education and absorption in employment as the main indicator of their employability. Moreover, any job change
made by the vocational education out-turns and their total numbers of years in employment are also regarded as significant indicators of their employability for the purpose of this work. From the employers’ perspective, this research work regards the employability of the vocational education out-turns to be determined by the demand for their skills in employment terminals (Evans & Herr, 1978; Stern, 1988; Karmel & Cully, 2009). The level of emphasis given by employers on on-the-job training of the employed out-turns of the vocational education system is also viewed as reflecting the employability of out-turns of the vocational education system in the present study.

1.4.1 Key Issues of Vocational Education
Taking into account the various classifications of education made at the global and national level, for the present study, vocational education is conceptualised to represent an educational programme that would equip participants with practical skills, know-how and understanding that would prepare them for specific forms of employment. It imparts hands-on training to individuals who go through its processes. This distinguishes vocational education from liberal or general education which imparts generic skills only and may not impart market relevant employable skills to its out-turns (UNESCO, 2011).

There are different public and private organisations that are associated with the provision of vocational education. They constitute the vocational education providers and individuals acquire a vocational education through them (UNESCO.2011).

An individual may be imparted a formal, non-formal or informal education. The discussions on education put forward by UNESCO (2011) have given a glimpse of the various forms of education as it exists today. Formal education is an institution based education, carried forward by a network of public and private bodies and supported by formal educational qualifications. In this regard, non-formal education does not show any departure in concept from a formal education. Non-formal education is also often authenticated by formal credentials. But, non-formal education has a unique characteristic of accessibility. It is often an addition or alternative to vocational
education and is characterized by short duration courses provided by different education providers. However, the type of vocational education provider does not define a non-formal education (UNESCO, 2011). Individuals also acquire an education informally by heredity, on-the-job or from life experiences, without access to institutions.

Given this backdrop of discussion and given the picture of types of vocational education in India (Biswas, 2008), a formal vocational education is regarded in this study as a vocational education system that is imparted in education and training institutes and is recognised by government and public bodies and is supported by the award of certificates and diplomas. In Assam, there are a number of structured, short duration vocational courses that may be accessed by the inactive population, rural youth, educated youth, the unemployed and those wishing to acquire market-relevant skills. These courses are catered to by different vocational education providers and do not necessarily require specific entry level educational qualifications. It has accessibility for people across ages and is, sometimes, supported by formal recognised qualifications. This research work regards these vocational courses as belonging to the genre of non-formal vocational education and looks into the non-formal approaches available in the state for acquiring a vocational education. There is also a significant proportion of workforce in Assam who have acquired vocational skills in informal ways like heredity, self-learning and by learning on-the-job that are not certified skills. This research study seeks to calculate the returns to vocational education and therefore, the informal vocational education out-turns are excluded from the study.

The products that are churned out of the vocational education system comprising of the various vocational education and training institutes are referred to as vocational education out-turns for the purpose of this study. Thus, the vocational education out-turns in this study is conceptualized to mean the out-turns of vocational streams of Higher Secondary Schools, Polytechnics, ITI s and private vocation education providers as well as specific government departments. These out-turn of the vocational education system, are equipped with credentials like certificates and diplomas that authenticate and validate their skills acquisition. The credentials act as passport to employment in various employing organisations which are referred to as employment terminals for the
purpose of this study. There are various kinds of employment terminals in which the out-turns of the vocational education system are employed. However, in a pilot survey conducted amongst informal sector employment establishments, it is seen that they normally do not employ people from formal educational institutions. Moreover, some of the trades followed by the informal sector employment terminals have been handed down through generations and have therefore maintained them as family enterprises without recruiting from external sources of labour. Therefore, in the process of calculation of the returns to vocational education, these employment terminals have not been included within this study.

1.4.2 Return to Vocational Education

The return to vocational education implies the return derived by investing in a programme of vocational education. There are various ways of calculating the returns to vocational education (Psacharopoulos, 1987; Woodhall, 2004). Among the methods that can be used, mention may be made of the elaborate cost-benefit analysis, the short-cut method of analysis and the Mincerian Earnings Function. The cost-benefit analysis poses certain limitations in the form of calculation of the opportunity cost as well as the incorporation of the social returns to vocational education. The short-cut method though estimates the private returns, also requires the identification of the opportunity cost. Confronted with a difficulty in the quantification and estimation of the positive and negative externalities of vocational education, these two methods would estimate a return that may be biased. While analyzing the applicability of cost-benefit analysis in education, Jiminez and Patrinos (2008) acknowledged the problem of elusiveness involved in a credible estimate of social returns of education. For these reasons, use has not been made of these methods in this research work. The Mincer’s earnings function is free from some of the limitations that confront the elaborate cost-benefit analysis and the short-cut method. The research study has therefore relied on Mincer’s Earnings Function to calculate the average private returns to vocational education.

*Mincerian Earnings Function:* Mincer (1974) establishes a relationship between the earnings of an individual and the years of schooling. Mincer used his model to explain the earning pattern of an individual, which is expressed in the form:
\[ Y = f(S, EX) \]

Where,

\[ Y = \text{Earnings} \]
\[ S = \text{Years of Schooling} \]
\[ EX = \text{Years of Work-experience}. \]

As has been pointed out by Psacharopoulos (1987), the Mincerian method employs regression analysis to fit a human capital earnings function to individual data on earnings (Y), years of schooling (S) and years of work-experience (E) in a semi logarithmic form. He points out that the estimated \( b \) regression coefficient in Mincer’s model is used to interpret the average private rate of return to schooling, known as the Mincerian rate. This model is represented below as:

\[ \ln Y = a + bS + cEX + dEX^2 \]

Where,

\( \ln Y \) is the natural logarithm of income (Y)
\( S \) is the number of years of education
\( Ex \) is the number of years of work experience
\( Ex^2 \) is experience squared
While \( a \) is constant; \( b, c, \& d \) are regression coefficients

Following Psacharopoulos (1987), it may be pointed out that in Mincer’s model, the partial differentiation of log Y i.e. the coefficient \( b \), with respect to \( S \) interprets the average rate of return, showing the percentage of earning increase for every year of increase in schooling. Thus, estimated regression coefficient (b) is interpreted as the average rate of return to one extra year of education, i.e. \( b = r \). In other words,

\[ \frac{\partial \ln Y}{\partial S} = b = r \]
The Mincerian equation depicted above has been adapted in this research study to estimate the rate of returns to vocational education using four independent variables, years of vocational schooling, years of pre-vocational schooling, gender and experience. In the present study, the $b_1$ regression coefficient denotes the rate of return to vocational education. Based on the standard Mincerian Equation, the following model has been used in this research work to calculate the returns to vocational education:

$$\text{LnY} = a + b_1 S + b_2 P + b_3 G + b_4 E + b_5 E^2 + u$$

Where,
- $a$ is constant and $b_1$, $b_2$, $b_3$, $b_4$, $b_5$ are the regression coefficients
- $\text{LnY}$ is the dependent variable which denotes the natural log of earning of the vocational education out-turns.
- $S$ denotes years of vocational schooling;
- $P$ denotes pre-vocational years of schooling;
- $G$ denotes gender ($G=1$ if female; $G=0$ if male.)
- $E$ denotes experience;
- $E^2$ denotes experience squared.
- $u$ denotes the error term.

In econometric models, logs are used for convenience or to have a good fit of the model to the data. In case of the samples of vocational education out-turns, it is seen that there exists inequality in the level of earnings of the out-turns of vocational education working in different employment terminals and with different years of vocational schooling. Following the analysis of Mincer model made by Chiswik (2003) the log of income has been used as the dependent variable in order to ensure that the residuals are closer to being normally distributed and homoscedastic. Therefore, both for convenience as well as to have a good fit of the model, the log of income is used as the dependent variable.

The use of the quadratic experience is guided by the basic Mincerian model where it is used to capture the linear decline in investment in schooling over time and for the
convenience of calculating a regression model with experience and experience squared. While analyzing Mincer’s model, Polachek (2007) highlighted that training decline linearly over the lifecycle and that log-earnings are a quadratic function of labour market experience.

The pre-vocational years of schooling as depicted in the above equation is determined by the total number of years of general education completed before acquiring the vocational education. The pre-vocational years of schooling considered are below matric, matric, intermediate and graduation. The pre-vocational years of schooling are indicated as-Below matric-8 years; Matric-10 years; Intermediate-12 years and Graduate-15 years.

The estimation of the returns to vocational education by using the above model has been done with the help of the information collected from the samples of vocational education out-turns employed in various employing organisations. Krejcie and Morgan (1970) maintain that research activities require an efficient method of determining the sample size that would be representative of the given population. They reiterate that as population increases, the sample size should increase at a diminishing rate and be stabilised at slightly more than 380 cases. The Survey System (1982) puts forward that the population size is likely to be a factor when working with a relatively small and known group of people. Therefore, it ignores population size when it “large” or “unknown”. It uses the sample size calculator to calculate the sample size. Based on it, at a confidence level of 95% and confidence interval of 5%, the sample size arrived at is 384. The Research Advisor (2006), also maintain that for a population of 1,00,000 and above, at 5% confidence interval and 95% confidence level, the sample size required is 384. This concept has been the guiding factor in the decision to take 640 samples of vocational education out-turns in the estimation of the average private returns to vocational education using the Mincerian model.
1.5. OBJECTIVES OF THE STUDY
The basic rationale behind an economic analysis of vocational education in Assam is to examine its relevance in a dynamic employment market and to investigate the economic consequences that such an education system will entail for its human resources. The primary objectives of the study are:

1. To estimate the private returns to vocational education.
2. To examine the impact of vocational education on the employability of labour.
3. To analyse the effect of vocational education on the effective utilization of human resources.
4. To explore skill deficit in labour in operational firms.

1.6 HYPOTHESES
The study tests the following null hypothesis:

1. Vocational education has no impact on the employability of labour.
2. Vocational education does not impact the effective utilisation of human resource.

1.7 METHODOLOGY
1.7.1 Coverage and Data Source:
In order to study about the effect of vocational education on human resource utilisation, education providers associated with the provision of vocational education have been first identified. The research has included vocational education institutions that provide diploma and certificate level vocational education after a secondary and intermediate education within the purview of this study. This coverage is done, keeping in mind, the Tenth Five Year Plan, 2002-2007 assertion that secondary and higher secondary
education are important terminal stages in the system of general education because these points influence youth decision to pursue higher education or enter the labour force. Accordingly, the Higher Secondary schools, Industrial Training Institutes, Polytechnics, government initiatives and a few private vocational training institutes that provide vocational education have been covered in this study. The educational institutes have been included within the purview of the study so as to have an idea about the infrastructure of vocational education in the state.

The selection of the vocational education providers within the ambit of this study has been so done as to reflect the type and the diversity of courses available in Assam. The vocational education providers have been selected from Guwahati city, as this gives the general picture of Assam. Guwahati, the most important city of Assam and the north-east, finds in it, the existence of almost all institutions providing different levels of education. The vocational educational institutes have been selected on the basis of random sampling. This method has been so used as to have a fair representation of various institutes and courses available in this education sector.

For estimating the returns to vocational education, as given by the earnings function, the study has included people with diploma and certificate level of vocational education qualifications who have entered into formal employment establishments. Both the salaried and the self-employed employees are included for the purpose of this study. For this, various employing organizations in the private as well as the government sector have been selected and different entrepreneurial activities have also been identified to represent the self-employed. The selection of the employment organisations and working categories has been based on the National Industrial Classification (NIC) of India (Central Statistical Organisation, 2008). The National Industrial Classification, which is based on the International Standard of Industrial Classification (ISIC), is a classification of different types of activities undertaken by economic units. The NIC 2008, which is a revised version of NIC, 2004 has 21 sections, 88 divisions, 238 groups, 403 classes and 1304 sub classes representing different economic units and activities in the country. The study also looked into the National Classification of Occupations (NCO) of India to identify working categories. The reference to NIC to select employment terminals and working categories has been made so as to have a fair
representation of activities classified by the National Industrial Classification. The employment terminals represent NIC classifications but have been chosen at random.

To have an idea about various aspects of employment of vocational education out-turns and skill position as well as to analyse the pre-determined objectives of the study, sixty-six of the employment terminals visited for this research work have also been covered within the purview of this study.

The study is broad-based because the samples of vocational education out-turns and employment terminals have been selected from various places across the state. The selection of samples of vocationally qualified people has been done on the basis of multi-stage sampling. First of all, the NIC sections from which these terminals would be included were identified purposively. The identification of the NIC sections was done, keeping in mind the activities that are supported by people with vocational education qualifications. In the second stage, certain employment terminals were selected at random so as to represent the nine sections of the NIC identified. From these employment terminals, employees with a vocational education qualification were selected at random.

There is a significant proportion of workforce in Assam who have acquired vocational skills in informal ways like heredity, self-learning and by learning on-the-job. This research study seeks to calculate the returns to vocational education and therefore, includes only those who have passed through a formal vocational education delivery mechanism. The informal vocational education out-turns are, therefore, excluded from this study.

In a pilot survey conducted amongst informal sector employment establishments, it is seen that they normally do not employ people from formal educational institutions. So these establishments are excluded from the purview of the study. Moreover, most of these trades have been handed down through generations and have therefore maintained them as family enterprises without recruiting from external sources of labour.
1.7.2 **Data collection and Sample Design:**

The data has been collected from both primary and secondary sources depending on the objective of analysis. However, the mainstay of this research study has been primary data, collected during the period 2012-2013. The primary data has been collected through sample survey by distribution of three structured schedules of interview extended to the target groups, relevant to this area of study. The questions in the schedules have been framed keeping in mind, the objectives to be fulfilled by the study and the requirements of the model to be tested.

One of the schedules (Schedule A) was presented to the providers of vocational education and this schedule elicited information regarding course availability in vocational education sector, student enrolment, the placement levels of students and industry linkages. Thus, the data and information regarding vocational education providers has been collected with the help of this schedule filled up by the providers of this education.

The second schedule (Schedule B) has been presented to out-turns of vocational educational system who have subsequently joined the work force and have entered into various employment terminals. These employment terminals have been stratified into nine sections on the basis of the National Industrial Classification, 2008. The vocationally qualified employees in these employment terminals have been selected at random, keeping in mind, the vocational courses provided in the various vocational education institutes. Primary data on years of schooling, salary and work-experience of the target group has been derived from this schedule. These data have been collected in order to calculate the earnings function of the out-turns of vocational education system. Other ancillary information has also been collected with the help of this schedule in order to analyse the objectives of this research work.

The third schedule (Schedule C) has been presented to employment establishments. The questions in this schedule have been so designed as to give an idea about the existence of specific skills and the skill requirement in the employment market as well as the strategies adopted by the establishments with respect to their human resource that would assist their adjustment to the dynamic employment market.
The secondary data has been obtained from population census, vocational educational institutions; relevant government departments like the Directorate of Employment and Craftsment Training, Department of Employment and Labour, different educational boards like Secondary Education Board of Assam, Assam Higher Secondary Education Council, Central Board of Secondary Education, National Institute of Open Schooling and the brochures and prospectus of various private vocational education providers. The secondary data has also been accessed from relevant websites. Other sources of secondary data include published and unpublished articles, journals, theses and various reports and documents of the government.

All data have been gathered keeping in mind, the various objectives outlined in the research study.

**SAMPLING DESIGN AND SAMPLING SIZE:**

Three sets of data have been collected for the purpose of this research work. One set pertains to the vocational education providers.

**Vocational Education Providers:**

For the field study, thirty-eight vocational education providers were surveyed. In case of the vocational education providers, the sample has been collected from Guwahati city only from amongst the following:

- ITIs/ Polytechnics
- List of Private Vocational Training Providers(VTP) provided by Directorate of Employment and Craftsment Training
- List of Government Higher Secondary Schools Provided by the Assam Higher Secondary Education Council
- Private Institutes of State/National /International Prominence
- Other Government Initiatives

The broad classification of these institutes has been made as:

<table>
<thead>
<tr>
<th></th>
<th>Government</th>
<th>Private-21</th>
<th>PPP-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>-13</td>
<td>-21</td>
<td>-4</td>
</tr>
<tr>
<td></td>
<td>Total -38</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
To represent the employment terminals and employees, the entire universe has been stratified into nine sections on the basis of the specific vocational skills observed. These nine sections decided on the basis of the National Industrial Classification are Manufacturing, Construction, Retail Trade and Automobile, Information and Communication, Financial and Insurance Activity, Education, Human Health and Social Work Activity, Hospitality and Other Service Activity.

**Employment Terminals:**

Sixty-six employing organisations that can be brought under the purview of the above nine divisions were surveyed in order to have an idea about certain aspects of employment of vocational education out-turns. The distribution of the sixty-six different employing organisations within the nine classified sections is shown below:

**Distribution of the samples of employment terminals**

<table>
<thead>
<tr>
<th>Manufacturing</th>
<th>Construction</th>
<th>Retail Trade and Automobile</th>
<th>Information and Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>37</td>
<td>5</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Financial and Insurance Activity</td>
<td>Education</td>
<td>Human Health and Social Work Activities</td>
<td>Hospitality</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Other Service Activity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Total-66</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Employees with a vocational education:**

It has been observed that the population size of vocational out-turns in the state is not exactly ‘known” due to lack of a sufficient database by the various sources of vocational education providers in the state. Therefore, from different employing organisations falling under the nine selected NIC divisions, a total of 640 vocationally qualified employees have been chosen at random to constitute the basis of the primary study conducted to inquire into a few aspects of vocational education. This constitutes the third set of data. The distribution of the samples of vocationally qualified employees in the nine divisions is shown in the following box:
**Distribution of Samples of Employees with vocational education**

<table>
<thead>
<tr>
<th></th>
<th>Manufacturing</th>
<th>Construction</th>
<th>Retail Trade and Automobile</th>
<th>Information and Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>260</td>
<td>70</td>
<td>46</td>
<td>30</td>
</tr>
<tr>
<td>Financial and Insurance Activities</td>
<td>27</td>
<td>Education</td>
<td>Human Health and Social work Activities</td>
<td>Hospitality</td>
</tr>
<tr>
<td></td>
<td></td>
<td>38</td>
<td>53</td>
<td>52</td>
</tr>
<tr>
<td>Other Service Activities</td>
<td>64</td>
<td>Total</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>640</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**1.7.3 Line of analysis:**

The line of analysis adopted to fulfill the objectives of the research is as follows:

- To estimate the private rate of returns to vocational education, the Mincerian Earnings Function has been adapted and applied to the primary data gathered from the vocationally qualified manpower. This multiple regression model has been applied to calculate the average private returns to vocational education across different categories identified for study.

- The main criterion for analyzing the impact of vocational education on the employability of labour has been the waiting period of vocational education out-turns after completion of their vocational education and before finding appropriate work. Other attributes like any job change undergone and average years of experience of the vocationally qualified manpower have also been studied as indicators of their employability. The employability of the vocational education out-turns has been studied on the basis of percentages and diagrammatic representations. A multiple regression model has also been used to study the impact that vocational education has on the employability of labour, defined in terms of the waiting period. Moreover, in order to have a more comprehensive picture of the employability of vocationally qualified employees, the study also looked into employability from the employers’ perspectives. In this regard a percentage analysis of skill requirement in employing organizations and the on-the-job training resorted to by them has been attempted.
To achieve the third objective i.e. to analyse the impact of vocational education on the effective utilization of human resource, the study examined whether the right person was at the right place, doing the right kind of work. The use of percentages and diagrams have been made to categorize and analyse the vocational education out-turns into pre-determined utilization groups. Moreover, a binary logistic regression was conducted to test the Null Hypothesis that vocational education does not impact the effective utilization of labour.

A percentage analysis of relevant data gathered from the employment terminals has been done to fulfill the fourth objective of exploring skill deficit in labour in operational firms. The skill status of the employment terminals has been discussed with the help of percentages and diagrammatic representation.

1.8 IMPORTANCE OF THE STUDY
In the fifty-second meeting of the National Development Council, 2006, the Chief Minister of Assam acknowledged that equipping the human resources of Assam with specific skills would expedite the growth process of the state (Gogoi, 2006). Vocational education is one way of providing such skills, which would increase the productivity, employability and versatility in the state’s human resources. The proposed study will give insights into the use of vocational or career based education to generate employable skills and hence indirectly contribute to state domestic product through labour absorption and wage enhancement.

Assam has seen significant inroads being made in its industrial and services sector. In recent times, deliberations abound regarding the “Look East Policy” and opening up of the Stillwell Road. The Assam Development Report, 2003 infers that fast changing technology and new emerging areas in the economy will see the emergence of new employment opportunities in the labour market. This kind of an economic environment is expected to call for increased supply of relevant human resources. As such, vocational education has a very important role to play. An economic analysis of vocational education in Assam will help to examine the feasibility of shifting the focus from the present overdose of liberal education to a more relevant “hands on”, “minds on” and
“hearts on” education. The research findings will throw light on the preparation of the labour force to face national and global competition in the face of changing technology.

To the individual, a study on rate of returns to investment in vocational education will project the practicality of undergoing such an education from employment perspectives. Empirical studies point to the fact that across the country, there is a preference for “white collared” positions, more specifically, scarce government jobs. It is hoped that the research findings will help to remove the existing disdain for “blue-collared” jobs and bring about a definite shift in the mindset of the people.

It is also hoped that this work on vocational education will help in formulation and implementation of public policies that would go a long way in solving the unemployment problem in the state.

The estimation of the rate of returns to vocational education is also likely to assist the government in framing appropriate policies regarding the planning and financing of vocational education. Finally, the study will help to identify critical areas of concentration in vocational education and facilitate government decision-making regarding appropriate corrective measures.

1.9 CHAPTERISATION PLAN

The entire study is divided into ten chapters as follows:

Chapter I: Introduction.
Introduction; Statement of the problem; Review of literature; Conceptual framework; Objectives of the study; Hypotheses; Methodology; Importance of the study; Chapterisation.

Chapter II: An Overview of Vocational Education Scenario in Assam.
Introduction; Human Resource: A glimpse into Employment–Unemployment Situation; Tracing the evolution of education; Pathways to a vocational education; The emergence of the public-private partnership; Conclusion.
Chapter III: Non Formal Approaches to a Vocational Education in Assam
Introduction; The facilitators of non-formal acquisition of a vocational education; Conclusion.

Chapter IV: In Search of the Demographic Dividend in Assam.
Introduction; Education as a facilitator of Demographic Dividend; Population of Assam: Facts at a glance; Age composition; Dependency ratios in Assam; Distribution of the working age population; Prescriptive educational policy; Conclusion.

CHAPTER V: The Vocational Education experience in Guwahati City-An Empirical Study.
Introduction; Type of institutes in the study group; Entry of institutes into the vocational education scenario; Economic background of students; Credentials awarded and entry-level qualifications; Screening of vocational abilities; Campus placement; Linkage of vocational education providers with industry; Conclusion.

CHAPTER VI: Estimating the Returns to Vocational Education: The Earnings Function.
Introduction; Mincerian Earnings Function-the model; Profile of respondents constituting the sample group of vocational education out-turns; Private returns to vocational education: Application of Mincer’s Earnings Function; Overall private returns to vocational education; Private returns to vocational education for different pre-vocational levels; Private returns to vocational education in government sector-private sector employment terminals; Private returns to vocational education in different types of employment terminals; Gender-based private returns to vocational education; Conclusion.

CHAPTER VII: Employability of Labour with Vocational Education.
Introduction; Representation of employees with vocational education in employment terminals; Differences in absorption of products of vocational education; Measures of employability; Employability from the employers’ perspectives; Conclusion.
CHAPTER VIII: Impact of Vocational Education on Effective Utilisation of Human Resource.
Introduction; Assessing the efficiency of utilization of vocational education; Testing the hypothesis; Sectoral differences in relation of work to skill; Picture of effective utilization of vocational education out-turns with different base education levels; Vocational education and effective utilisation of Human Resource: A gender perspective; Conclusion.

CHAPTER IX: Exploring the Skill Gap in Operational Firms.
Introduction; Search for a skill gap; Measures in place to remove the skill gap; A look into the employment establishment-vocational education provider connect; Conclusion.

CHAPTER X: Summary of Findings, Conclusions and Policy Implications.
Introduction; Summary of Findings; Conclusions and Policy Implications.