CHAPTER 4

STATUS OF HIGHER EDUCATION INSTITUTIONS

The present scenario of higher education in terms of its status and basic infrastructural facilities available in these HEIs in India as well as in Barak Valley are depicted in this chapter. The chapter is divided into the three broad sections. The first and second section of the chapter deals with structure of higher education at national level (in section 4.1) dealing with an overview of higher education in India along with the assessment and accreditation of HEIs in India (in section 4.1.1), followed by brief outline of higher education in Assam in Section 4.2. The last section deals with higher education scenario of Barak Valley which is further subdivided into two subsections viz; Section 4.3.1 describing the structure of higher education in Barak Valley and Section 4.3.2 containing explanatory analysis of different indicators related to infrastructure and performance of HEIs for examining status of the HEIs in Barak Valley.

4.1 Higher Education in India

At the time of Independence of India, there were only 20 universities and 500 colleges in the country with 2.1 lakhs students in higher education. These numbers has increased over time. The numbers are now increased to 29 times in the case of the universities, 71 times in the case of colleges and the students enrollment has gone up to 97 times in the formal system of higher education in comparison to the figures at the time of independence. At the end of XI Plan (31.03.2012), there were 573 Universities (43 Central, 129 Deemed and 397 State Universities (State / Public 286 and 111 Private) and 4 Institutions established under Special State Legislature Acts and 35,539 Colleges in the Country. During the year 2014-15 there were 711 Universities and university level institutions (listed by UGC) (46 Central, 128 Deemed, 329 State Public, 205 State Private and three Institutions under Special State Legislature Act) and 40760 Colleges, thus registering an increase of 24 per cent in the number of Universities and 14.69 per cent increase in colleges during the 3rd year of XII plan in comparison to the figures at the end of XI plan.

During the academic year 2014-15, there had been 265.85 lakhs (provisional as per UGC Annual Report 2015) students enrolled in various courses at all levels in universities / colleges and other institutions of higher education as compared to the unrevised figure of 237.65 lakhs in the previous year, registering an increase of 11.87 per cent. During the academic session 2011-2012, the total enrollment in all courses and levels in regular stream stood at 203.27 lakhs including 86.72 lakhs women students, constituting 42.66 per cent. During this session percentage of total enrollment in different levels of higher education at undergraduate, post graduate, certificate and diploma courses and research degrees are 85.87 per cent , 12.26 per cent, 1.08 per cent and 0.79 per cent respectively. The maximum number of students had been enrolled in the state of Uttar Pradesh (29.11 lakhs), followed by Maharashtra (24.14 lakhs), Andhra Pradesh (19.98 lakhs), Tamil Nadu (18.55 lakhs), etc. and Sikkim had the lowest enrollment of 12,757 amongst states.

Table 4.1 Students enrollment at various levels/stages of Higher Education (in percentage)

Session	Total Enrollment	Share of enrollment in different Levels of Higher Education			
		UG	PG	Dip./Cert	Research
2005-06	1004507	88.91%	9.42%	1.03%	0.64%
2006-07	13163054	N/A	N/A	N/A	N/A
2007-08	14400381	89.15%	9.26%	0.93%	0.33%
2008-09	15768417	87.84%	10.92%	1.09%	0.70%
2009-10	17243352	86.55%	11.49%	1.15%	0.89%
2010-11	18670050	86.00%	12.00%	1.20%	0.80%
2011-12	20327478	85.87%	12.26%	1.08%	0.79%
2012-13	22302938	85.90%	12.15%	1.11%	0.84%
2013-14	23764960	85.12%	12.35%	1.68%	0.85%
2014-15	26585437*	86.26%	11.09%	1.57%	0.67%

Source: UGC Annual Report 2006-2014

*Note: UG stands for Undergraduate enrollment in the affiliated colleges of India, PG for Post graduate enrollment, Dip./Cert for diploma and certificate courses of higher education, Research denotes enrollment in research related degrees viz; M.Phil. and Ph.D. * denotes provisional data.*

The students' enrollment increases over the last ten years. The estimated growth rate of students' enrollment is 0.22 which is also significant. The students at undergraduate level constitute provisionally 86.26 per cent of the total number of students in colleges and universities put together. The percentage of students enrolled for Master's level courses (PG) are 11.09 per cent while a very small proportion i.e. 0.67 per cent of the total number of students have enrolled for research, and only 1.57 per cent of the total number of students has enrolled in Diploma / Certificate courses during the session 2014-15. About 89.38 per cent of all the under-graduate students (156.02 lakhs) and 72.16 per cent of all post-graduate students (17.99 lakhs) are in the affiliated colleges while the remaining in departments of the universities and their constituent colleges. Out of the total research students (1.61 lakhs), 79.43 per cent are in the universities. Out of the total enrollment of students (203.27 lakhs), 37.09 per cent students studied in Arts, 18.64 per cent in Science and 17.57 per cent in Commerce, while the remaining 26.70 per cent enrollment are in professional faculties. It is important to observe that the percentage of post graduate students is very lower comparative to under graduate students and a very small percentage of students come from master degree to pursue research work.

According to UGC Annual Report 2014-15, the strength of the teaching faculty in universities and colleges increases to 9.34 lakhs as compared to 8.17 lakhs teachers in the previous year, registering an increase of 14.32 per cent. Out of 9.34 lakh teachers, 83.09 per cent teachers are working in colleges and the remaining 16.91 per cent in universities. The number of women students enrolled per hundred men students enrolled at all levels was 74 in the reporting year. In terms of percentage, the women enrollment was highest in Goa (60.31 per cent), followed by Kerala (58.62 per cent), Meghalaya (54.19 per cent), Himachal Pradesh (51.16 per cent), etc. and Arunachal Pradesh had the lowest enrollment of 36.69 per cent. In absolute numbers, UP was on the top with 12.01 lakhs women enrollment, followed by Maharashtra (10.60 lakhs), Tamil Nadu (8.61 lakhs), etc. The women enrollment was the highest in Arts (41.91 per cent) stream, followed by Science (19.17 per cent) and Commerce (16.31 per cent) and the remaining 22.61 per cent was in various professional faculties. Among professional faculties, the maximum percentage of women enrollment was in Engineering / Technology (11.06 per cent). During 2011-12, as many as 284 new women colleges had been established in various states, thus taking the total number of women colleges to 4266. During XI plan, 2058 new women colleges were established as compared to the number of colleges (2208) at the end of X Plan.

General Development Grants to College

General Development Grants are being provided to the Central, State and Deemed Universities for their overall development covering aspects like enhancing access, ensuring equity, imparting relevant education, improving quality, making the administration effective, enhancing facilities for students, augmenting research facilities and any other plans of universities. Maintenance Grants are also being provided to limited number of universities to meet their recurring expenditure on salaries of both teaching and non-teaching employees, maintenance of labs, libraries, buildings and also for obligatory payments such as taxes, telephone & electricity bills, postage, etc. The central universities and few deemed universities are being paid both Plan and Non-plan grants where as the state universities are being paid only Plan grant.

According to UGC Annual Report 2014-15, there are 18,064 colleges at present of which, 6109 have been recognized under 2(f), and 5525 colleges under sections 2(f) and 12(B) of the UGC Act, 1956. This makes the colleges eligible for central assistance from the Government of India or any organization receiving funds from the Central Government. All eligible colleges have been financially supported for the development of under-graduate and postgraduate education so as to:

i) Strengthen basic infrastructure and meet their basic needs like books and journals, scientific equipment, staff, campus development, teaching aids etc. required for proper functioning.

ii) Provide special assistance, catering to the needs of SC & ST students.

iii) Develop Colleges situated in the backward/ rural/hilly areas for removing or reducing disparities and regional imbalances.

Further UGC provides both Development (Plan) and Maintenance (Non-Plan) assistance to Central Universities under various schemes / programmes. As per the UGC Annual Report 2014-15, of 31st March, 2014, there are 46 Central Universities, out of which six Universities namely; Central Agricultural University, Imphal, Manipur; Indira Gandhi National Open University, New Delhi; Indian Maritime University, Chennai; South Asian University, New Delhi; Nalanda University, Bihar and Rajiv Gandhi National Aviation University, Uttar Pradesh are not funded by the UGC. Therefore, 40 Central Universities are being provided Plan (Development Grant) and other specific schemes of UGC. 24 old Central Universities including three newly converted Central Universities and one Medical College are receiving maintenance grant from the UGC.

As on 31st March, 2012, there were 35,539 colleges in the country. Out of these total colleges, only 8288 colleges were recognized up to 31-03-2012 under section 2(f) of the UGC Act, constituting 23 per cent of the total number of colleges. Out of recognized colleges (8288), only 6787 are eligible to receive grants from the UGC under Section 12(B) of the UGC Act. All the schemes / programmes relating to the college sector are being implemented through the UGC Regional Offices located at Hyderabad, Pune, Bhopal, Kolkata, Guwahati, Delhi and Bangalore.

4.1.1 Assessment of Higher Educational Institutes in India

The Higher Education sector ensures quality of the educational process with the help of accreditation agencies established for the purpose. The main agency which accredits

University and Colleges in general education is the National Assessment and Accreditation Council (NAAC) established by the UGC in 1994, whereas similar function is done for Technical Education by the National Board of Accreditation (NBA) set up by AICTE in 1994, and for Agricultural education by Accreditation Board (AB) set up by ICAR in 1996. Some of the other professional regulatory bodies are attempting to set up their own accreditation agencies, for instance both the Distance Education Council (DEC) and the National Council for Teacher Education (NCTE) are currently discussing with NAAC about the procedures for developing their own accreditation mechanisms. Because of their very late arrival on the scene, the progress of accreditation so far has been very slow. As on May 21, 2006, there were only 128 NAAC accredited universities and 2879 colleges and four Universities and 43 Colleges (NAAC Website, www.naac.gov.in) were reaccredited, where as NBA by June 2005 accredited merely 1232 programs from 325 institutions (NBA Website, www.nbaind.org) as against a total of 14000 programs in 3589 approved UG and PG and 1608 diploma institutions. Initially the progress of accreditation was very slow but has picked up speed in the last few years, and both NAAC and NBA have plans to complete the backlog of accreditation of eligible institutions. In addition to national accreditation, local quality inspections of affiliated colleges are carried out by the affiliating University to ensure provision of adequate academic infrastructure and satisfactory teaching-learning processes. Analysis of examination performance of students is also used by universities to assess the quality of educational offerings of individual colleges.

National Assessment and Accreditation Council (NAAC)

Education plays a vital role in the development of any nation. Therefore, there is a premium on both quantity (increased access) and quality (relevance and excellence of academic programmes offered) of higher education. The NAAC has been set up to facilitate the volunteering institutions to assess their performance vis-a-vis set parameters through introspection and a process that provides space for participation of the institution.

Benefits of Accreditation

Accreditation is beneficial as it facilitates the following:

- Institution to know its strengths, weaknesses, and opportunities through an informed review process.
- Identification of internal areas of planning and resource allocation
- Collegiality on the campus.
- Funding agencies look for objective data for performance funding.
- Institutions to initiate innovative and modern methods of pedagogy.
- New sense of direction and identity for institutions.
- The society look for reliable information on quality education offered.
- Employers look for reliable information on the quality of education offered to the prospective recruits.
- Intra and inter-institutional interactions.

Criteria for Assessment: NAAC has identified the following seven criteria to serve as the basis of its assessment procedures:

- Curricular Aspects
- Teaching-Learning and Evaluation
- Research, Consultancy and Extension
- Infrastructure and Learning Resources
- Student Support and Progression
- Governance, Leadership and Management
- Innovations and Best Practices

Certain important Assessment Indicators are identified under the key aspects and the Seven Criteria which encompasses them, as probes or leads for the Peer Team members to capture the micro-level quality parameters. These indicators facilitate the computing of the

Key Aspect-wise Grade Points (KA-GPS) and the Criterion-wise Grade Point Averages (CR-GPAs) in order to arrive at the quality status of the institution.

Modified Eligibility Criteria for Institutions (with effect from 1st November 2013)

The eligibility criteria has been modified and new criteria has been formulated from 1st November, 2013. Now, the Higher Education Institutions (HEIs) are eligible to apply for the process of Assessment and Accreditation (A&A) of NAAC, if they have a record of at least two batches of students graduated or been in existence for six years, whichever is earlier and fulfil the other conditions or are covered by the other provisions, if any, mentioned below:

a) **Universities (Central / State / Private / Deemed-to-be) and Institutions of National Importance**

- Provided further that the duly established campuses within the country, if any, shall be treated as part of the universities / Institutions of National Importance for the A&A process
- NAAC will not undertake the accreditation of off-shore campuses

b) **Colleges** (i.e., colleges / institutions affiliated to, or constituent of, or recognized by universities, including autonomous colleges)

- Provided Teacher Education / Physical Education colleges shall have a standing of at least three years.
- However, colleges / institutions offering programmes recognized by Statutory Professional Regulatory Councils concerned as equivalent to a degree programme of a university shall also be eligible for A&A even if such colleges / institutions are not affiliated to a university.

4.2 Higher Education in Assam

Assam boasts of the most wide-ranging networks of higher educational institutions in the whole of North-Eastern region of India. There have been some important developments in the field of higher education in Assam. The establishment of two central universities, one Indian Institute of Technology (IIT), and a few private professional colleges in last two decades and the proposals to create more such institutions are steps in the right direction. That these institutions offer a wider range of vocational courses than the existing institutions do, is also a welcome initiative. Presence of institutions like the National Institute of Technology, Silchar; Indian Institute of Technology, Assam and Tezpur University (Central University) and several others help to add stature to the higher education system of Assam. The state is also home to several elite higher education institutions which include:

Table 4.2 Profiles of universities in Assam

University Types	Name of the Universities with year of Establishment
	1. Assam University, Silchar (1994)
Central Universities	2. Tezpur University, Tezpur (1994)
	1. Gauhati University, Guwahati (1948)
	2. Dibrugarh University, Dibrugarh (1965)
	3. K.K. Handique State Open University (2007)
	4. Kumar Bhaskar B. Barman University Womens University (2011)
	5. Bodoland University, Kokrajhar (BTAD) (2009)
	6. Cotton College State University (2011)
State Universities	7. Assam Agricultural University (1969)
	1. Don Bosco University (2008)
	2. Down Town University (2011)
Private Universities	3. Kaziranga University (2010)

Source: Director of Higher Education, Assam Report http://dheassam.gov.in

Director of Higher Education, Assam looks after all the affairs of the universities, Govt. Colleges, Provincialised Colleges, Non-Provincialised Colleges, Sanskrit Education, Literary and Voluntary Organizations of Assam. The Institutions under the administrative control of Higher Education (General / Sixth Schedule / BTAD areas) are shown in Table 4.2.

The endeavour of the Government is to make higher education in Assam more accessible and affordable to the economically weaker section and rural students and to create employment opportunity through in Assam. In Assam there are seven universities including the distance universities, three Medical Colleges, seven Engineering colleges, nine Polytechnic, 20 govt. Arts & science colleges, two Govt. teacher training Colleges and 171 other non Govt. and affiliated educational institutions.

There has been a phenomenal growth of Higher Education in Assam since independence. The major concern of Government of India and of the states was to give increasing attention to education sector. Problem of educational reforms and reconstruction were reviewed by various commissions and committees. In the later part of the last century Policy on Education (1986) has been adopted at the national level. In Assam, government has been quite alive to the requirement, improvement and expansion of education in the state. The state government has followed policies and decisions taken at the national level for implementation in the state. As such it follows the mandate of National Policy on Education (1986) and Programme of Action (1986, revised in 1992) in terms of intervention in Higher Education. The University Grants Commission and National Assessment and Accreditation Council (NAAC) play a major role in the quality aspect of it.

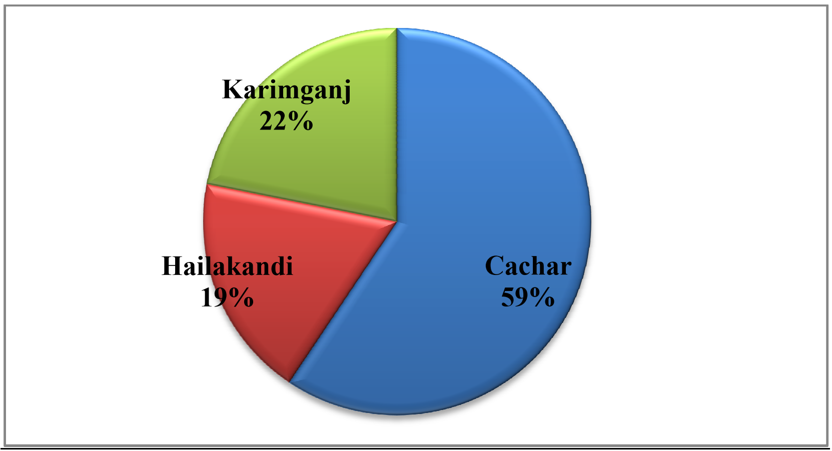
The post of Director of Public Instruction (DPI) had been created in 1874. Officiating from Shillong, the capital of undivided Assam, DPI's office catered to all aspects of education viz; Elementary, Secondary, Higher, Adult, Technical etc. of the entire state that included the present day Meghalaya, Mizoram and Nagaland. It remained in Shillong, even after all these states shot off for their independent existence as states, till 1973 when the capital of Assam finally shifted to Guwahati. The Higher Education Directorate is entrusted with the responsibility of managing the affairs relating to higher education. The Directorate of Higher Education caters to the Universities, Government Colleges, Non-Govt. (Provincialised) colleges, Ad-hoc Colleges, Affiliated Colleges, Ad-hoc Law Colleges, Asom Publication Board, Literary & Voluntary Organisations, Sanskrit and Pali Prakrit Tols, Asom Sanskrit Board, State Selection Board, Asom etc. The Directorate is controlling the Non-Plan and Plan Budget, releasing salaries to the staff of the above mentioned institutions, and takes significant steps in appointment, administration etc. The Directorate is administered as per Acts & Rules of the Government notified from time to time.

4.3.1 Higher Education in Barak Valley

The Barak Valley is situated in southern part of Assam consisting of three districts viz: Cachar, Karimganj and Hailakandi. In this region both public and private institutions operate simultaneously to provide higher education for the people of the valley and its nearby areas. At present there are 41 degree colleges, one Central University (under it these 41 degree colleges are affiliated), one Medical College, one NIT, one Polytechnic Institute, and few study centers of Distance Education which constitutes the set of Higher Educational Institutions in Barak Valley. Here out of these 41 degree colleges 32 provide general education of either single or combination of Arts, Science and Commerce streams, and the rest nine are professional colleges (seven B.Ed. Colleges and two Law colleges) shown in Table 4.3. In Barak Valley, there are 15 NAAC accredited HEIs out of which one is teacher’s training college, another one is central university and the rest 13 are three years general degree colleges. The study is concentrated only on affiliated general degree colleges. District wise distribution of general degree Colleges are shown in Figure 4.1.

From above Figure 4.1, it is observed that approximately three-fifth general degree colleges are situated in Cachar District, while Karimganj districts shares more than one fifth and the rests are in Hailakandi districts.

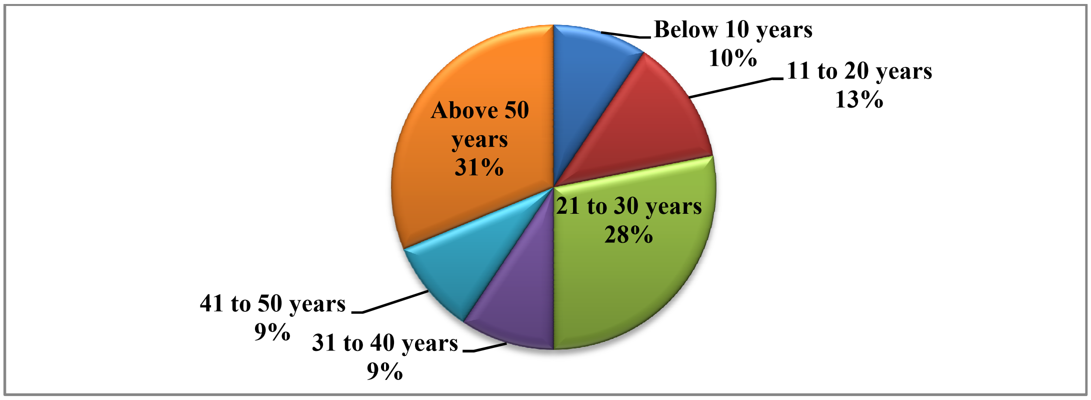
Figure 4.1: District wise Distribution of General Degree Colleges



Source: Adapted from Table 4.1

The general degree colleges of Barak Valley are situated in both urban and rural areas and providing higher education to the people of this region. Here, approximately 70 per cent colleges belong to rural area and the rests are in urban areas. Approximately, 50 per cent colleges are permanently affiliated under Assam University and the rests are either permitted or temporarily affiliated under the same university. Out of these approximately 20 per cent are providing three streams, i.e., Arts, Science and commerce, 20 per cent two streams and the rests 60 per cent are offering either of the three streams. The first college in Barak Valley is started in the year 1935, while at the time of independence only two colleges were there and the number rose to 18 in 1990 and further increased to 30 in the year 2000. As on 31st March 2016 approximately 31 per cent of the affiliated general degree colleges are more than 50 years old, 21 per cent are between 21 to years old.

Figure 4.2 Distribution of General Degree Colleges according to Years of their Establishment



Source: Assam University Annual report 2014-15

Figure 4.2 shows Distribution of General Degree Colleges according to years of their establishment. From here it is observed that approximately 50 per cent of general degree colleges were set up before 30 years, while the rests are after wards.

In Barak Valley, there are 15 NAAC accredited HEIs out of which one is Teacher's Training College and the rest 13 are general degree colleges. The central university is also NAAC accredited. The present study is concentrated only on affiliated general degree colleges (both NAAC accredited and non-NAAC accredited) for study period 2005-06 session to 2011-12.

Table 4.3 Types of HEIs in Barak Valley

HEI Types	Cachar	Hailakandi	Karimganj	Barak Valley
General Degree Colleges	19	6	7	32
Professional Colleges	6	3	3	13
B.Ed. Colleges	3	3	2	8
Law Colleges	1	0	1	2
Medical Colleges	1	0	0	1
Engineering College (NIT)	1	0	0	1
University (Central)	1	0	0	1

Source: Assam University Annual Report 2011-12

The detailed number of HEIs in three districts of Barak Valley is shown in Table 4.4. Cachar district being the largest district of the region among the three districts of the region has highest number of both general and professional degree colleges. In case of professional degree colleges there is only one medical college and one institute of national importance (NIT) in the region, in case of teachers training colleges both Karimganj and Cachar districts have three B. Ed. colleges and two B. Ed. colleges are situated in Hailakandi district. There are two Law colleges and they are continuing their LLB programme under Assam University.

Table 4.4 Enrollment, Student Teacher Ratio and Fund Allocation in Higher Education Institutions

	Number of Affiliated Colleges	Total Enrollment	Pupil Teacher Ratio in Affiliated Colleges			2(f) & 12 B	2(f) only (Not Included Under 12 B
			Central University	State University	Total		
Barak Valley	42	17746	19.04:1	N/A	19.04:1	17	2
Assam	507	279243	N/A	N/A	N/A	229	30
India	35539	20327478	27:1	20:1	21:1	6787	1501

Source: UGC Report 2011-12, MHRD Annual Report 2011-12 and Assam University Annual Report 2011-12

At present, there are 17 affiliated general degree colleges and two professional colleges in Barak Valley are receiving both 2(f) & 12B. Approximately seven per cent colleges of Barak Valley are receiving this fund in Assam. Out of the total number of colleges in India, Barak Valley shares only 0.12 per cent of colleges with 0.08 per cent of total enrollment. Out of the total colleges in Assam, only 8.48 per cent colleges are situated in Barak Valley with 6.4 per cent of total enrollment out of state total. According to UGC Report of 2011-12 students-teacher ratio in affiliated colleges under central university is 1:27 for the nation while in case of Barak Valley it is at 1:19.04 which are far below the national level. While considering the success rate the average pass percentage of students in this region is below national level even with more availability teachers per student.

4.3.2 Infrastructure of the Higher Education institutions in Barak Valley

The term infrastructure in higher education is comprehensive with all basic facilities, services, and installations needed for the functioning of a community or society. Generally, infrastructure is divided into two types, namely economic or physical infrastructure and human infrastructure, similarly for the higher education institutions strategic planning need to take into consideration the infrastructure and its components. Furthermore, for applied sciences, laboratories and other equipments are needed for experiments and projects of the fields. Advanced equipments and substances needed for such facilities will increase the quality of learning and enhance the sense of research among students and faculty in the fields pursued. In addition to these facilities, faculty is another important component of infrastructure. Usually it is acknowledged that the primary mission of any higher education institution is to provide education and spreading knowledge. To transmit this objective effectively, the human resource involved in it should have the skills, experience and resources needed. Therefore, having a qualified, energetic, and research-oriented faculty will enhance the institution's ability to achieve its mission.

To investigate the status as well as infrastructural facilities available in the Higher Education Institutions, composite dimension index and principal component analysis have been used. The status of higher education institutions is measured by using composite index of infrastructure and performance index with equal weights. The infrastructure index is constructed by using composite dimension indices of physical and human resources as teaching learning is determined by both of it. The following Table 4.5 shows descriptive statistics of different factors are taken as indicator of physical and human resource indices.

The HEIs shown in the table are divided into two categories viz; NAAC accredited and non-NAAC accredited.

Physical resource of any higher education institution or any other plays a great role due to its influential impact on educational process and programmes. Generally speaking it is one of the major aspects of institutional administration related to material provisions of the HEIs from the perspective of its prerequisite for growth and development of youths who are part of higher education. Physical resources in any HEI mainly includes campus of the institution in terms of area and buildings, playgrounds, library, laboratories according to the necessity of available subjects, class-rooms, furniture, equipments, common rooms, canteens, reading rooms etc.

Library is the hub of the academic life of any education institution hence its availability and accessibility plays an important in learning process. A separate room for library centrally located from all teaching departments and rooms with sufficient study materials is desirable for any education institution. However, there are few colleges in Barak Valley which do not have sufficient library facilities. Number of Books and issuing of books to students at a time is better in NAAC accredited colleges than others. Number of books in the HEIs of Barak Valley varies from zero to 35,000 approximately. Even there are few colleges which have neither girls nor boys common room. Classroom number and size varies according to requirement and necessity of the HEIs according to subjects and students strength. From the survey, it is observed that the number of classrooms in the HEIs of Barak Valley ranges from four to 43 with mean and median 19.70 and 10 respectively. As construction and development is a continuous process of any institution for up gradation, so a minor divergence in these values of may be there in terms of some indicators present time and the study period.

Table 4.5: Descriptive Statistics of the Indicators of Physical Resources and Human Resources in the HEIs of Barak Valley

Indicators	NAAC Non- Accredited Colleges					NAAC Accredited Colleges					All Colleges				
	Mean	Median	SD	Min	Max	Mean	Median	SD	Min	Max	Mean	Median	SD	Min	Max
Boys' Common rooms	0.65	1	0.49	0	1	0.85	1	0.38	0	1	0.73	1	0.45	0	1
Girls Common rooms	0.76	1	0.44	0	1	1.00	1	0.00	1	1	0.87	1	0.35	0	1
Generator Facility	0.18	0	0.39	0	1	1.00	1	0.00	1	1	0.53	1	0.51	0	1
Class Rooms	8.82	8	3.96	4	19	19.85	15	9.88	12	43	13.60	12	8.94	4	43
Playground	0.88	1	0.33	0	1	1.00	1	0.00	1	1	0.93	1	0.25	0	1
Canteens in the campus	0.59	1	0.51	0	1	1.23	1	0.60	1	3	0.87	1	0.63	0	3
Number of computers	3.94	1	4.97	0	15	40.31	26	27.13	10	100	19.70	10	25.58	0	100
Seminar hall	0.24	0	0.44	0	1	0.92	1	0.49	0	2	0.53	0.5	0.57	0	2
Books in Library	3475.71	1812	3947.10	0	15000	17235.08	18000	9317.98	1200	35000	9438.10	5536	9623.66	0	35000
Books issued to Hons. Students	1.18	2	1.19	0	3	3.31	3	1.03	2	5	2.10	2	1.54	0	5
Books issued to Pass Students	1.53	2	0.72	0	3	2.08	2	0.86	1	4	1.77	2	0.82	0	4
Full-time Teaching Staffs	19.06	19	6.91	9	31	38.85	31	24.53	14	90	27.63	20.5	19.36	9	90
Per-time Teaching Staffs	2.44	1	4.29	0	17	9.31	8	6.88	2	25	5.52	3	6.50	0	25
Full-time Non-teaching Staffs	7.65	7	3.71	2	14	16.54	12	12.20	7	52	11.50	9	9.45	2	52
Per-time Non-teaching Staffs	1.00	0	1.80	0	7	8.08	6	6.17	1	22	4.07	1.5	5.50	0	22
Teachers with NET/SLET	1.47	1	2.29	0	8	5.31	6	3.97	0	12	3.13	1	3.63	0	12
Teachers with Ph.D.	1.29	1	1.93	0	8	11.62	8	10.83	0	36	5.77	2	8.81	0	36
Teachers with M.Phil.	2.18	2	1.98	0	7	9.85	9	8.24	0	28	5.50	2.5	6.72	0	28
Teachers with NET+ M.Phil.	0.35	0	0.61	0	2	0.77	0	1.01	0	3	0.53	0	0.82	0	3
Teachers with NET+ Ph.D.	0.06	0	0.24	0	1	1.15	1	1.28	0	4	0.53	0	1.01	0	4
Teachers with M.Phil. +Ph.D.	0.00	0	0.00	0	0	2.15	1	3.00	0	9	0.93	0	2.21	0	9

Source: Primary data collected from the colleges during September 2012 to September 2013, DHE, Assam Publication regarding Statement of Provincialisation services in affiliated degree colleges as per Assam Venture Educational Institutions (Provincialisation of Services) Act,2011 and Amended, 2012 in respect of Degree Colleges of Assam and AUS's Annual Reports

Among the various indicators of physical resource of the colleges, the study sorted eight factors for constructing physical resource index which are common for all the general degree colleges irrespective of the stream. Boys' common rooms, girls' common rooms, class rooms, playground, number of computers, seminar hall, books in library, books issued to Honours students, books issued to Pass students are selected factors which are common and basic necessity for all stream for all types of colleges. However, for colleges having science subject, specific laboratory are important for determining status of physical resource, but in order to maintain homogeneity in the sample common factors are included for analysis. Table 4.6 shows the validity of principal component analysis for constructing physical resource of the colleges. Here, Kaiser-Meyer-Olkin Measure of Sampling Adequacy statistic reveals that the dataset is explaining 77 per cent of the population which is a good indicator of representative population. Bartlett's test provides sufficient statistical significance.

Table 4.6: KMO and Bartlett's Test for Physical Resource Index

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.77
Bartlett's Test of Sphericity	Approx. Chi-Square	162.09
	Degrees of Freedom	28
	Significance	0.00

Source: Author's Calculation form primary data collected from the colleges (during September 2012 to September 2013).

Table 4.7: Total Variance Explained by factors of Physical Resources

Component	Initial Eigen values			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.56	56.99	56.99	4.56	56.99	56.99
2	1.52	19.04	76.03	1.52	19.04	76.03
3	0.63	7.88	83.91			
4	0.49	6.13	90.04			
5	0.30	3.74	93.78			
6	0.29	3.63	97.41			
7	0.14	1.77	99.18			
8	0.07	0.82	100.00			

Extraction Method: Principal Component Analysis.

Source: Author's Calculation form primary data collected from the colleges (during September 2012 to September 2013)

The Principal Component analysis indicates that there exist only two principal components for these twelve indicators, which explain 80.56 per cent of the variation in the data. The first principal component is accounted for 56.99 per cent of variation and the second principal component is accounted for 19.04 per cent of the variation (Table 4.7). The percentage of variation explained by each factor is different and hence the importance of the factors is different.

Table 4.8: Physical Resource Index of the Colleges in Barak Valley

HEI Code	NAAC Accredited (1 for Yes / 0 for No)	Factor 1	Factor 2	Composite Index of Physical Resources	Physical Resources Index (PRI)	Rank in terms of PRI
C1	0	0.264	0.589	26.286	0.577	12
C2	0	-1.563	-1.495	-117.521	0.002	29
C3	1	1.566	-0.84	73.253	0.765	3
C4	1	2.15	-1.484	94.292	0.849	2
C5	0	-0.745	-0.565	-53.226	0.259	26
C6	1	0.747	0.664	55.226	0.693	4
C7	0	-1.254	-1.897	-107.606	0.042	27
C8	0	-1.572	-1.497	-118.095	0	30
C9	1	2.421	-0.313	132.001	1	1
C10	1	0.082	0.565	15.436	0.534	13
C11	0	-0.725	-0.622	-53.165	0.26	25
C12	1	0.656	0.079	38.919	0.628	6
C13	0	0.443	0.424	33.314	0.605	9
C14	0	-1.497	-1.539	-114.628	0.014	28
C15	1	0.421	0.247	28.72	0.587	11
C16	1	0.571	0.149	35.408	0.614	8
C17	0	-0.348	0.899	-2.733	0.461	17
C18	0	-0.535	1.13	-8.978	0.436	20
C19	1	0.629	-1.321	10.715	0.515	14
C20	1	0.542	0.307	36.762	0.619	7
C21	1	0.369	0.473	30.009	0.592	10
C22	0	-0.231	0.947	4.872	0.492	16
C23	0	-0.539	1.151	-8.791	0.437	19
C24	0	-0.652	1.215	-14.018	0.416	23
C25	0	-0.465	0.977	-7.905	0.441	18
C26	1	0.728	0.026	41.98	0.64	5
C27	0	-0.585	1.17	-11.096	0.428	22
C28	0	-0.903	0.774	-36.755	0.325	24
C29	0	-0.527	1.05	-10.034	0.432	21
C30	1	0.552	-1.265	7.359	0.502	15

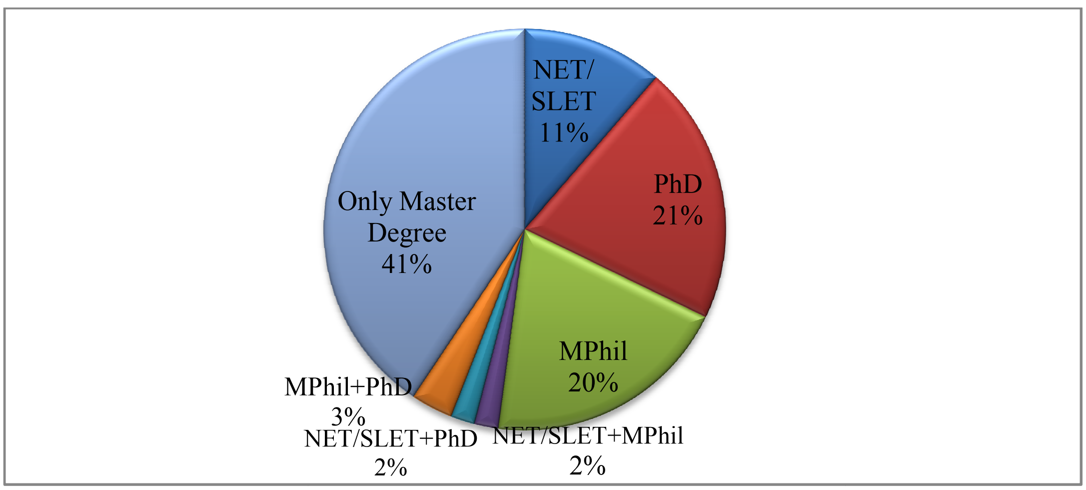
Source: Author's Calculation form primary data collected from the colleges (during September 2012 to September 2013).

A composite index is developed as weighted sum of scores for each HEI, the weight being the percentage of the variation explained by the factors. This index measures the physical resource index of one HEI relative to the other on a linear scale. The index value is calculated for each HEI in Table 4.7. For example, for the HEI C1, the composite index is 0.264 x 56.99 + 0.589 x 19.04 = 0.577. Similarly, the value of the index is computed for the 30 HEIs of Barak Valley which is shown in Table 4.8. Among the top ten rank of HEIs in terms of physical resources of the institutes, only one non-NAAC accredited college is there at 9th position, while the all others are NAAC accredited colleges. Out of 13 accredited colleges on C15, C10, C20 and C30 have ranked 11th, 13th 14th and 15th position respectively. Among 17 non-accredited colleges college C12 and C1 have ranked 9th and 12th position respectively. The mean value of the physical resource index is 0.4721 and the median lies at 0.497. Among 30 colleges the values of physical resource index of 15 colleges have scored above average where only two non-accredited colleges and all others are accredited colleges. Hence, it can be argued that the status of most of the non-accredited colleges is not up to the mark as compared to accredited colleges. This may be due to the shortage of sufficient fund these colleges are unable to build the sufficient and necessary infrastructure. Other possible reason may be poor enrollment of those colleges due to geographical backwardness or newly established colleges.

In educational institution, human resources play a more vital role than physical resources and have positive influence on the performance of it. In order to examine the status of human infrastructure availability and quality of the related factors plays an important role. In this connection two indices are constructed where one measures availability of human resources and another measures the quality of teachers which plays a determinant role in terms of performance. In order to construct human resource index of the colleges a composite index is used by assigning equal weights to teacher-student ratio and nonteaching staffs-teachers ratio. For smooth functioning and maintenance of HEIs, it is necessary and desirable to have favourable non-teaching staffs and teachers ratio. While availability of teachers in a greater proportion per-student improves academic environment and performance of the institution. Nonetheless their quality is of more important variable than the quantity, hence quality of teachers of a particular college is here considered as an indicator of infrastructure. However, measurement of quality and its indicators are also subjective in nature which are difficult to compute. Simply if we consider the criteria of teachers' quality then it can be argued that additional qualifications related to the field of knowledge and experience in relevant field are of determining factors of it. Hence, in order to construct teachers' quality index of the colleges average additional higher qualifications and average teaching experience of the teachers are taken as indicators of quality. For calculation of teachers' educational index, weights are assigned as per the academic qualifications of teachers in those colleges according to the guidelines for selection of college teachers by Director of Higher Education, Assam. Hence weights are assigned as ten for Ph.D. Degree and NET / SLET, five for M.Phil. and fifteen for NET/SLET or Ph.D. with M.Phil. Though NET and SLET are just eligibility criterion at entry level but there is very few NET / SLET qualified teachers in these Colleges. However, according to UGC Regulation of 2009 candidates having Ph.D. degree with course work of six month in research methodology are exempted from these criteria. Hence, in this connection Ph.D. degree and NET / SLET are assigned equal weights for construction of teachers' educational qualification index and weight as twenty for the teachers with both. Finally, the index is constructed by taking sum of the number of teachers having these extra qualifications rather than simple master degree multiplied with the respective weights per teacher for each college.

In the affiliated degree colleges of Barak Valley, it is found that 41 per cent of the teachers have no additional qualifications rather than Master Degree in their respective subjects. However, this is not much a matter of concern as before introduction of NET and SLET (1988) as the basic minimum criteria for selection of Lectureship or Assistant Professorship for provincialised colleges as per UGC regulations. Earlier the eligibility was 55 per cent marks for unreserved candidate and 50 per cent for Schedule castes and Schedule Tribe community at Master Degree in the respective subject. However after the introduction of the criterion there was day to day change in eligibility criteria regarding recruitment of teachers in the colleges, but NET / SLET has remain as the basic norms for recruitment of teachers in the colleges. In the affiliated colleges of Barak Valley total 15 per cent teachers have NET / SLET, out of which only two percent have NET / SLET with Ph.D. degree and the proportion is same for NET / SLET with M.Phil. degree (shown in Figure 4.3). While only 26 per cent are with Ph.D. degrees in the affiliated colleges of the region. Only three per cent teachers have both M.Phil. and Ph.D. degree which is five per cent for accredited and zero per cent for non-accredited colleges (shown in Figure 2 and Figure 3).

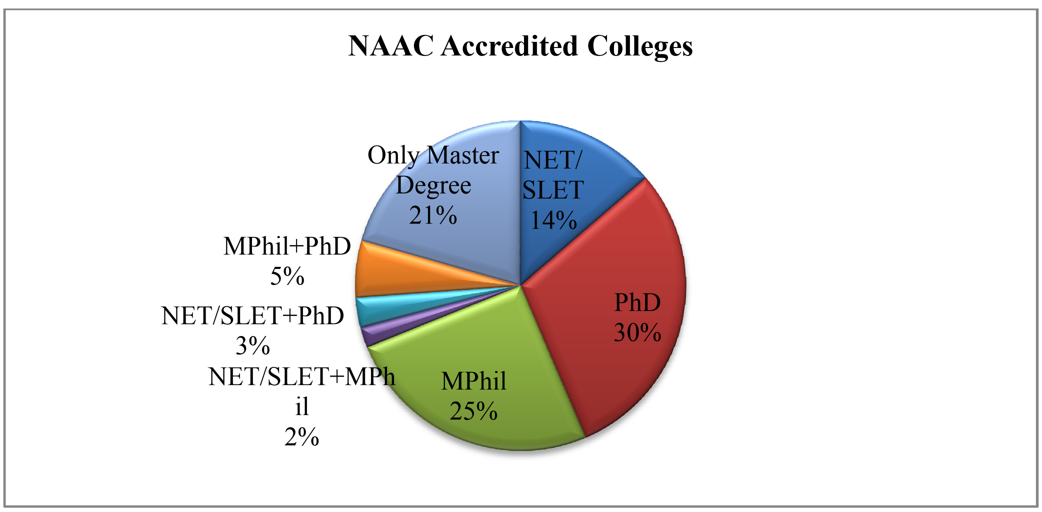
Figure 4.3 Teachers' Qualifications in Affiliated General Degree Colleges of Barak Valley



Source: *Author's Compilation form primary data collected from the colleges (during September 2012 to September 2013) and DHE, Assam Publication regarding Statement of Provincialisation services in affiliated degree colleges as per Assam Venture Educational Institutions (Provincialisation of Services) Act,2011 and Amended, 2012 in respect of Degree Colleges of Assam.*

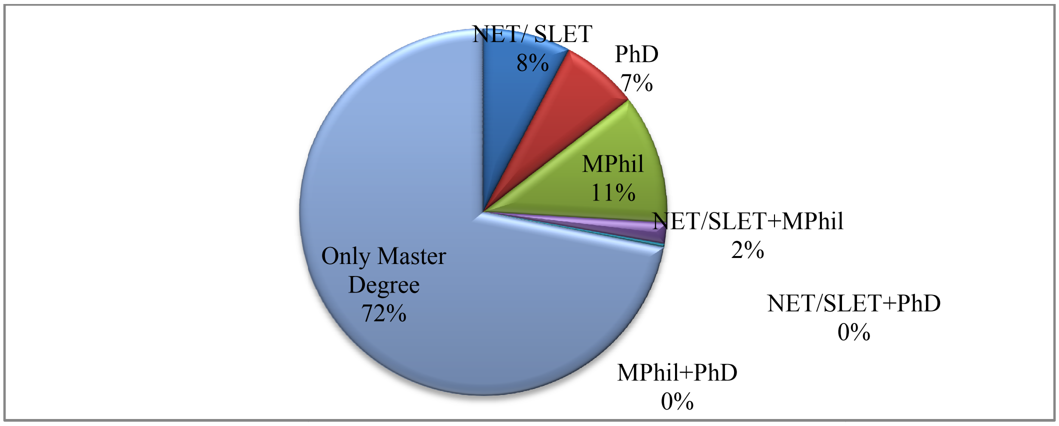
Figure 4.4 depicts qualifications of the teachers in NAAC accredited colleges and Figure 4.5 shows qualifications of the teachers in non-NAAC accredited colleges of Barak Valley. From these two figures, it is also observed that qualifications of teachers in NAAC accredited colleges are better than that of non-accredited colleges. In NAAC accredited colleges 21 per cent teachers have no additional qualifications rather than Master Degree who are generally experienced teachers with teaching experience approximately 20 years. Whereas in non-accredited colleges where only 72 per cent of the teachers have no other qualifications rather than Master Degree. This implies that these colleges have followed no strict guidelines in their recruitment process, which may be due to non availability of suitable candidates at their prevailing situation or may be due to locational bottleneck of these colleges.

Figure 4.4: Teachers' Qualifications in NAAC Accredited Colleges of Barak Valley



Source: *Author's Compilation form primary data collected from the colleges during September 2012 to September 2013*

Figure 4.5: Teachers' Qualifications in Non-NAAC Accredited Colleges of Barak Valley

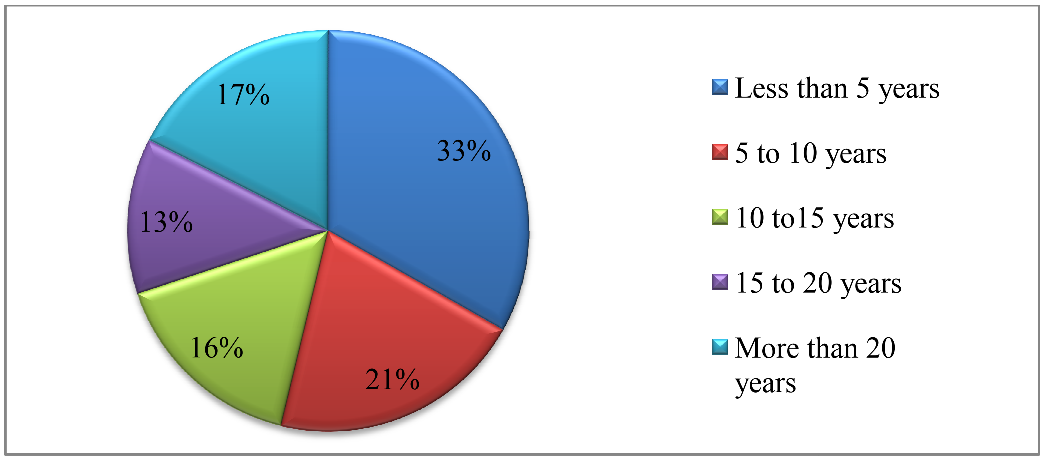


Source: *Author's Compilation form primary data collected from the colleges during September 2012 to September 2013, DHE, Assam's Publication regarding Statement of Provincialisation services in affiliated degree colleges as per Assam Venture Educational Institutions (Provincialisation of Services) Act,2011 and Amended, 2012 in respect of Degree Colleges of Assam and AUS's Annual Reports*

In case of accredited colleges, total 19 per cent teachers are either NET or SLET qualified where 14 per cent are only NET / SLET qualified, three per cent are NET / SLET qualified with Ph.D. and two per cent are NET / SLET qualified with MPhil degree. However, 38 per cent of the teachers have Ph.D. degree out of which five per cent have both M.Phil. and Ph.D. degree and in total 32 per cent have MPhil degree. In case of non-accredited colleges total ten percent of teachers have NET / SLET out of which only two percent have NET / SLET with M.Phil. degree while in total only seven percent of the teachers have Ph.D. degree. Hence, it seems that the status the accredited colleges in terms of teachers' educational qualifications are superior to that of in non-accredited colleges of Barak Valley.

Like teachers qualification, teaching experience also plays a crucial role in determining quality of teachers as with the increase in experience in any field leads to growth in that area. Figure 4.6 shows distribution teachers' experience in affiliated General Colleges of Barak Valley in terms of percentage. From here it is clearly observed that 33 per cent teachers of the colleges in this region are having teaching experience less than five years, which implies that 33 per cent of teachers of this region are newly recruited teachers. While 17 per cent teachers have experience more than 20 years, which implies that within few years there would be some new entry in the colleges of Barak Valley after the retirements of these teachers. These two extreme groups consists 50 per cent of the teachers of the colleges as a while and the remaining fall in the group of teaching experience in between five to 20 years.

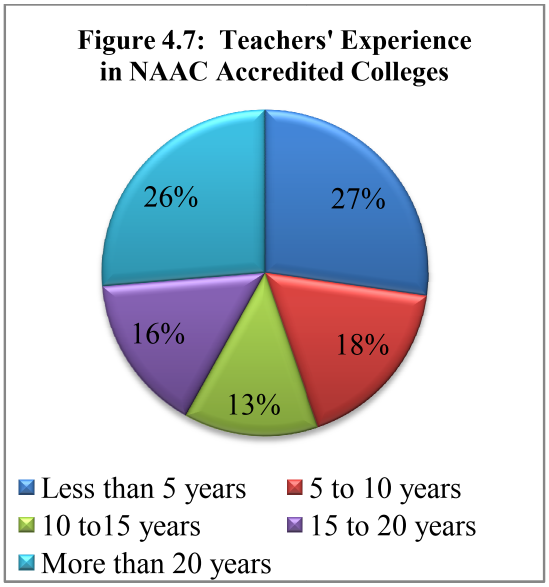
Figure 4.6: Teachers' Experience in Affiliated General Colleges of Barak Valley

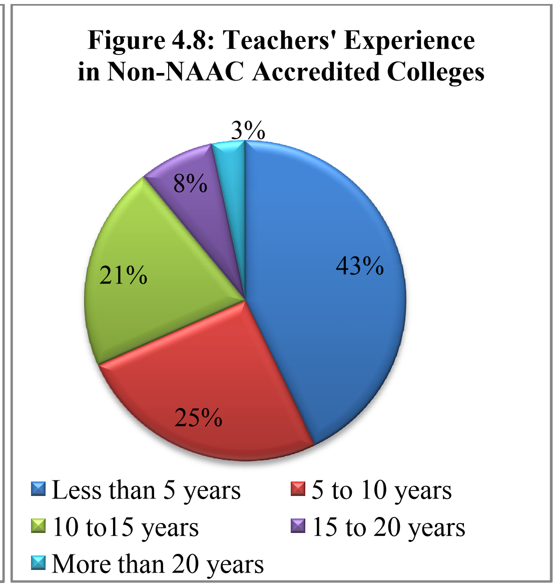


Source: *Author's Compilation form primary data collected from the colleges during September 2012 to September 2013, DHE, Assam Publication regarding Statement of Provincialisation services in affiliated degree colleges as per Assam Venture Educational Institutions (Provincialisation of Services) Act, 2011 and Amended, 2012 in respect of Degree Colleges of Assam and AUS's Annual Reports*

Figure 4.7 and Figure 4.8 represent teachers' experience in NAAC accredited and non-accredited Colleges of Barak Valley respectively. From these two figures, it is very clear that number of experienced teachers in NAAC accredited colleges are at a larger proportion than non-accredited colleges. In case of NAAC accredited colleges only 27 per cent teachers are having experience less than five years which is 43 per cent for non-accredited colleges. While three per cent teachers in non-accredited colleges consists of teachers with teaching experience more than 20 years, which 26 per cent for NAAC accredited colleges. In case of accredited colleges 18 per cent teachers having teaching experience between 5 to 10 years, whereas it is 25 per cent in non-accredited colleges.

Hence, it can be argued that in non-accredited colleges majority (68 per cent) of teachers have teaching experience of less than 10 years. While only 21 and eight per cent teachers in these colleges have teaching experience between 10 to 15 years and 15 to 20 years respectively.





Source: *Author's Compilation form primary data collected from the colleges during September 2012 to September 2013 and DHE, Assam Publication regarding Statement of Provincialisation services in affiliated degree colleges as per Assam Venture Educational Institutions (Provincialisation of Services) Act, 2011 and Amended, 2012 in respect of Degree Colleges of Assam and AUS's Annual Reports*

In NAAC accredited colleges, 42 per cent teachers have teaching experience more than 15 years and 13 per cent teachers have experience between 10 to 15 years; hence in total 65 per cent teachers are in these colleges with teaching experience more than 10 years. The distribution of teachers' experience in accredited is less skewed and clusters around a value which is approximately more than 10 years. But, in case of non-accredited colleges teaching experience is more skewed toward five years experienced teachers. Among the different ranges of teaching experience there is less variation in composition in case of NAAC accredited colleges, while more in case of non-accredited colleges.

Availability and quality of human resources related to teaching learning process plays an important role in determining performance of the HEIs or any educational institutions which reflect ultimate status of it. Here, the human resource index (HRI) is taken as a proxy for measuring availability of human resources in the HEIs and Teachers' Quality Index (TQI) is taken as an indicator of quality of human resource involved in teaching learning process with the help of teachers' educational qualifications (TEI) and average teaching experience (ATE). Table 4.9 depicts the descriptive statistics of HRI and TQI along with their indicators.

Table 4.9: Descriptive statistics of HRI, TQI and their indicators for the HEIs of Barak Valley

Groups	Indicators	Mean	Median	Maximum	Minimum	Variance
NAAC Accredited Colleges	ATE	10.50	10.97	16.13	4.65	9.02
	TEI	7.48	7.43	10.28	4.03	2.88
	TQI	0.78	0.82	1.00	0.30	0.03
	TNTR	0.49	0.48	0.80	0.22	0.03
	TSR	0.05	0.06	0.09	0.02	0.00
	HRI	0.28	0.27	0.57	0.00	0.02
Non-NAAC Accredited Colleges	ATE	6.87	7.16	12.07	2.75	7.39
	TEI	2.14	1.18	7.37	0.00	4.60
	TQI	0.32	0.27	0.72	0.00	0.04
	TNTR	0.46	0.44	0.59	0.36	0.00
	TSR	0.13	0.09	0.84	0.03	0.04
	HRI	0.32	0.27	1.00	0.21	0.04
All Affiliated Colleges	ATE	8.44	7.98	16.13	2.75	11.17
	TEI	4.45	3.65	10.28	0.00	10.98
	TQI	0.52	0.53	1.00	0.00	0.09
	TNTR	0.47	0.45	0.80	0.22	0.01
	TSR	0.10	0.06	0.84	0.02	0.02
	HRI	0.30	0.27	1.00	0.00	0.03

Source: Author's Compilation form primary data collected from the colleges during September 2012 to September 2013, DHE, Assam Publication regarding Statement of Provincialisation services in affiliated degree colleges as per Assam Venture Educational Institutions (Provincialisation of Services) Act, 2011 and Amended, 2012 in respect of Degree Colleges of Assam and AUS's Annual Reports

From Table 4.9 it is observed that status of the NAAC accredited colleges are better in terms of Teachers' Quality index (TQI) while in terms Human Resource Index (HRI) non-accredited colleges are in a better position. This is due to the reason that in non-accredited colleges, enrollment is less in these colleges which is also clear from the average values of teachers-student ratio of these two groups. In case of non-teaching staffs to teachers ratio, the mean value is also slightly higher for accredited colleges and the difference between two groups is not that much of significant. Hence the value of HRI which is a composite index with equal weights of these two indicators gives favourable result for non-accredited colleges. But, in case of TQI the mean and median value is comparatively much higher for NAAC-accredited colleges with quite less variation. The average teaching experience for NAAC-accredited colleges is approximately 10.5 years which approximately seven years for non-accredited colleges. This implies teachers of NAAC accredited colleges are more experienced in teaching compared to non-accredited colleges which is also cleared from Figure 4.7 and Figure 4.8. As both these indices are converted into a normalized scale from zero to one by using dimension index, the maximum and minimum value for TQI and HRI ranges from zero to one for all colleges. But, in case of NAAC accredited colleges maximum value is secured in terms of TQI and minimum in case of HRI.

After computation of PRI, HRI and TQI, the infrastructure index for each college is constructed in a composite form by assigning equal weights to these three indices and then the infrastructure index (II) is converted to a normalize scale of zero to one in similar manner. Distribution of these four indices (PRI, HRI, TQI and II) for NAAC accredited and non-accredited colleges of Barak Valley is shown in Table 4.9 in terms of five different range viz; 0.0-0.2 (poor), 0.21-0.40 (below average), 0.41-0.60 (average), 0.61-0.80 (above average) and 0.81-1.00 (good).

In terms of physical resource 35 per cent non-accredited colleges are at less than average level, out of which three colleges are having poor physical infrastructure. In total only two colleges have good infrastructure in terms of physical resources, while five accredited colleges and three non-accredited colleges have physical infrastructure above average and below good level. In case of HRI, the situation is quite reverse than that of PRI and TQI which are more convincing in accredited colleges. Here, only one non-accredited college has the value at top range in terms of HRI and not a single college from this group have score between 0.61 to 0.80. Four NAAC accredited colleges are at poor range and the rests are at below average range. Hence, in terms of HRI only one college has secured maximum value with huge gap which implies this college has higher amount of human recourse which may be even higher than the required level for which majority of other colleges have scored a lower value. In case of TQI eight NAAC accredited colleges are there in Barak Valley with comparatively good values while only on non-accredited college has value below average level and majority of the non-accredited colleges have score less than average level.

Table 4.10: Distribution of Resources in NAAC Accredited and Non-Accredited Colleges

Values	PRI			HRI			TQI			II		
	NC	NNC	Total	NC	NNC	Total	NC	NNC	Total	NC	NNC	Total
0.0-0.20	0	3	3	4	0	4	0	4	4	0	4	4
0.21-0.40	0	3	3	6	15	21	1	7	8	0	5	5
0.41-0.60	6	8	14	3	1	4	1	4	5	1	6	7
0.61-0.80	5	3	8	0	0	0	3	2	5	6	1	7
0.81-1.00	2	0	2	0	1	1	8	0	8	6	1	7
Total	13	17	30	13	17	30	13	17	30	13	17	30

Source: Author's Calculation form primary data collected from the colleges during September 2012 to September 2013, AUS's Result Books, and AUS's Annual Reports

Note: NC and NNC denote NAAC Accredited Colleges and Non-NAAC Accredited Colleges respectively.

From Table 4.10, it is clear that majority of the NAAC accredited colleges are better in terms of infrastructure of the institution as their scores of infrastructure index (II) lies above the average level out of which six are with value more than 0.8 and only one college has scored average value. Whereas in case of non-accredited colleges the II score of nine colleges are below average and the II score of only two non-accredited colleges are above average. The infrastructural status of NAAC accredited colleges is better than the other colleges. This may be mainly due to the reason that all these colleges are getting grant 2(f) and 12B UGC which is very essential for constructive development of both physical and human infrastructure for the HEIs. But in case of non-accredited colleges only three colleges are getting these two funds while two other non-accredited colleges are getting 2(f) assistance only. Another possible reason may be that the teachers of the accredited colleges have more experience and their urge to pursue higher degrees for the sake of salary increment, reputation or competition with new generation teachers who are entering into the institution with higher degrees. Whereas the non-accredited colleges are comparatively newly established colleges, and hence there are somewhat less restrictive in eligibility criteria for their growth.

Ranking of the colleges in terms of infrastructural index and the performance indicators are shown in Table 4.11. Here, college C4 is at the first position in terms of II followed by C13, C6, C3 and C9. Top ten ranks in terms of II are occupied nine NAAC accredited colleges while only C13 from the group of non-accredited colleges is at second position with 4^{th}, 25^{th}, 15^{th}, 1^{st} and 9^{th} position in terms of ATE, TEI, TQI, HRI, and PRI respectively. However, the position of the college in terms of performance indicator, WPI is last, hence the status of C13 in terms of physical and human resource is good, but not in terms of quality of teachers and performance. This may be due to the reason that the college situated in rural areas is providing science stream only and hence has failed to attract good quality students who generally score good marks in the final examination. On the contrary, college C1 which is an oldest NAAC accredited college is not only best in terms of infrastructure but also best in terms of performance at this point of time.

Table 4.11: Rankings of the HEIs of Barak Valley in Infrastructure related Indices

HEI Code	NAAC	Ranking of the Colleges in terms of different indicators						
		ATE	TEI	TQI	HRI	PRI	**II**	WPI
C1	0	19	28	23	24	12	**20**	20
C2	0	30	30	30	25	29	**30**	27
C3	1	2	7	3	14	3	**4**	3
C4	1	6	6	6	2	2	**1**	1
C5	0	24	21	25	26	26	**26**	19
C6	1	7	10	8	3	4	**3**	17
C7	0	23	8	16	17	27	**25**	10
C8	0	20	27	22	22	30	**28**	24
C9	1	3	5	4	30	1	**5**	2
C10	1	9	14	10	8	13	**9**	22
C11	0	28	29	28	19	25	**27**	25
C12	1	11	2	2	29	6	**8**	13
C13	0	4	25	15	1	9	**2**	30
C14	0	29	26	29	12	28	**29**	26
C15	1	1	13	1	9	11	**6**	7
C16	1	16	12	14	10	8	**11**	18
C17	0	26	19	24	13	17	**23**	12
C18	0	12	9	11	16	20	**15**	21
C19	1	10	3	5	28	14	**10**	15
C20	1	27	15	21	15	7	**17**	4
C21	1	21	4	12	23	10	**13**	11
C22	0	13	24	19	7	16	**16**	16
C23	0	5	17	13	6	19	**14**	23
C24	0	22	22	26	11	23	**24**	28
C25	0	18	16	17	21	18	**19**	8
C26	1	8	11	9	5	5	**7**	6
C27	0	17	18	20	20	22	**21**	14
C28	0	25	23	27	4	24	**22**	29
C29	0	14	20	18	18	21	**18**	5
C30	1	15	1	7	27	15	**12**	9

Source: Compiled from primary data collected from the colleges during September 2012 to September 2013, AUS's Result Books, and AUS's Annual Reports

However, there are some exceptions like college C19 (NAAC accredited college) which has ranked 17^{th} position in terms of II while 4^{th} position in WPI. This college comparatively better in terms of physical resource than human resource and not that much satisfactory in case of TQI but its performance is better than many other colleges of this region. This may be due to the reason that this college is successful in attracting more number of students with good quality due to its situational advantage or with good physical and human infrastructure. Similarly among non-accredited colleges C6, C17, C25, C27, and C29 instead of having not so good infrastructure are quite better in terms of performance than other colleges. On the other hand NAAC accredited colleges like College C6 and C10 with comparatively better infrastructure are not that much better in terms of performance.

To analyse the divergence in various indicators related to infrastructure and output of the NAAC accredited and non-accredited colleges, Levene's Test for Equality of Variances and Independent Samples Test for equality of means are applied which are shown in Table 4.12. The independent t-test assumes the variances of the two groups you are measuring to be equal. Levene's test for homogeneity of variance provides an F-statistic and a significance value (p-value) and if $p<0.05$ means that the assumption of homogeneity of variance is violated at less than five per cent level of significance, hence there is unequal variances and that implies the violation of the assumption of homogeneity of variance.

Table 4.12 depicts Levene's Test for Equality of Variances and t-test for Equality of Means for different indicators' related to infrastructure and performance of the colleges for two different groups. Here weighted results of the college in honours course (WRH), weighted results of the college in pass course (WRP) and weighted performance index (WPI) measuring total output of the colleges (already defined in Chapter 3) are taken as performance of the colleges.

Table 4.12: Tests for Equality of Means and Variances in NAAC Accredited and Non-accredited Colleges

Indices	Levene's Test for Equality of Variances			t-test for Equality of Means		
	F	P value	Variances	Mean Difference	t	Significance
WHR	11.16***	0.00	Not Equal	12.06*	1.81	0.10
WRP	2.67	0.11	Equal	11.07**	2.50	0.02
WPI	7.53***	0.01	Not Equal	11.62*	2.04	0.06
PRI	2.83*	0.10	Not Equal	0.33***	5.19	0.00
TNTR	6.21**	0.02	Not Equal	0.04	0.75	0.47
TSR	3.06***	0.09	Not Equal	-0.08*	-1.73	0.10
HRI	0.00	0.97	Equal	-0.02	-0.68	0.50
TEI	0.28	0.60	Equal	5.34***	7.38	0.00
ATE	0.00	0.97	Equal	3.63***	3.47	0.00
TQI	0.53	0.47	Equal	0.46***	6.54	0.00
II	0.77	0.39	Equal	0.37***	5.50	0.00

Source: Author's Compilation form primary data collected from the colleges during September 2012 to September 2013, AUS's Result Books, and AUS's Annual Reports.
*Notes: ***, ** and * denotes variables are significant at equal or less than one, five and ten percent level of significance respectively.*

In case of physical resource index the test statistic for equality of variance is significant at ten per cent level of significance and it reveals that there exists variation in physical resource acquisition in accredited and non-accredited colleges. The mean difference shows favourable result for NAAC accredited colleges, which implies that accredited colleges have better infrastructure in terms of physical resource than non-accredited colleges. This is due to the fact that accredited colleges are old reputed colleges and they are also getting 2(f) and 12(B) from UGC which is very important for development of infrastructure of HEIs. In terms of human resource allocation there is no variation as well as means difference in the pattern of teachers-student ratio and teaching and non-teaching staff ratio. This indicates that both the groups have similar values in terms of this indicator teachers-student ratio. In terms of teachers' educational qualification index Leven's test static for equality of variance is insignificant while the mean difference is positive and significant at less than one percent level of significance. This implies that educational qualifications of the teachers in NAAC accredited colleges are higher than non-accredited colleges. This may be due to the reason that accredited colleges are following strict recruitment guidelines which are not followed by accredited colleges which is also evident from Figure 4.1 and Figure 4.2. In terms of teaching experience the mean difference is positive and significant at less than one percent level of significance. This is also evident from Figure 4.7 and Figure 4.8 which is due to the fact that NAAC accredited colleges are experienced colleges where there are several teachers with teaching experience more than 15 years.

In order to examine the degree of association between performance indicators with infrastructural indicators of the colleges Spearman's Rank Correlation Coefficient is applied. These relationships are shown in Table 4.13.

Table 4.13: Spearman's Correlation Coefficients of Performance and Infrastructural Related Indicators

Indicators	TEI	ATE	TQI	PRI	TNTR	TSR	HRI	II
WRH	0.62***	0.40**	0.62***	0.76***	0.13	-0.43**	0.01	0.62***
	(0.00)	(0.03)	(0.00)	(0.00)	(0.51)	(0.02)	(0.95)	(0.00)
WRP	0.63***	0.31*	0.54***	0.49***	0.14	-0.65***	-0.27	0.38**
	(0.00)	(0.09)	(0.00)	(0.01)	(0.47)	(0.00)	(0.15)	(0.04)
WPI	0.65***	0.37**	0.59***	0.58***	0.21	-0.66***	-0.17	0.47***
	(0.00)	(0.04)	(0.00)	(0.00)	(0.26)	(0.00)	(0.36)	(0.01)

Source: Authors Calculation form primary data collected from the colleges during September 2012 to September 2013, AUSs Result sheet 2012, and AUS's Annual Reports.
*Notes: 1. the parentheses denotes p-value of the correlation coefficients. 2. ***, ** and * denotes variables are significant at equal or less than one, five and ten percent level of significance respectively.*

It is found that teachers' educational qualifications, teaching experience, quality of teachers', physical resources and overall infrastructure of the colleges are significant and positively related with performance indicators of the colleges. Whereas the faculty and non-teaching staff ratio and HRI are insignificant. Theoretically speaking there is no influence of non-teaching staff on performance of the colleges which is also reflected in the coefficients of correlation. However, the rank correlation coefficients of performance indicators with HRI are also insignificant which implies there is no degree of association between availability of human resource and performance of colleges in Barak Valley. This may be due to the reason that HRI is a composite of two other indices, out of which one is not at all an important determinant and the other (TSR) is weak and negatively associated. The correlation coefficients of TSR with three performance indicators are significant and negatively related because in Barak Valley TSR is comparatively higher than national and prescribed level (shown in Table 4.13), hence for these colleges with lower TSR are better in terms of performance. Among the other indicators teachers educational qualification and physical resources are significant and more strongly relate to honours results than pass course's result.

Sanitation facility

Sanitation facility of HEI or any educational institution includes drinking water facilities and lavatory facilities for the teachers as well students. It is universally agreed that the provision of adequate and proper sanitary facilities is essential for healthy infrastructure of any institution. So far the drinking water is concerned; the HEIs of Barak Valley situated in urban areas are in better situation than the HEIs belonging to rural areas. For examining status of lavatory facilities in the Colleges of Barak Valley accessibility of lavatory rooms per students and teachers for both male and females are calculated separately for all the HEIs and then shown on an average basis in Table 4.14.

Table 4.14: Accessibility of lavatory Facilities in the Colleges of Barak Valley

Accessibility of Lavatory Room in Average	All HEIs (30)	NAAC Accredited HEIs (N=13)	Non-NAAC Accredited HEIs (N=15)
Latrine for Male Students	1 : 147	1 : 168	1 : 131
Urinal for Male Students	1 : 131	1 : 143	1 : 122
Latrine for Female Students	1 : 196	1 : 272	1 : 139
Urinal for Female Students	1 : 172	1 : 230	1 : 127
Latrine for Male Teachers	1 : 13	1 : 14	1 : 13
Urinal for Male Teachers	1 : 12	1 : 12	1 : 12
Latrine for Female Teachers	1 : 7	1 : 9	1 : 6
Urinal for Female Teachers	1 : 7	1 : 9	1 : 6

Source: Primary data collected from the colleges during September 2012 to September 2013
Note: Average number of teachers and students both male and females per lavatory rooms are rounded here.

Toilets rooms should have moisture proof concrete floors which can be easily washed. But in case of Barak Valley there is wide gap between standard recommended by different authorities and the actual conditions. It is surprising to found that some of the colleges of Barak Valley do not have any proper lavatory faculties. Although some of the colleges have all the requisites of lavatory facilities but their accessibility per students is not satisfactory. Availability of one latrine for 147 male students is for all general degree colleges, which is more adverse for female students where one latrine is allotted for 197 female students on an average in the HEIs of the region. On an average one urinal in the HEIs of Barak Valley is available for 132 male students and the same is available for 172 female students.

However availability of lavatory rooms for teaching faculty both males and females are quite satisfactory and somewhat ten times better than that for students. Further variation in accessibility of lavatory rooms especially for students are found in NAAC accredited and non-accredited colleges. Here sanitary accessibility in NAAC accredited colleges are found more crowded than non-NAAC accredited colleges because enrollment in the NAAC accredited colleges are much higher than that in others and hence the ratio moves towards adverse direction even if with more numbers in the NAAC accredited HEIs.

Status index for the HEIs of Barak Valley

The status of an institution denotes its position in the society in terms of different acceptable characteristics (viz; infrastructure and performance) in relation to others. In order to construct the status index for the HEIs of Barak Valley a composite index by assigning equal weights to infrastructure index and weighted performance index is used. The status index value ranges from 0.0032 to 1 with standard deviation 0.196 for mean value 0.3223 (shown in Table 4.15).

Table 4.15: Descriptive Statistics of Status Index for the HEIs of Barak Valley

Statistics	NAAC Accredited HEIs	Non-NAAC Accredited HEIs	All HEIs
Mean	0.4695	0.2107	0.3228
Standard Deviation	0.1835	0.1164	0.196
Maximum	1	0.4740	1
Minimum	0.3227	0.0032	0.0032

Source: Calculated form primary data collected during September 2012 to September 2013 from the HEIs, Annual Report2012 and AUS Result Book 2012

Variation in terms of status index vale is observed more for NAAC accredited colleges than non-accredited colleges in Barak Valley. The mean value of the index is 0.47 for accredited colleges while 0.21 for non accredited colleges. The maximum value for the index is obtained by NAAC accredited college and the minimum score of the group is almost near to overall average. Further to examine the difference in mean value of status index for NAAC accredited and non-accredited colleges of Barak Valley test for equality of means are applied here.

Table 4.16: Test for Equality of Means for Status Index in NAAC Accredited and non-NAAC Accredited Colleges of Barak Valley

Levene's Test for Equality of Variances (F)	0.693
Mean Difference	0.259***
Std. Error Difference	0.055
t-Value	4.715

Source: Calculated from the compiled primary data collected September 2012 to September 2013 from the HEIs during September 2012- September 2013 and Annual Report2012 and AUS Result Book 2012

Table 4.16 shows t tests Equality of Means with Levene's test statistics for equality of variances for Status Index in NAAC accredited and non-NAAC Accredited Colleges of Barak Valley. It is found that the variation in these two groups in terms of status index is same, however the mean difference is positive and statistically significant at less than one percent level of significance. This implies that the status of NAAC accredited college is better than non-accredited colleges in this region.

Table 4.17: Distribution of Status Index in NAAC Accredited and Non-NAAC Accredited HEIs of Barak Valley

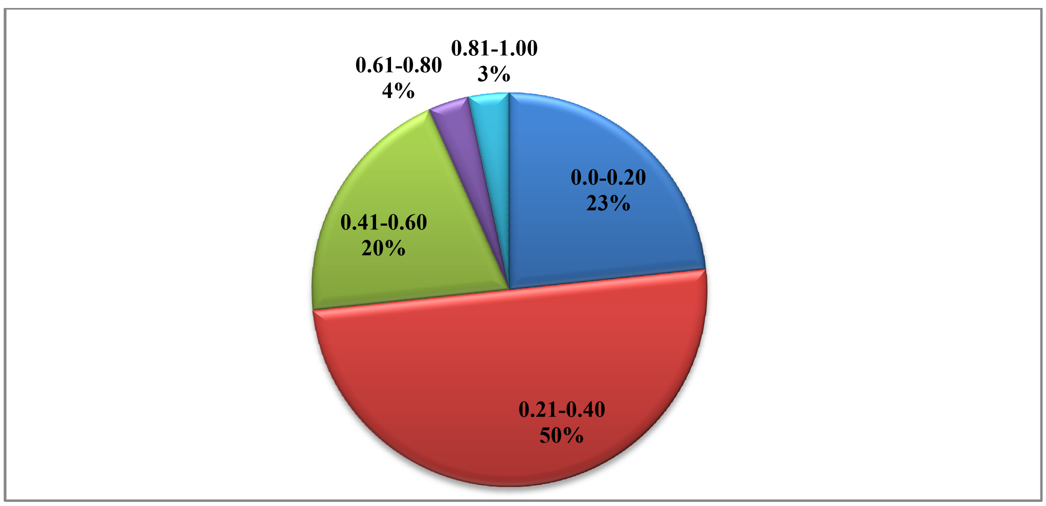
Values	NAAC Accredited HEIs	Non-NAAC Accredited HEIs	All HEIs
0.0-0.20	0	7	7
0.21-0.40	6	9	15
0.41-0.60	5	1	6
0.61-0.80	1	0	1
0.81-1.00	1	0	1
Total (N)	13	17	30

Source: Calculated form primary data collected from the HEIs, Annual Report2012 and AUS Result Book 2012

Table 4.17 shows distribution of status index ranging from zero to one in NAAC Accredited and Non-Accredited HEIs of Barak Valley for five different class intervals with equal gap. It is found that only one NAAC accredited HEI's status index value is above 0.8 and another above 0.6. There are 21 HEIs lies between the status index score 0.21 to 0.6. There are seven HEIs which are below the status index value 0.2. This implies most of the HEIs are clustering below the level of average status index value.

Hence from the table it can be said that both NAAC accredited and non-NAAC accredited HEIs' status index values are at average and below average range. Whereas the lowest range is occupied by non-accredited HEIs and contrarily accredited HEIs on top two ranges. Thus from the here it is clearly visible that status of NAAC accredited colleges are better than that of non-accredited colleges.

Figure 4.7: HEIs of Bark Valley falling under different ranges of Status Index



Source: Adapted from Table: 4.17

Figure 4.7 shows the distribution of all HEIs of Barak Valley for five different ranges. The value of 50 per cent HEIs of Barak Valley are under the range of status index value 0.21-.04 and approximately 23 per cent HEIs scored below 0.2 in terms of status index. This implies that approximately 73 per cent HEIs are below the average level of status index score, while approximately 27 per cent are above average range.

From the above findings can be concluded that the status of the general degree colleges of Barak Valley is below average. However the status of the NAAC accredited colleges are better in terms of infrastructure and performance in terms of infrastructure. However, there are few exceptions where some non-accredited with poor infrastructure are better in terms of performance and some accredited colleges even if with good infrastructure are not up to the mark in producing successful quality graduate. Among the several indicators of HEIs' infrastructure there remains some shot of heterogeneity within the group itself.