A Diagnostic Report on Status and Dynamics affecting Employability in UP's Polytechnic Institutes





UP POLYTECHNIC SYSTEM: AN EMPLOYABILITY REVIEW

(A Diagnostic Report on Status and Dynamics affecting Employability in UP's Polytechnic Institutes)

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Acronyms

EXECUTIVE SUMMARY

Backdrop

Uttar Pradesh has a vast network of polytechnics, which include 166 government or government aided institutions, spread across 75 districts of the state of Uttar Pradesh. These institutions function under the Directorate of Technical Education, Kanpur, Uttar Pradesh. However, since employability and the final desired outcome of high employment figures are important and current figures are not too encouraging, a need was felt to rethink and observe the overall resources, structures, systems, and processes of these institutes.

A three-tiered placement cell that manages various activities related to placement of students was also conceived as were soft skill development and some sort of industry readiness. In this backdrop it was decided that Medha could play a key support role and be a source of expertise to take some aspects of this newly conceived initiative forward.

However, with time, both Medha and the Directorate came to realize experientially that simply focusing on imparting the core skills and knowledge to the students studying in the specific branch of Engineering or Technology and then creating a placement structure is not sufficient for employment and is at best a necessary condition. Creating a better understanding of the current system, its functionality, students' core subject specific learning and the gaps was also equally important as was identifying the specific industry compliant skills sets that the students needed. Overall, it was felt that AICTE compliance would be a big move in this direction, as it covers most of these aspects. Hence such compliance should also be probed through the study.

In this backdrop, the need for an exploratory research study was recognized to create better understanding of the current systems and resources; the AICTE compliance and how they match up to employability expectations. This was expected to provide a data centric direction for the future.

Aims and Objectives of the Study

The aims and objectives of the study are as follows:

- To explore the current systems and resources at the disposal of these institutes and have greater understanding of their AICTE compliance.
- To explore and diagnose the barriers faced by these polytechnic institutes resulting in low learning & placement outcomes for its students; to also garner an insight of the enabling factors.
- To understand the short-term challenges and long-term viability factors of polytechnic institutes in Uttar Pradesh.
- To carve out broader insights for the probable solutions for bridging the core gaps in the polytechnic education ecosystem in the state and provide a comprehensive set of recommendations.

Methodology of the Study

The study built its pathway on both secondary data and primary data. For the purpose of collecting primary data, Mixed Methods (both qualitative and quantitative data) was used.

For collecting quantitative primary data, structured tools were developed. The state of Uttar Pradesh was divided into 4 regions administratively: East, West, Central and Bundelkhand. From each of these regions 9 polytechnic institutes were selected, thus totally 36 institutes selected. Quantitative data from the principals of each of these institutes and 20 students as well as 20 alumni from each institute (thus total of 720 students and alumni each) was collected. Some quantitative data on the institute infrastructure and facilities was collected from 144 colleges.

Qualitative data was collected from industry experts and subject experts.

Core findings of the study

i. Findings on Structural & Functional Dimensions

Some of the findings on core infrastructure, facilities, and resources as well as teaching-learning mechanisms and outcomes are given below:

- Approximately 28 percent of the sampled students said that basic facilities such as suitable drinking water and clean toilets are missing in their institutes. However, approximately 72 percent of the students interviewed from the sampled polytechnic institutes said that there is availability of these facilities.
- Approximately 35 percent of the sampled students and approximately 30 percent of principals said that there was no power backup in their institutions.
- Approximately 78 percent of the students interviewed mentioned that the condition of the institute buildings were either fair, good, very good or excellent.
- Approximately 44 percent of the interviewed sampled students said that they either did not have wi fi facilities or had non-functional wifi or wifi that functioned only sometimes.
- Approximately 9 percent of the students said that they did not have any computer lab facilities in their campus.
- Approximately 31percent of the college principals said that subject specific labs have not been updated in the last 5 years or not been updated at all.
- Approximately 69 percent of the college principals said that their institute was more than 3 kilometres away from the nearest bus stand.
- Approximately 71 percent of the alumni said that there had been no feedback mechanism collected from them after the completion of course in each semester.
- Approximately 38 percent of the principals said that the traditional book-based learning method was the main mode of teaching and learning in their institutes, with relatively less practical emphasis.

Thus, the institutes violate AICTE parameters on Infrastructure; Other Essential and Desired Facilities; Evaluation, Assessment and performance of students etc. The outcome is that

approximately 25 percent students were quite unsure of being able to put their classroom learning to practical application. Approximately another 38 percent were either somewhat sure or somewhat unsure or neither sure nor unsure that they could put their theoretical learning to practical purpose.

ii. Findings on Employability Dynamics & Industry Interface

Some of the findings on employability aspirations, outcomes and inputs from subject and industry experts are given below:

- Approximately half of the sampled students mentioned that they planned to start working on a job after they finished their course. Approximately 14 percent of the students mentioned that they would pursue higher studies after their polytechnic course. Approximately 30 percent felt that they would apply for government jobs after they finished their polytechnic course.
- Findings from the students show that there is no specific location preference for a good share of the students in terms of their employment. Approximately 35 percent of the students interviewed from the sampled polytechnic institutes said that they would be happy to locate to any place that offered them a good job. However, approximately 52 percent have preference for peripheral locations.
- Data collected from the alumni shows that approximately 29 percent of the alumni interviewed said they were employed (either on job or through self-employment). But **71 percent of the alumni were found not be gainfully employed currently**. Although not a cohort analysis, this clashes with expectations of students, approximately 50 percent of whom had mentioned that they expected gainful employment after finishing their polytechnic courses.

Findings from subject and industry experts show that some of the core gaps that they perceive are in the numbers and quality of teachers, Lack of effort to improve curriculum and make it more relevant to the times, Lack of counselling services and awareness services that can improve employment potential, Inadequate infrastructure, low development of industry complaint skills such as soft skills, English etc. It merits mention that most of these aspects are covered in AICTE parameters and compliance to the same would have thus strengthened industry preparedness of these institutes.

iii. Employability and Associated Factors

The study also tried to understand if some of the situational factors show any correlation to the employment rates in the polytechnic institutions. To get a better understanding of this, 10 polytechnic institutions with the best employment figures had been sampled out as have 10 polytechnic institutes with the worst employment figures. Co-variation between employability of these 20 sampled institutes and various situational factors has been assessed to see if there is any tendency of these variables to co-vary.

- It was found that the employment percentages varied widely between the best performing and the worst performing institutes. The range between the percentage employment figures was as high as 96.45 percent. On the other hand, the standard deviation was also high at 38.34 percent.
- Data did not reveal any positive linear correlation or positive co variation between basic infrastructure such as condition of the classroom and college building and employability outcomes of these institutes. But it merits mention that variation in infrastructure itself among the 10 institutes with the highest employment figures and the 10 with the lowest employment figures was quite low. It may be interesting to see how institutes with widely varying basic infrastructure fare on employment outcomes.
- Data however reveals that there is some co-variation between employability outcomes of institutes and value added facilities such as wifi, library, subject labs etc. The covariance between the two sets of variables is 21.47 and In fact if we remove the two outliers (one from the best employability and one from the worst employability institutes), we get a positive covariance of 58.1. Thus This shows that these are important facilities that can enhance a students' performance and employment outcomes.
- Data analysis has shown that there is indeed some positive correlation between a higher teacher-student ratio (as made on the basis of ratings provided to institutes based on teacher student ratio) and employability outcomes in the sampled colleges. Correlation coefficient was found to be 0.41. It was also found that the average (AM) teacher student rating of the 10 highest employability institutes is 2.7 while in the 10 lowest employability, it is 2.

iv. Viability of Institutes

Data have shown that various factors are affecting viability of institutes. For example, data from the last 5 years show that in certain colleges in certain streams, the percentage of seats actually filled in comparison to total seats available is very low. In some cases this percentage was even 0, showing that no students had enrolled in that specific stream in that specific institute that particular year. Data also shows that not only are the actual admission figures with respect to total seats very low in a decent number of institutes across one or several streams, but also that they seem to be declining over time. This is established by time series data.

Findings on manpower employment also show that percentages of actual filled positions to vacant positions are far from desired and a very high percentage of positions are lying vacant. For example, data shows that as much as 66.25 percent of the Lecturer's Positions and 70.63 percent of the HOD positions are lying vacant. This raises apprehension that while some streams in some institutes may have lecturers allocated to them, even with very poor student enrolment, in other cases a crunch of lecturers may be affecting the quality of teaching learning outcomes. It violates the AICTE parameter of Availability of Director and Faculty.

Recommendations

Based on the findings of the study, some recommendations can be made and are as follows:

• Greater emphasis on institute viability as per various AICTE norms, making the existing institutes AICTE compliant and up to date in their resources and functionality (rather than setting up new

once) must be prioritized. As of now, data shows that approximately 21 percent institutes do not completely adhere to a single AICTE compliance head out of the 9 broad compliance heads in total.

- Data driven Viability of institutes and specialities/streams need to be explored based on enrolment and attendance of students in institutes and streams/specialities. Resources (including human resources) of institutes and streams shut down can be considered for reallocation to functional institutes to improve their AICTE compliance.
- Greater accountability and performance needs to be set into motion, particularly for crucial
 positions. Such accountability may be improved through precise job description and performance
 indicators aligned to AICTE parameters and robust appraisal systems. It is necessary to create
 SOPs towards performance appraisals. Data driven monitoring and evaluation through existing
 URISE and Manav Sampada portals may be explored here.

The diagnostic study has brought up interesting findings, despite being limited in its scope. So in a way the exploratory intent of the diagnostic study has been well justified by its findings and it has pointed to the fact that more extensive as well intensive research can provide very conclusive findings and guidance in the right direction.

BACKGROUND AND METHODOLOGY

1. Backdrop:

Uttar Pradesh has a vast network of polytechnics, which include 166 government or government aided institutions, spread across 75 districts of the state of Uttar Pradesh. These institutions function under the Directorate of Technical Education, Kanpur, Uttar Pradesh. A core aim of this Directorate has been to uplift the standard of technical education in these institutions and convert their students into skilled workforce suitable for market demands in general and the medium and the small-scale industries in particular. This would require regular updating of resources and systems in these institutes to keep education quality in these polytechnic colleges at par with industry requirements.

Since employability and the final desired outcome of high employment figures are of prominence and current figures are not too encouraging, a need was felt to rethink and observe the overall resources, structures, systems and processes of these institutes. A need was also felt to create a three tiered placement cell that manages various activities related to placement of students from the government polytechnics of the state in suitable jobs. Core functionalities of it would include creating strong industry interface, conducting research on skill gaps, providing recommendations to improve/develop curriculum, strengthening a centralized database of placement records and improving expertise on soft skills, personality development & entrepreneurship development.

In this backdrop it was decided that Medha could play a key support role and be a source of expertise to take some aspects of this newly conceived initiative forward. Since a decade in fact, Medha has been playing a strong role in skill development, professional growth and future centric interventions with students and youth. As an organization, it seeks to realize equal career opportunities for youth; irrespective of gender, class, or caste and create professionally life changing experiences for these youth and their communities. It considers itself as a 'mentor, advocate and facilitator' in this skill based professional journey of the target youth. Hence, it was considered apt that Medha would endeavour to take this forward.

However, with time, both Medha and the Directorate came to realize experientially that simply focusing on imparting the core skills and knowledge to the students studying in the specific branch of Engineering or Technology and then creating a placement structure is not sufficient for employment and is at best a necessary condition. Thus to ensure better placement, besides creating a well functional placement support structure and imparting some soft skills, it was felt that greater emphasis on other associated dimensions relevant from the stand point of the employability and industry requirement must be inbuilt into the resources and systems of these polytechnic institutes.

Overall, experience showed that even in core areas of imparting stream and subject specific knowledge and skills, there are gaps as are gaps in greater sphere of functionality linked to greater industry responsiveness. Synoptically speaking, a lot of these gaps seem to be a consequence of lack of AICTE compliance in a high percentage of these polytechnic institutes. These gaps and the

enabling or disabling functional/structural/resource factors needed to be systematically explored, documented and addressed.

In this backdrop, the need for an exploratory diagnostic research study was recognized to create better understanding of the current systems and resources and how they match up to industry and employability expectations and overall AICTE compliance. The study was also conceived to explore various facets that may affect the employability of students that pass out from these polytechnic institutes to understand the complexity of the broad array of factors that may improve employment of the students. It was with this objective that this diagnostic research was conceived and executed.

2. Aims and Objectives of the Study

The aims and objectives of the study are as follows:

- To explore the current systems and resources at the disposal of these institutes and have greater understanding of their AICTE compliance.
- To explore and diagnose the barriers faced by these polytechnic institutes resulting in low learning & placement outcomes for its students; to also garner an insight of the enabling factors.
- To understand the short-term challenges and long-term viability factors of polytechnic institutes in Uttar Pradesh.
- To carve out broader insights for the probable solutions for bridging the core gaps in the polytechnic education ecosystem in the state and provide a comprehensive set of recommendations.

3. Proposed Methodology of the Study

The study built its pathway on both secondary data and primary data.

It intended to build upon the experiential insights through secondary data collected primarily through online research studies and articles. Some of the data for all the institutes, particularly those pertaining to employment was provided by the Directorate of Technical Education.

For the purpose of collecting primary data, Mixed Methods (both qualitative and quantitative data) was used.

Sampling Strategy for collection of Quantitative Data:

To collect quantitative data, a multistage sampling method was used.

- First, the state of Uttar Pradesh was divided into 4 regions administratively: East, West, Central and Bundelkhand.
- From each of these regions 9 colleges were selected.
- The selection of 9 colleges was based on Medha's internal classification study which classified colleges into lukewarm, hot, cold. Accessibility of colleges and proactive-ness of these colleges were factors taken into account while clubbing them as 'hot', 'lukewarm' or 'cold'.

- Thus a total of 36 colleges were selected for the quantitative study. This is geographically representative, and the results so obtained can be extrapolated to the entire population.
- Within these colleges, data was collected from the principal of each college using structured tools.
- Besides this, 20 students from each college were sampled through convenience sampling for quantitative data collection. Thus data was collected from a total of 720 students. Some of the data collected from principals were corroborated for data triangulation through survey from students.
- The survey also collected quantitative data from 20 alumni from each institute; thus a total of 720 alumni.
- Besides the 36 sampled colleges, some quantitative data on the institute infrastructure and facilities was collected from all the 144 government colleges.

Qualitative Data: Besides quantitative data, qualitative data was also collected for the purpose of this study from:

Industry Experts: In-depth discussion using unstructured tools/qualitative guidelines were collected from 15 industry experts.

Besides this, qualitative data was also collected from various subject experts.

1.4 Team Deployment & Data Collection

Quantitative data from all the polytechnic colleges were collected by team deployed through Uttar Pradesh Training and Placement Cell, JEECUP run and managed by Medha. Mostly post graduates with some research understanding were roped in for data collection. They were separately briefed on the tool developed for them. They were also well trained on the interpretations of each of the questions. This was followed by mock call sessions to ensure that accurate and neutral data may be collected.

For collection of data from the students, alumni, principals and industry experts, senior team members of Medha were well trained on the tools. Owing to the covid situation, however, the process of data collection was virtual and detailed discussion ensued with the target respondents to collect information as per the quantitative tools after telephonic appointment had been taken from them. A few focus group discussions and also a workshop model of data collection was pursued. Thus, the entire process of data collection was carried on by senior professionals in a systematic and time bound manner.

The core methodology may be represented in Info-graphic 1 below:



FINDINGS FROM SECONDARY DATA

Various reports and articles have propounded the low employment outcomes of polytechnic courses. For example, an article¹ quoting AICTE data mentions that while the intake of the course has gone up, number of students enrolled hovers around a low 10 percent or even lower. This article propounds the causes behind this performance as low recognition by industry of these courses as compared to engineering courses, with the result that students who at all find employment, start off with salaries around the Rs.10 000 bracket. This is corroborated by the National Employability Report that speaks that over 8 lakh diploma holders are missing out on job opportunities due to hiring intent being bent towards engineering graduates.

Such findings are corroborated by the National Skills Report. The National Skills report, 2019 highlights the hiring intent by education and Chart2.1 demonstrates the same. The polytechnic diploma degree stands at a meagre/ abysmally low 7%². This is shown below:



Articles³ also bring to the fore that India's manufacturing sector contributes to 17% of the GDP (compared to China's 30%). This implies that there is a good prospect of better induction of the diploma holders as the manufacturing sector grows and its percentage share starts increasing, through various stimuli and structural changes. This potential is particularly strong because unlike other degrees, polytechnic diploma is conceived to provide systematic hands on education mechanism of its students to meet the market standards. But this conception base needs to be executed in reality.

¹ On job front Polytechnic Courses Fail to Impress: Preeti Biswas; 10th Sept 2016; TNN

² India Skills Report 2019

³ Polytechnics the pivot point for Make in India dream: Ajit Balakrishnan; April, 2016

Further reports⁴ also state that it is necessary to revisit the curriculum in order to match up to the market standards. In Uttar Pradesh, Vocational and Technical Education have not matched up to the requirements of the industry since it falls short in practical and on-job skill training. The report further suggests that existing vocational and skill training institutes need to expose students to new techniques that are in demand. It is believed that good practical domain knowledge and soft skills such as interpersonal skills are on the priority list of most employers.

The Uttar Pradesh Policy Document further elucidates the matter. It points out that approximately 60 percent intake capacity in institutes such as polytechnics, engineering colleges etc. go unutilized due to poor quality education, obsolete teachers, outdated syllabi and skill mismatches. As a consequence, a low percentage of students have been connected to gainful employment after course completion.

An important point that is coming to the fore through the various sources of secondary data is that the low employment is largely a demand-supply disconnect factor. Where such hurdles are removed, better performance has been mentioned. It has been mentioned in articles⁵ that where polytechnic colleges provide hands on training suitable to an industrial environment, employability outcomes may be good and even better than that of engineering institutes. This must particularly be seen in the light that polytechnic training requires far less resources and lesser time than engineering courses.

Synoptic finding from secondary data through various discussion boards such as Quora and articles⁶ in sites like thehighereducationreview.com have pointed out that it is important for students to pursue further studies after the completion of Polytechnic Diploma course in order to be able to progress further in their professional life. This is because even though Polytechnic Diploma programmes are complete technical degree courses that are run and approved by AICTE, they are primarily defined as stressing on the practical aspects and basics of the respective study stream or the subject. As such more advanced professional courses can strengthen a student's professional prospect. Discussion boards have brought to the fore alumni who have received a decent beginner's job after their course through their campus placement but have later realized that their scope of promotion beyond a point is limited unless they go in for further studies. However, changing a few jobs over a period of time, may nevertheless give them a decent living. Students have also mentioned that taking up B.Tech or B.E after polytechnic course is a professionally strong option and here it is best to select colleges which provide lateral entry to diploma holders in engineering courses.

Thus secondary data is providing a mixed bag of findings but overall it appears to point to the following:

⁴ The state of employment in Uttar Pradesh: Unleashing the potential for inclusive growth: Unleashing the potential for inclusive growth: Rajendra P Mamgain; December,2017

⁵ Polytechnic Trumps Engineering with Lower Fees, better Jobs: R Sathyanarayana; 30th Nov 2018; DTNext

⁶ Career Opportunities after Polytechnic: Disha Gogoi;

- Polytechnic courses are meant to be practical courses with strong hands-on aspect in built into an ideal course
- However, these are also basic courses and often following them up with engineering courses can be professionally advantageous as it then gives both a degree and also suitable hands-on experience
- Nevertheless, with suitable industrial demand it is possible to get a decent job and over a period of time and through job switches, a polytechnic student can eke out a decent professional career. This can be particularly life changing for students from otherwise marginalized sections. Additionally polytechnic courses have the advantage of starting professionally earlier and being burdened with a lesser course fee
- Despite these advantages and aspirations of a polytechnic course, however, employment outcomes are low owing to core factors – low hands-on practical experience; poor facilities; low interface with industry to create visibility in industry and poor match with industry expectations

This diagnostic report endeavours to explore the various factors that have been thrown up both through secondary and experiential data and form its own findings and conclusions.

STRUCTURAL & FUNCTIONAL STATUS OF SAMPLED POLYTECHNIC INSTITUTES

3.1 Introduction

The last couple of chapters have built upon the relevance, objectives and methodology of this diagnostic study. Also, secondary data has explored on the various factors that appear to have an impact on students' employability and professional growth while passing out from a polytechnic institute.

One of the core factors that the secondary data points to is that the low outcome indicators of a polytechnic course must be sought in the poor structural and functional factors in the institute itself. Thus this chapter focuses on these factors and gives a situational update. It covers the status of the sampled polytechnic institutes on factors such as basic infrastructure, other essential and desired infrastructure, teacher student ratio, academic and good governance parameters, industry interface etc. So it tries to understand the structural and functional aspects, most of which are already covered in the AICTE parameter list and identify gaps in them. Data collected from the students and the principals have been the core driving factors for data represented in this chapter.

3.2 Availability of Basic Amenities

Suitable Drinking water and Clean Toilets: For the purposes of this study certain facilities such as clean toilets and drinking water facilities were considered as rudimentary facilities that are needed in a college. On being asked, approximately 72 percent of the students interviewed from the sampled polytechnic institutes said that there is availability of these facilities. However, approximately 28 percent of the students said that even these basic facilities are missing in their institutes (Chart 3.1). These are de-motivational elements to residential or even daytime studying.



3.3 Availability of Basic Infrastructure

Condition of Institute Building: Most of the students interviewed mentioned that the condition of the institute buildings were either fair, good, very good or excellent. In fact most students (approximately 78 percent) mentioned that the condition of the institute building was either good or very good. This is shown in the curve below (Chart 3.2), which shows that most students mentioned positively about the condition of their institute building.



Status of Classroom Infrastructure: A similar finding was noticed regarding students' insights on condition of classrooms, reflected in chart 3.3 below:



A point of concern is that according to the principals from the sampled institutes, approximately 62 percent of the institutes had separate hostel facilities for boys and girls while there was no availability of basic facilities such as separate girls and boys hostels in approximately 17 percent of the institutes. On the other hand, there was no need for such separate hostels in approximately 21 percent of the institutes.

3.4 Teacher Student Ratio

Data showed that approximately 56 percent of the sampled institutes had either good or very good teacher student ratios. However, the same does not hold true for the remaining 44 percent of the institutes.



3.5 Availability of Essential & Desired Infrastructure

As have come to the fore that availability of basic infrastructure is not sufficient. Rather value added facilities such as internet connection, computer labs, access to functional computers with internet etc. is needed to make the students employable by adding to their market readiness and basic techno savvy requirements of the job market. These factors in a way strengthen an institute's ability to develop students who match industry expectations. Exploring these value-added infrastructural factors was thus crucial to this diagnostic study. Here the findings were as follows:

Availability of Electricity & Power backup: Approximately 65 percent of the students said that there is power backup in their institutes but approximately 35 percent said that there was no power backup in their institutes.

This was further corroborated by data from principals, approximately 30 percent of whom said that there was no power backup in their institutions. This is shown in chart 3.5:



This attains importance in that in the case of no power backup, it may be expected that various dimensions of smooth learning would be disrupted.

Wifi: Approximately 10 percent of the interviewed students said that they did not have wi fi facilities in their campus.

- Approximately 34 percent of the students said that wifi facilities did not function sometimes or did not function at all.



This matches findings from the principals, approximately 31 percent of whom said that there was no wifi in their institutions.

- Also, approximately 9 percent of the students said that they did not have any computer lab facilities in their campus.
- Approximately 8 percent said that computers in computer labs are not in working conditions.

Subject Specific Labs: The findings on subject specific labs were also not very encouraging.

- Approximately 31percent of the college principals said that subject specific labs have not been updated in the last 5 years or not been updated at all.
- Approximately 14 percent said that these have been updated between 2 to 5 years ago.



3.6 Location Advantage of Institutes

Feedback was taken from the institute principals on the location of the institute in context to conveyance points. Approximately 69 percent of the college principals said that their institute was more than 3 kilometres away from the nearest bus stand. Approximately another 17 percent said that it was between 2 to 3 kilometres from the nearest bus stand. Only approximately 14 percent said that their institute was located within 2 kilometres from the nearest bus stand. This is shown in chart 3.7 below:



3.7 Quality of Education and Practical Emphasis on Learning

Feedback Mechanism – Data collected from alumni shows that approximately 71 percent of the alumni said that there had been no feedback mechanism collected from them after the completion of course in each semester. Only approximately 29 percent said that there had been such a mechanism in place.



Method of teaching adopted – The method of teaching learning adopted by the institution was explored. Data collected from principals showed that approximately 38 percent of the principals said that the traditional book-based learning method was the main mode of teaching and learning in their institutes. However, the remaining 62 percent of the principals mentioned that they stressed on IT based learning, experiential learning, learning along with problem solving skills etc.

Sl. No.	Number of principals who said:	Percentage
1	Traditional Method	37.93
2	Problem Solving	3.44
3	IT Enabled	10.34
4	Experiential Learning	44.82
5	Others	3.44
	Total	100

The details are shown in Table 3.1 below:

The table also shows that a good share of institutes focus on applying practical and experiential learning. However, they still do not comprise even half of the total institutes. Also, further qualitative data can with time substantiate the nature of this 'experiential learning' and whether it matches practical requirements of the training and industry expectations of skill sets.

Ability for Practical transformation of Classroom Learning: The emphasis on method of teaching is reflected in the aptitude of students to be able to put their course based learning to practical application. Findings show that approximately 37 percent of the students interviewed from the sampled polytechnic institutes were quite or very confident of putting their theoretical learning to practical application (rated them as 8, 9 or 10 out of 10).

Unfortunately, approximately 25 percent students were quite unsure of being able to put their classroom learning to practical application (rated 1, 2 or 3 out of 10). Approximately another 38 percent (rated 4, 5, 6 or 7 out of 10) were either somewhat sure or somewhat unsure or neither sure nor unsure that they could put their theoretical learning to practical purpose.



The disconnect between emphasis on experiential and other modern modes of learning and the ability to put it to practise through practical application of institutional learning needs to be probed. It may be probed both in terms of practical emphasis in learning and in terms of educators' ability to impart learning through these techniques. It may here also be mentioned that approximately 90 percent of the principals interviewed had said that the teachers had gone through a professional development program within the last 3 years.

Thus the findings point to definite gaps of compliance with various broad AICTE parameters such as Infrastructure facilities, Other Essential and desired facilities, Academic and good Governance parameters and Quality of Faculty & Supporting Technical Staff. The result is a theory centric course with students low on confidence of practical application of this learning.

STRUCTURAL & FUNCTIONAL STATUS

4.1 Introduction

The last chapter emphasised on the current status of facilities, resources and functionality in the institutes. This chapter looks into the employment aspirations, employability situation and also industry insights of employability of polytechnic institutes.

For the purpose of these findings, there have been four sources of data. Firstly secondary data that had already been collected by the government; secondly data collected from the students of the selected institutes; thirdly, data collected from alumni and finally, insights taken from select industry experts.

These various sources have provided an understanding of the employability perspective and condition in the sampled institutes.

4.2 Objective behind enrolment to Polytechnic

From the data it appears that the vast majority of the students had enrolled for the course especially with the expectation that they will get a job. In fact, approximately half of the respondents (50 **percent) mentioned that they planned to start working on a job after they finished their course.** Approximately another 3 percent said that they will endeavour self-employment after finishing their course. Almost an equal percentage mentioned that as of now they did not have any concrete plans after finishing their course.

It is also noticeable that a certain percentage of the students did not consider the polytechnic as a finishing course but as a mid-level course that must be strengthened with additional courses to further their employment opportunities. Approximately 14 percent of the students mentioned that they would pursue higher studies after their polytechnic course.



A good percentage of the students (approximately 30 percent) felt that they would apply for government jobs after they finished their polytechnic course.

This data shows that different students are viewing the course differently, ranging from a finishing course that should provide them with jobs, a mid-level course that must be topped up with more advanced courses and a course that is an enabler to sit for government competitive exams. However, the vast majority of the students are still considering it as an end course that will enable them to gain employment.

4.3 Employment Location Preference among Students

Findings from the students show that there is no specific location preference for a good share of the students in terms of their employment. Approximately 35 percent of the students interviewed from the sampled polytechnic institutes said that they would be happy to locate to any place that offered them a good job. However, almost an equal percentage (36 percent) also said that they would like to be placed within the state. Approximately 16 percent said that they would prefer to be placed within their district while approximately 13 percent also said that they would like to be placed outside their state.

Thus there is a wide variation in the location preference of sampled students. While approximately **52 percent have preference for peripheral locations**, approximately 13 percent prefer relatively distant locations whereas approximately 35 have no stringency on location preference. This is shown in chart 4.2.



4.3 Industry Interface

Industry interface is considered an important part of the exercise to build employability. Here approximately 52 percent students interviewed from the sampled polytechnic institutes said that they

have industry partners come to their institutes for class orientation. However, close to half of the students (48 percent) said that no industry partners came to their institutes for class orientation.

This finding has been corroborated by finding from college principals, approximately 53 percent of whom said that there was no industry interface in their institutes.

Similar results came in for alumni interface. Approximately half of the students (50 percent) said that they had alumni meet in their institutes whereas approximately an equal percentage said that they did not have alumni meet in their institutes.



Alumni Interface: As compared to students, a lesser percentage of principals said that there had been any alumni meet in their institutes. In fact, approximately 69 percent of the principals interviewed mentioned that there had not been any alumni meet in their institutes recently.

4.4 Findings from Industry and Subject Experts

Discussion with various types of subject experts has brought up various moot points. These discussions have indicated some of the causes behind the relatively lacklustre performance of these institutes. These gaps, in their turn, may be instrumental in giving direction for situation improvement. The various people, who participated in the discussions, include IRDTs, DTEs, BTEs and JEECUPs. It may be mentioned that these are essentially qualitative findings and are mentioned below:

 Both quantity and quality of teachers must be examined and improved – Most respondents shared concern about the availability of teachers in the institute or their quality, or both. Lack of adequate teachers and teachers being assigned to numerous tasks came across as a point of concern among some respondents. They believed that teacher strength needs quick and systematic improvement and at the same time their duty needs to largely be limited to academics and teaching. Pushing them to take up various aligned duties was diluting their efforts as a teacher. "There is lack of adequate faculty at the institutes. Only 40% of the total teacher's capacity has been filled in a lot of institutes and the recruitment processes for teaching staff takes as long as 4-5 years."

IRDT official

"On an average it takes 3 to 4 years to close recruitment process for a vacancy published in the state." DTE official

Another point of concern raised here is that although teachers' training is provided from time to time, there is no systematic mechanism to monitor their performance or track if teacher trainings are useful. There is also no feedback mechanism to see if what is being taught during these trainings is systematically being implemented in classrooms.

- *Lesser manpower delegation as compared to required manpower* – Some respondents said the total manpower delegated in the institutes do not fulfil the requirement of these institutes. This is disabling in various ways.

For example, some respondents said that non-availability of lab assistants in colleges after 2008 has resulted in less practical accessibility to students. Often teachers tend to take theory lessons even during practical classes.

Other respondents have pointed out that lack of adequate staff at the department level makes monitoring and evaluation difficult on ground.

"Gap in manpower allocation at colleges and department level is creating difficulties in managing the institutes efficiently."

DTE official

Lack of effort to improve curriculum and make it more relevant to the times – Several respondents have mentioned the need to revisit the curriculum of the students. They have mentioned that neither do the teachers have any kind of feedback mechanism for the existing curriculum nor any mechanism to provide feedback on new curriculum introduced. At the same time there are no independent surveys conducted to understand the need for curriculum change.

Several industrial experts have pointed out that the curriculum does not have any soft skill dimensions such as presentability, behaviour and communication. It also does not include upgradation of basic skills such as computer and basic application of the English language. This often leaves them inadequate in today's professional atmosphere. - *Inadequate infrastructure* – It has been pointed out by several respondents that infrastructure is not adequate in various ways. The budget allocated for infrastructural development has been increased over the years but such an increase has not been commensurate with required up-gradation of colleges and the increase in the total number of colleges. As such, the infrastructure development gap is increasing each year.

"Lack of infrastructural facilities at campuses makes it difficult to conduct pre-placement talks."

Industry Expert

- Lack of counselling services and awareness services that can improve employment potential – Findings from various respondents suggest that counselling services are required and missing at various levels. Owing to lack of pre counselling, students do not come in with realistic expectations from their jobs. According to industry experts, students are not well counselled at campuses because of which there is an aspiration mismatch when they start their jobs. Overall, there is a lack of provision of professional counsellors in the system that is overall necessary for suitable student guidance.

"About 4 years back awareness campaigns were conducted with inter-college students to let them know about the scope of polytechnics and the kind of jobs available. But after this, it has been stopped."

JEECUP official

- *Other factors* Respondents have also mentioned a variety of other factors that impeded employability for the students of the polytechnic institutes. This include:
 - Low learning and low employment outcomes acting as a deterrent to admissions.
 - Poor response from private sector pushing parents to make their protégés take admission in streams that have better opportunity with the government. Overall both parents and students lack knowledge about admissions and opportunities in non-core branches.
 - No monitoring and analysis of online learning system.
 - Industry partners have mentioned non availability of students during campuses for hiring and poor selection versus joining ratio as strong deterrents for them. Other deterrents include lack of common platform for hiring, non-availability of data of alumni and a dedicated TPO makes hiring difficult.

4.5 Current Status of Employment of Polytechnic Institute Alumni

Data collected from the alumni shows that a relatively small percentage of them were currently employed. In fact, approximately 29 percent of the alumni interviewed said they were employed. This included both the alumni who are currently self-employed or working in jobs. Approximately 9

27/42

percent of the alumni said that they were self-employed. On the other hand, approximately 20 percent of the alumni said that they were working in various jobs. Thus as much as **71 percent of the alumni were found not be gainfully employed currently.**



The highest share of the alumni interviewed (approximately 45 percent) said that they were preparing for government jobs. On the other hand, approximately 18 percent said that they were pursuing higher education. Approximately 8 percent came in 'others' and represent alumni who said that they were not currently employed and not pursuing anything immediately. Also, approximately 56 percent of them said that they had never done a job.

Although there is no cohort data, comparison of professional aspirations of existing students and actual profession situation of alumni provide interesting analysis. It shows that far lower percentage of students who had sought employment is actually employed after the course completion. Instead, a good share has shifted to the section making efforts to get a government job. A higher percentage is also now pursuing higher studies than had aspired to do so. These are shown in the two charts below:





The findings from this chapter too show that there are gaps of compliance with various broad AICTE parameters such as Director & Faculty Availability, Academic & Good Governance Parameters and Evaluation & assessment of Student Parameters. Several of these have also been pointed out by subject experts and industry experts.

EMPLOYABILITY AND ASSOCIATED FACTORS

5.1 Introduction

So far, the report has explored the situations such as infrastructure; value added facilities and resources; teacher student ratio; teaching techniques etc. At the same time, it has tried to delve into the employability aspirations of the students and current employment situation of the alumni. It has also tried to understand the industry view and expert opinion and how the current process of education connects or disconnects with industry interface and expectations.

This chapter goes a step forward and tries to understand if some of the situational factors show any correlation to the employment rates in the polytechnic institutions.

To get a better understanding of this, 10 polytechnic institutions with the best employment figures had been sampled out as have 10 polytechnic institutes with the worst employment figures. Thus 20 polytechnic institutes from diametrically opposite spectrum were identified and considered for analysis. Data provided by the Directorate have been used for the purpose.

Co-variation between employability of these 20 sampled institutes and various situational factors has been assessed to see if there is any tendency of these variables to co-vary. Besides this, correlation between factors has also been calculated. Several of these situational data had been collected by Medha team from all institutes and thus sampling out data that corroborated with the 20 selected institutes was possible.

It is necessary to mention here that the scope of the study was limited and thus correlation and covariability factors could be explored only with a limited number of factors. However, more factors as have come up in the situation analysis data need to be explored against employability and this has been mentioned in the section on recommendations.

5.2 Variation of Employment rates between the selected institutes

As already mentioned, 10 institutes with the best employment figures and 10 with the worst employment figures were sampled for the purpose of further analysis. These figures were computed in terms of percentages, as in the percentage of students in the institute who received placement on passing out of it. It was found that the employment percentages varied widely between the best performing and the worst performing institutes.

It may be mentioned that the employment figure of each institute was computed as an arithmetic mean of the employment figure of the last three years (2017-18; 2018-19; 2019-20).

The range between the employment percentage figures was as high as 96.45 percent. On the other hand, the standard deviation was also high at 38.34 percent.

5.3 Relation between Employment and Basic Infrastructure

As already mentioned in Chapter 3, factors such as condition of the classroom and college building, condition of toilets etc. were together considered as part of the basic infrastructure. The study tried to understand whether there is any co-variation between infrastructure available in a polytechnic institute and the employment figures in that institute.

Figures did not however, reveal any positive linear correlation or positive co variation as revealed by the Pearson's correlation coefficient and the co-variance figures.

What is noteworthy though is that there is low variation in infrastructure itself among the 10 institutes with the highest employment figures and the 10 with the lowest employment figures. The standard deviation of the basic infrastructure among all these 20 institutes is approximately 1.8.

The difference between the arithmetic mean of the basic infrastructure scores between the 10 institutes with the highest employment scores and the 10 institutes with the lowest employment score institutes is only 0.6.

This shows that institutes with high employment figures do not necessarily have substantially better basic infrastructure as compared to institutes with low employment outcomes. However, it merits mention that only very basic infrastructure such as institute building, classrooms and toilets were considered here. Also a better understanding of the effect of such basic infrastructure can be gained if we can later study institutes with very good and very poor infrastructure facilities, instead of institutes with similar basic infrastructure.

5.4 Effect of Electricity and Power Backup availability

There basically appears to be no correlation between employability outcomes from institutes and electricity and power back up. *In other words, our data did not show that institutes with better employment have higher power backup and better electricity situation than institutes with relatively lower employment outcomes. However, here too the understanding can be strengthened in future by studying employment figures of institutes with high electricity and power backup and those with poor electricity supply and power back up.* The current finding is represented in the scatter diagram shown in chart 5.1:



There is almost no correlation between the two sets of variables as reflected by a correlation coefficient =

5.5 Effect of various Desired & Value-Added Facilities

The study also tried to explore relations between the employability figures of the sampled institutes and various resources and facilities in these institutes. These facilities include condition of working labs for the students, availability of subject labs, availability of library and access to wifi.

These facilities were clubbed together, and it was believed that their availability and functionality would be useful and minimum requirements for better practical driven methods of teaching and learning. In this way, they could be drivers of employment.

Data collected shows that there is indeed some co-variability between the two sets of data. Covariance = 21.47

In fact, if we remove the two outliers (one from the best employability and one from the worst employability institutes), we get a positive covariance = 58.1

This shows that institutes with better essential and desired infrastructure could be having higher employment compared to those with lesser essential and desired infrastructure.

5.6 Teacher Student Ratio and Employability

While the number and quality of teachers can both play an instrumental role in the learning levels of students and thus finally on their employment outcomes, here restricted by quantitative factors, the number of teachers (in terms of the teacher-student ratio) have been considered.

Analysis has shown that there is indeed some positive correlation between a higher teacherstudent ratio and employability in the sampled colleges and colleges with high teacher student ratio rating seemed to have had better employment outcomes as compared to those with poorer ratings. It needs mention that analysis have been made on the basis of ratings provided to institutes based on teacher student ratio (and not the ratio itself).

Correlation coefficient was found to be 0.41.

It was also found that the average (AM) teacher student rating of the 10 highest employability institutes is 2.7 while in the 10 lowest employability, it is 2. This is shown in chart 5.2.

However, it also merits mention that there is not high variation between the teacher student rating of the 10 institutes with high employability figures and the 10 with low employability figures. Standard deviation = 0.81.

5.7 Accessibility of Institute and Employability

It was found that accessibility of institutes did not seem to have any effect on the employability figures among the sampled institutes. Thus, both the institutes that had high employment figures and those that had low employment figures showed similar accessibility quotients. But it merits mention here that in 50 percent of the selected institutes, the institutes were at a distance of more than 6 kilometres from the closest main road/bus stand.

As a consequence, the correlation coefficient was almost 0 and low covariance was found showing that factors that affect employability of the students in polytechnic institutes have to be sought beyond accessibility.

5.8 Inter relation between factors

Data also throws up interesting results between factors such as student strength and teacher student ratio rating. Chart 5.3 below shows the line diagram of student strength and teacher student ratio rating.

The correlation coefficient between the two is high at 0.78. This shows that high teacher-student ratio seems to draw more students to an institute. Conversely, high student load may be inducing the government to improve facilities such as teacher-student ratio, in an institute.

All these point to interesting results. They show that there are certain factors that might be affecting employment and resources in institutes whereas other factors seem to have lesser effects. Another point to be noted is that some situational factors such as basic infrastructure seem to vary little between institutes themselves, including institutes with rather different employment outcomes. This shows that there is both space and need to explore these areas further.

VIABILITY OF INSTITUTES & STREAMS

6.1 Introduction

As has already been mentioned earlier, understanding the viability of the institutes has been one of the specific objectives of this study. Before understanding this aspect however, important parameters such as function/structure/resource situations of the sampled institutes have been gathered and already represented in this report. Also, employment outcomes of these institutes have been considered against the backdrops of these situational factors to understand any inter relation between the factors.

All this has built a platform where the understanding of enabling and disabling factors around these institutes has been strengthened. In this chapter, viability of running the various polytechnic institutes and also various streams within these institutes is explored. Here secondary data has been received from the Directorate of Technical Education and has been useful to present findings.

Certain factors that this study has taken for considering the viability of the polytechnic institutes is admission of students with respect to total seats available in an institute or stream; the number of AICTE norm compliant institutes and also aspects such as availability of human resources such as teachers against requirements.

6.2 Student Enrolment in Institutions in comparison to Total seats available

Data from the last 5 years have shown that in certain colleges in certain streams, the percentage of seats actually filled in comparison to total seats available is very low. A few examples are given in Table 6.1 below:

SI. No.	Name of Institutes	Course Stream & Group	Year	Percentage
1	Government Girls Polytechnic, Shamli	Computer Science And Engineering (Group A)	2016	10.00%
2	Government Girls Polytechnic, Shamli	Electronics Engineering (Group A)	2017	3.33%
3	Government Polytechnic, Lalitpur	Modern Office Management And Secretarial Practice (Group D)	2019	2.67%
4	Government Polytechnic, Lalitpur	Modern Office Management And Secretarial Practice (Group G)	2020	0.00%
5	Government Polytechnic, Saharanpur	P G Diploma In Computer Hardware & Networking (Group G)	2020	0.00%

While this table represents only a few data points, equally dismal data exist across a large number of colleges and in several streams, a detailed list of which can be developed. However, the above table shows that different streams in different colleges and often different steams in the same college have abysmal admission rates. As an example, one may take Government Polytechnic, Lalitpur and Government Girls Polytechnic, Shamli, where in both the streams shown above the enrolment ratio has been very poor.

Another point of concern is the trend that must be considered over and above the time series data. This is shown in **Table 6.2 A and Table 6.2 B** below with examples of only 2 institutes, although again, going by the data, such situations have been noticed in some streams in several institutes:

Table 6.2A: Government Girls Polytechnic Shamli

	2016	2017	2018	2019	2020
Time Series Data (enrolment versus seat availability)	15.00%	18.33%	11.67%	11.67%	15.00%
Trend Line Figures (3 years' moving averages)		15.00%	13.89%	15.00%	

Table 6.2B: Government Polytechnic Lalitpur

	2016	2017	2018	2019	2020
Time Series Data (enrolment versus seat availability)	43.33%	20.00%	8.33%	2.67%	10.67%
Trend Figures (3 years' moving averages)		23.89%	10.33%	7.22%	

This shows that not only are the actual admission figures with respect to total seats very low in a decent number of institutes across one or several streams, but also that they seem to be declining over time. As such there is definite need and space to question the viability of these institutes or specific streams within these institutes. As of now, keeping them open seems to allocate resources sub optimally.

6.3 Low Teacher Allocation

While a decent share of students had mentioned that they find the teacher student ratio good, data shows actual allocation of teachers is way lesser than that earmarked for. This could be because student expectations of teacher-student ratio may not be too idealistic. However, percentages of actual filled positions and vacant positions show that a very high percentage of positions are lying vacant.

This is shown in **Table 6.3** below:

Summary for Principal's Position	Number	%age
Filled Posts	106	77.37
Vacant Posts	31	22.62
Total	137	100

Summary for HoD's Position	Number	%age
Filled Posts	126	29.37
Vacant Posts	303	70.63
Total	429	100

Summary for Lecturer's Position	Number	%age
Filled Posts	1004	33.74
Vacant Posts	1971	66.25
Total	2975	100

Data as reflected in the above table raises concern as it shows that as much as 66.25 percent of the Lecturer's Positions are lying vacant. The situation is even more dismal for the position of HODs.

This raises apprehension that while some streams in some institutes may have lecturers allocated to them, even with very poor student enrolment, in other cases a crunch of lecturers may be affecting the quality of teaching learning experiences. This has been strengthened by our finding that there is some positive correlation between teacher student ratio and student employment outcome. Hence this calls for a reallocation of human resources.

6.4 AICTE Compliance

Another important area that this study probed is the AICTE compliance data, which was provided by the Directorate. It may be noted that there are various compliance parameters that must be met to gain full compliance. Some of the core compliance parameters include: administrative compliance; compliance of computer facilities; compliance of instructional area; library compliance and similar facility related deficiencies.

Given below is a comprehensive view in **Table 6.4**, which shows the overall compliance to such norms in all the 144 government polytechnic institutes:

Parameter	Details	Percentage Non Compliance	Percentage Compliance
Administrative Area Deficiency	Board room, department office/cabin for head of dept., maintenance, security, housekeeping, pantry for staff faculty, exam control office, training placement office, office all inclusive, Principal/Director office	54.17	45.83
Computational facilities	Numbers of PCs in Language lab, Legal Application S/W, , legal system S/w, PCs to Student ratio, printers, internet bandwidth	87.50	12.50
Instructional area -engineering and technology- diploma	Laboratories, seminar hall, Additional Workshop /Labs, tutorial room	79.17	20.83
Instructional area common facilities	Language Laboratory, library and reading room	77.78	22.22
Faculty deficiency		90.28	9.72
Library facilities	Titles, volumes, journals, reading room and seating capacity, Library Management Software, MultiMediaPC	86.81	13.19

Other Facility Deficiency	Standalone Language Laboratory, Provision to watch MOOCS courses- Swayam, Food safety and standards, Fire and safety certificate, Atleast 5 MOU's with industries, group accident policy for employees, internal quality assurance cell, display of info submitted to AICTE on website ,mandatory internship policy for students, online grievance redress mechanism, telephone, implementation of security measures. Institution-industry cell, medical and counselling, general insurance, , teacher training policy, sports facilities, AICTE approval letters-EoA/LoA,	73.61	26.39
Other facilities iii & faculties questions	Fees to be charged- policies uploaded, courses/approved intake displayed, institute's operation from permanent site, list of faculty and data uploaded	48.61	51.39
Amenities area deficiency	Cafeteria, first aid cum sick room, stationary store, boy's common room, girl's common room	55.56	44.44

The secondary data corroborates the primary data collected and shows basic gaps. There is noncompliance across AICTE compliance parameters in the institutes and such non-compliance on some parameters is very high. This is shown in **Chart 6.1** below:

CONCLUSION AND RECOMMENDATIONS

7.1 Concluding Thoughts

The diagnostic study has brought up interesting findings, despite being limited in its scope. It has given a peep into some of the core facilities and resources that are available with the institutes and the resource and infrastructural gap. Here not only have infrastructure and resources been explored but also teaching techniques in these institutes and their practical applications were probed. Another very important aspect that this study has probed is the employability aspirations of the students. Their location preferences were also mapped. So overall, it has been able to provide us with varied findings.

A few points here merit mention:

- Findings show that compliance to AICTE parameters is poor and most of the gaps uncovered by this study can be covered by covering these gaps. In fact the findings have shown that approximately 21 percent institutes do not adhere to a single AICTE compliance head out of the 9 broad compliance heads in total.
- 2. The gaps that have been noted are infrastructural (as noted by AICTE parameters such as Infrastructure facilities, Library Facilities and Essential and desired facilities). However, they also encompass human resource gaps (AICTE parameter of Director and Faculty availability.) Besides this gaps for technical assistant positions are also affecting employment outcomes, as mentioned by both students and industry experts.
- 3. Industry and Subject experts have pointed to the human resource gap and other gaps (most of which are covered under Academic and Good Governance parameters under AICTE) as core factors resulting in low employment of students.
- 4. Approximately 71 percent of the alumni covered by the study said that they had never been employed and approximately 25 percent of the sampled students were quite unsure of being able to put their classroom learning to practical application. Approximately another 38 percent students were either somewhat sure or somewhat unsure or neither sure nor unsure that they could put their theoretical learning to practical purpose.
- 5. There were gaps in compliance to AICTE parameters such as Evaluation, Assessment and Performance of Students; Quality of Faculty & Supporting Technical Staff.
- 6. A worrisome trend of declining enrolment in various institutes and particular streams of particular institutes was noticed, with some streams in some institutes registering zero enrolment.

Such findings point to the fact that decisive steps must be taken in the right direction and have justified the relevance of this study.

7.2 Recommendations

Based on the findings, the following recommendations and suggestions are made:

- 1. Stricter adherence to various AICTE norms and deciding on viability of institutes based on such adherence is needed. For example, viability of institutes with zero compliance to norms (including the 21 percent that do not comply with a single AICTE parameter head) must be considered. Thus instead of adding to existing number of institutes, making the existing institutes AICTE compliant and up to date in their resources and functionality must be prioritized. Data driven viability of specialities/streams need to be created based on adherence to AICTE norms. Data driven viability of specialities/streams need to be explored based on enrolment, attendance, and market relevance. This is corroborated by secondary data that shows that a lot of streams in various institutes do not have a single student enrolment over years and data also exhibits a decreasing trend in enrolment of students across certain institutes/streams. Resources (including human resources) of institutes and streams shut down can be considered for reallocation to functional institutes to improve their AICTE compliance. Before opening of any new institute viability survey needs to be conducted
- 2. Ensure adequate availability of Principal and Faculty (and support staff such as lab technicians, as required) on campuses.
- 3. Even in colleges that are considered viable, compliance to all AICTE parameters, with stress on the following is important to improve learning and placement outcomes:
- a) Curriculum and content delivery with increasing role of stakeholders including industry experts in the process. Also, greater stress on industry interface and industry compliant curriculum including soft skills, English etc. is important.
- b) Strengthen Career guidance, mentoring and placement cells on campuses
- c) Quality enhancement through Faculty Development Initiatives and better performance management systems.

Such accountability may be ensured by strengthening existing portals like URISE (can be considered as department MIS and data collection tool) and Manav Sampada for managing both institutions and human resource performances and to create transparency in the system. It is necessary to create SOPs and data driven monitoring and evaluation systems.

4. Based on the findings and learning of this relatively limited diagnostic study, a more intensive study needs to be conducted, to create greater understanding of employment correlation elements; case study driven comparison with private institutes/ best institutes to provide direction etc

Acronyms

- AICTE All India Council for Technical Education
- BTE Board of Technical Education, Uttar Pradesh
- DTE Directorate of Technical Education, Uttar Pradesh
- **GDP** Gross Domestic Product
- IRDT Institute of Research Development & Training
- JEECUP Joint Entrance Examination Council of Uttar Pradesh