An Analytical Approach of Faculty Members on the Frame work of Technical Education in India

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Summary
The objective of the present work is to find out dynamic matrix of embryonic technological developments with its concurrent adoption by technical institutions in India. The education particularly the technical education is backbone of development of any country. Therefore, the study under reference has enormous importance & need to find out the critical matching parameters. The responses of faculty members, a sector shaping the future of the country through quality students output confined mainly around, course deliveries, examinations, participatory opportunities in policymaking and management planning, satisfaction level in both technical laboratories and technical personnel, manpower assessments, personality development of students, additional pre-requisites (perks), welfare schemes, contributions in placement of students in various employment sectors, quality production of research papers, status of electronic communication etc. for the two sample technical institutions called as T1 & T2 under study. The nature of T1 is a singular faculty whereas T2 is multi faculty. It has been observed that in most of the deliverables received from faculty members on the designed questionnaires threshold of T1 is higher than the T2. The obtained results are quite pertinent to most of the Indian Technical Institutions and to the Government of India to formulate proper policies for the implementation of observations in all such institutions of India.

Key words:
Human Resource Management, satisfaction level, technical institutions, framework, faculty members.

1. Introduction

The knowledge based education plays an important role in multidimensional yet sustainable growth of any country. Technical and professional streams of education are important components of overall educational structure for the development. Prior to India's independence, educational resources were considered to be quite insufficient to meet the growing aspirations. However, combating upon the growing challenge, the Government of India decided to establish world class technical and professional educational institutions as the first step to modernize the nation. Subsequently the Indian Government established the educational institutions like Indian Institute of Technology, Indian Institute of Management, Regional Engineering Colleges and universities. These institutions have been imparting under graduate and graduate courses since their inception. With the advent of information technology (IT) revolution, a severe need has been felt to reorient the overall educational philosophy, pedagogy and appropriate curriculum as per the growing needs of the nation. It has been, therefore, thought relevant and important to find out the changes adopted by technical institutions in consonance with the dynamic technical educational system. There are more than seven thousand technical educational institutions in India at present. Nevertheless, to carry out the results and maintain scientific objectivity within the scope of this research paper, it was impossible to collect the data manually from all the institutions. Therefore, we focused only on two technical educational institutions of excellence having different nature as the model study for this research paper.

The findings of the study have to be extrapolated for about 100 similar institutions of excellence in India. The physical infrastructure and human resources at various levels are important segments of an institution. In the present study the data collected through standardized questionnaire from the faculty members has been statistically analyzed [1]. The chosen faculty members are based on their importance as the pillars of the system. The important findings of this study relate to the measuring points of the administration, academic, financial affairs of the institutions, government, and other funding agencies supporting the institutions. It is anticipated that the concerned technical institutions and government might incorporate the findings of this research in their developmental plans and policymaking.

The significance of the present study reveals multifold aspects fulfilling the demand of the society. The educational system particularly technical ones have to be matching matrix with dynamics of development. The pre-requisites for this require latest equipments, innovative curriculum, competent faculty and technical staff, proper policies for upgrading and enriching knowledge of the faculty members etc. Normally it has been observed that acceptance and adoption of changes with the technological dynamics need are quite slow in most of the educational institutions in India. Nonetheless, the older institutions

Manuscript received April 5, 2009

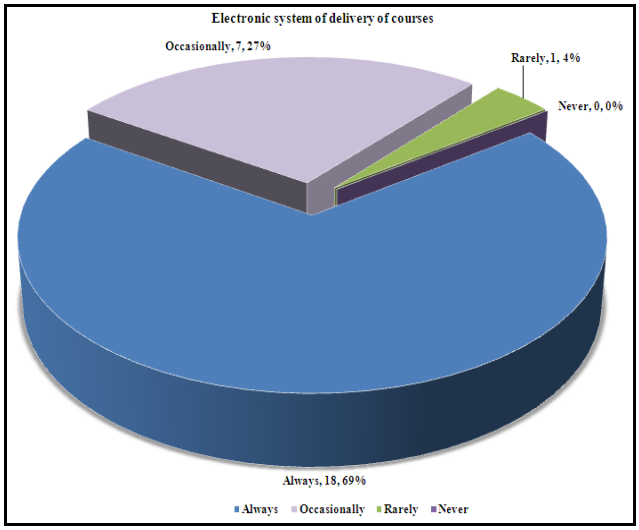
have much slower rate of adoption of changes compared to the new ones. Any programme and schemes for matching the movable technical system is easily not accepted by the administrative agencies working in educational institutions which turns out to be the biggest challenge in the knowledge based educational growth of an institution. It was therefore, necessary to first find out the present status of technical institutions and on the basis of findings suggest the solutions to the concerned partners for incorporation at various stages [2].

As mentioned earlier the faculty members are backbone of the education, therefore, in the present paper the study addresses the important questions related to them only. Also as per need of the society and country at large, the research presented here has evolved an analytical approach of the framework as accepted by appropriate bodies for fulfillment of their goals in the changing world. The statistical approach adopted in the study reflects the two technical institutions named as T1 having singular discipline and T2 is having multi disciplines. The statistical analysis has been carried out very diligently to compare the common aspects of two institutions and their teacher's opinion expressed in T1 & T2.

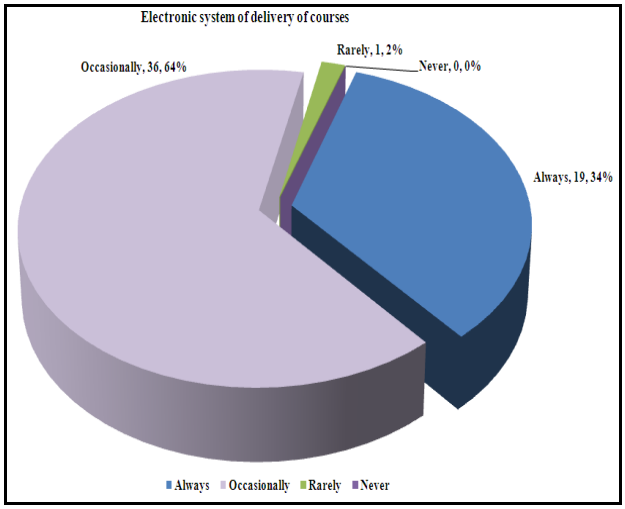
The responses in this research relate to delivery of education, examination, level of satisfaction of faculty members on various areas, career growth, perks, vertical upliftment, programme of collaborations, sanctity of research publications, catching plagiarism and other relevant aspects. In the opinion of authors, the responses are mostly matched with the requirement of latest IT developments and personal aspirations of faculty members. Accordingly, the data has been collected through questionnaires on these aspects and are depicted in following pages from the sample study [3].

The detail analysis of the data alongwith implications is shown for the two institutions in the following graphics and pie-chart. It has been observed that the advent of IT revolution and availability of various IT tools has manifested necessary action for delivery of courses. Some of the technical institutions are still using traditional methods and approaches of teaching like chalk, duster and blackboard system. It was, therefore, very important to find out the ground realities of T1 & T2 on electronic system of delivery of courses by the faculty members. In Figs 1 (a) & 1 (b) a comparison is made on the data collected from T1 & T2 for depicting the use of electronic tools for imparting courses to the students.

It is apparent that in T1 there is higher percentage of tendencies of faculty members to adopt latest electronic developments whereas in T2, the adoption for new technology for delivery system by the faculty members has to be increased enabling students prone to the new technological developments to face the society in a better manner. Therefore use of new technologies in such technical Institutes needs encouragement [4].



Technical Institute T1 & T2 Fig-1 (a)

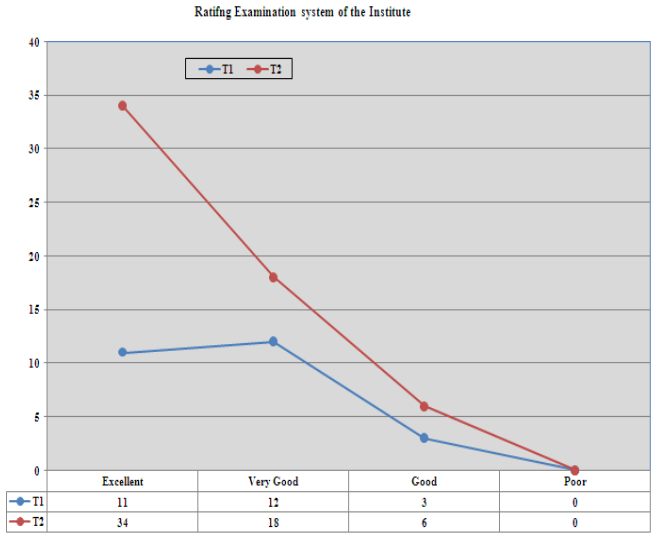


Technical Institute T1 & T2 Fig-1 (b)

Also, since the electronic systems of delivery of courses are an important parameter for the enrichment, the new and important tools of the subject have to be emphasized for T1 to raise level to 95% from 68% and in T2 to 90% from 64%, respectively.

The faculty members are solely responsible for the examination and evaluation in technical institutions. **Fig-2** reflects the rating of their existing examination system of T1 & T2 by the faculty members of both Institutions themselves. In this figure the percentage of T2 faculty favours their examination as excellent in comparison to T1. In T2 about 50% of the faculty, have opined for better

examination system as they feel the present state of art of examination system and evaluation are inappropriate.



Technical Institute T1 & T2 Fig-2

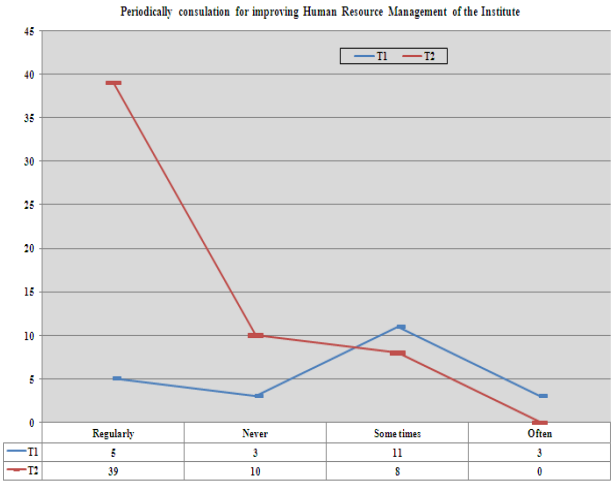
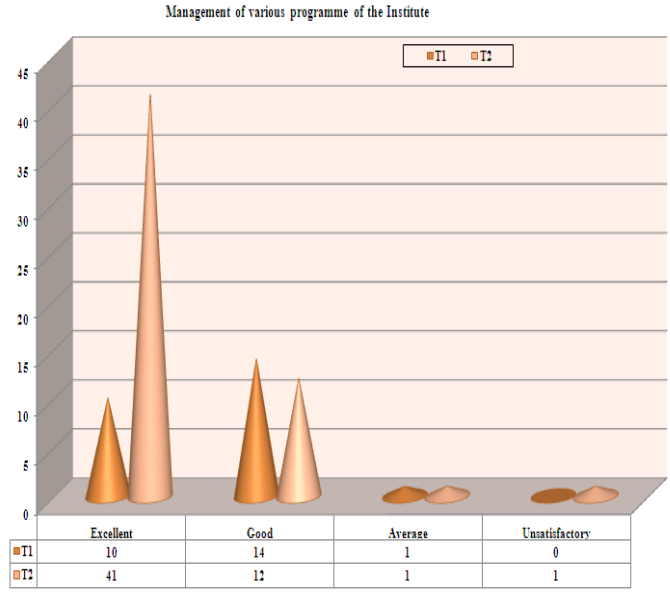


Fig-3

The growth of any institution depends on participatory policy with the consultation of faculty members and other support system on major activities of the institutions. Periodic consultations and opinions of every human resource of the institution is as important as any other parameter for vertical growth. Therefore, the present responses have been collected from faculty members of the two institutions under this study. This component also involves decentralization of work, capability based work assignment, mobility and relevant policy planning of the institutions.

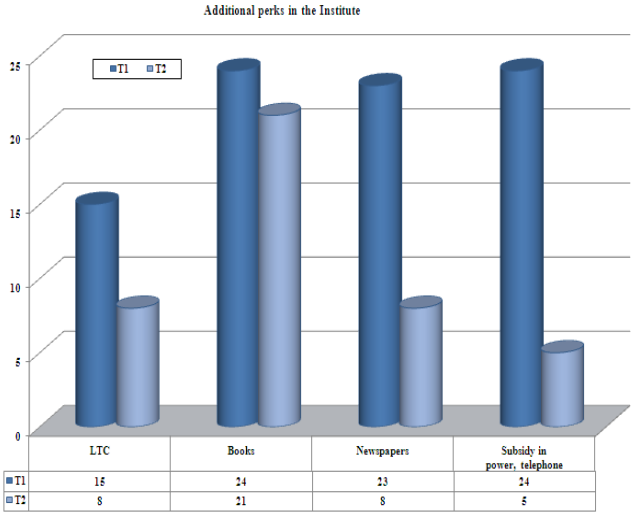
Fig-3 provides opinion on periodic consultation with them for improving human resources. In T1 more than 50% faculty members have accepted that consultations are only for sometimes and 25% accept for regular consultation whereas in T2 about 45% agree for regular consultation and 25% deny any consultation. The data of both institutions are discouraging and show an autocratic system of management. These findings along with others will definitely compromise the [5] growth of the two institutions.



Technical Institute T1 & T2 Fig-4

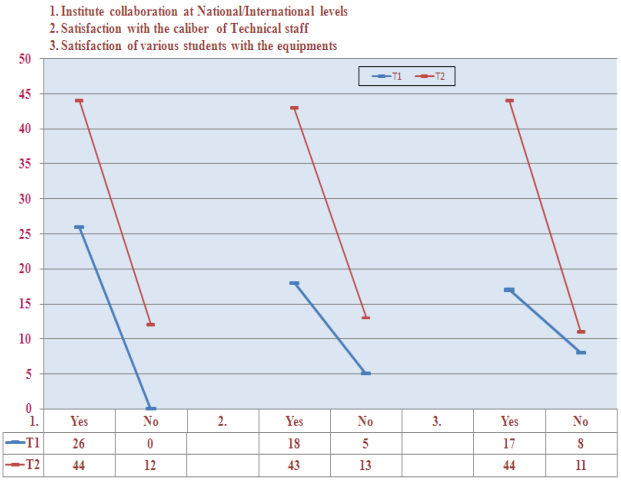
The important ingredients for managing various programmes of any institution broadly include academic, administration, finances, extra curricular and capability development of human recourses with high level of satisfaction etc. For these components human resource personnel with relevant qualifications, experience and management capabilities are assigned with the responsibilities for ensuring excellent management. Whereas the faculty members' responsibilities include teaching, research, development, generation of resources through the projects etc, the supporting human resource personnel manage ground operating systems to add the excellence in delivery of courses and other tasks initiated by the faculty members. Thus quality of management is an integrated effort for overall maintenance leading exceptional growth both horizontally as well as vertically. According to the faculty (T1 and T2) opinions collected and demonstrated in **Fig-4,** about 42% in T1 are in favour of qualify management of programme whereas 54% have expressed as good, others have mentioned average and none is unsatisfied. In case of T2 more than 65%

favour excellent management in their institute, 28% rate it good and 5% average and similar percentage is unsatisfied. The inference is that both institutions [6,7] under the present study require review of management of their various programme to achieve further quality in academic curricula.



Technical Institute T1 & T2 Fig-5

Fig-5 represents a component for better performance and attraction of qualified human resources along with their retention and better output as an additional pre-requisite (perks) is not covered and regulated by the Government of India which are need of the day. This is also required due to the shortage of qualified faculty members for which concerns are being shown at different platforms by the policymakers of India. Keeping this aspect in view the information on additional perks provided to faculty members by T1 & T2 have been reflected in Fig-5. This shows that T1 excels in providing better perks as compared to T2. Although there are several perks to be offered to human resources in any organization outside purview of government sanctioned facilities. In the present study three additional perks [8, 9] and one partial perk has been taken for views of faculty members. The leave travel concession (popularly called as LTC) is a scheme that covers the cost of travel to any parts of India but only one time in four years. This should be applicable in all federally funded academic institutions and other departments of Government of India. In addition faculty members are provided with the books for personal use along with other perks like newspapers and magazines. The institute bears all costs for faculty members but provides great subsidy in power and telephones to its employees. Responses from the faculty members have been collected on these aspects. In case of T1 about 60% enjoy LTC, 100% purchased books, avail the facilities of newspapers, power and telephone and in case of T2, the situation is not very encouraging since only 30% enjoy LTC, 85% purchase books, 30% get newspapers and magazines and only 18% received subsidy in power and telephone. It is presumed that most of the technical institutions fall in the line of T2. As a result this is affecting overall qualified manpower in joining such institutes and retention rate is quite low [10]. It is, therefore, suggested that remedial steps be taken by such organizations to extend additional perks to all the human resource personnel working in educational institutions for better performance, retention and active participation in the growth of the institutions. This shows that T1 excels in academic endeavours due to better perks as compared to T2.



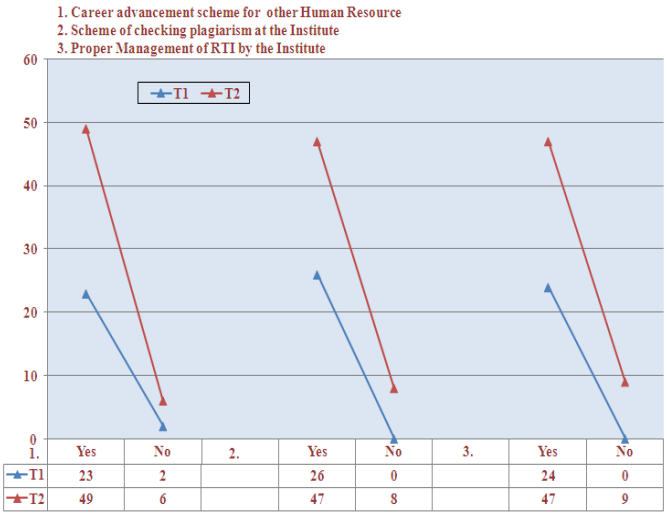
Technical Institute T1 & T2 Fig-6

Fig-6.1. illustrates that to enhance the capability and knowledge of faculty members, national and international exposures to other institutes of excellence are essentially required. It reflects the need of collaboration at national and international levels as viewed by the teachers. In case of T1 100% faculty members support the collaboration whereas in case of T2 only 84% have viewed such collaboration. Thus T1 has comparatively better exposure as compared to the T2 at both national and international levels.

Fig-6.2. also shows satisfaction of faculty members with caliber of technical staff of the institute. 87% of teachers of T1 are satisfied with the caliber of technical staff whereas in the case of T2 only 82% were satisfied with their support system. As mentioned [11,12] earlier the technical staff is an important and integral part aspect for to any technical Institute. Their caliber & competency are linked with quality of services being provided to students and to the faculty members. Therefore, the study reflects that quality of technical skills as provided to the research work,

teaching with excellence in the institutes. The satisfaction of students with the laboratories and equipments is another important parameter to qualify the institute for excellence in technical education.

Fig-6.3. represents that more than 60% of faculty members have high satisfaction level with equipment in the laboratory in case of T1 whereas in case of T2 it is about 80%. Therefore, the laboratories of T1 need enrichment and modernization with latest equipments and facilities. Here it may be important to mention that in T1 obsolescence seems very fast as compared to the T2. Therefore, overall satisfaction level has naturally gone down as compared to the T2.



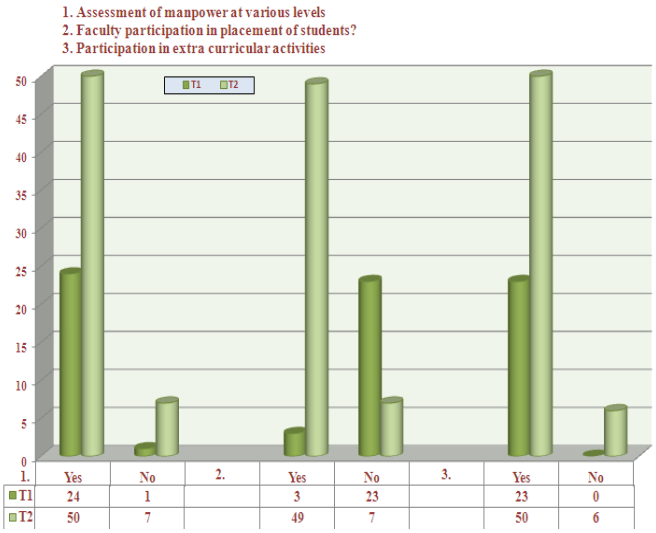
1.	Yes	No	2.	Yes	No	3.	Yes	No
T1	23	2		26	0		24	0
T2	49	6		47	8		47	9

Technical Institute T1 & T2 Fig-7

Figs-7 reflects the importance given to data index related to accountability, monitoring, assessment and performance indicators, report on benchmark studies and researches, competitors in the field, links to researchers and groups along with other intervening aspect in career enhancement scheme and checking of plagiarism in the Institute.

Fig-7.1. also shows that the threshold of career advancement of T1 is more than that of the T2. Similarly, the thresholds of other factors of T1 are more in comparison to T2. Low level of career advancement is contravention of the basic policies for development of any institute. This implies that there may be several other institutions following similar outcome as of T2. This collectively will give negative impact for overall horizontal and vertical growth [13] of technical education and, in turn, the growth of country will be affected in a quite substantial manner. Some positive actions may be required to arrest such scheme if any from government favors and is still operative in educational system.

Fig-7.2. incorporates the issue of the tendency of cut and paste which is quite prevalent in several sectors including educational institutions. It has been found that not only students at under graduate and graduate levels but also research scholars and faculty members indulge in such shortcuts for quick production of research papers as a part of fulfillment of requirements of their Ph.D. degree. This is hampering the quality of academic output and academic creativities in students and faculty members. It is, therefore, important to find out about the method of controlling tendencies of cut and paste system through developing various softwares in T1 & T2. In case of T1, 100% faculty members are convinced of plagiarism check of any document whether it is a research paper or any other document such as dissertations etc where as only 85% of teachers in T2 are in favour for such action at institution level [14].



1.	Yes	No	2.	Yes	No	3.	Yes	No
T1	24	1		3	23		23	0
T2	50	7		49	7		50	6

Technical Institute T1 & T2 Fig-8

India is a democratic country and every citizen has the rights to know the policies, administrative control, rules and methods of management of any organization including educational institutions. However, these documents have not been made available to any citizen of the country. To have transparency in the functioning of various wings of Government of India, the constitution has been amended. It is now mandatory for any organization to provide information sought by any citizen of India. This also envisaged to control of corruption, if any, in any organization of the government. The faculty members being highly educated and aware of various rights have given their opinion about such changes in the Indian constitution to supply the information in educational institution**. Fig-7.3**. shows that 100% faculty of T1 agree

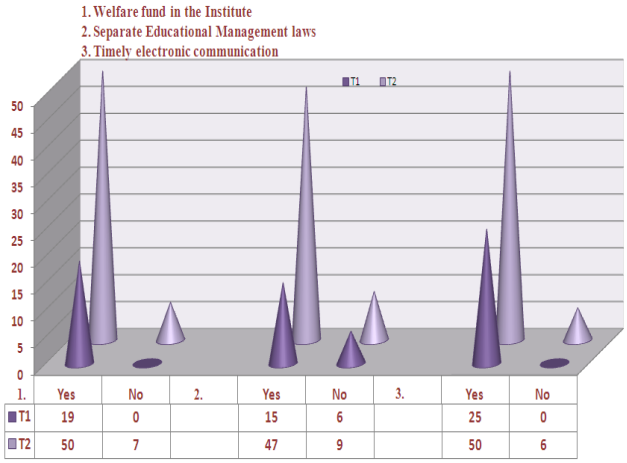
for such enforcement of laws where as in case of T2 only 83% are in favour of such act of Government of India[15].

One of the most important ingredients of any institution is capable human resource management team. These resources are placed at various levels for appropriate roles, responsibilities and functions. Accordingly, they possess different qualifications and capabilities. This is a difficult task and requires proper assessment and need of man power at various ladder points. Some of the institutions could not perform well due to improper planning and assessment of human resource [16] in the beginning and also due to their deployment according to their capabilities. Educational institutions being the nervous system of any country are affected severely due to the lack of such assessment. **Fig-8.1.** reflects views of faculty members about such important component. 98% in case of T1 and 88% in case of T2 favour for such assessment of manpower. Thus almost all faculty members of the two institutions regard this aspect as most crucial one in managing the educational system.

The outputs of institutions are the following: research papers, doctoral degrees, projects, exposures, exchange of resources including faculty members and above all the students for whom most of the infrastructure have been developed. In technical institution it is a practice and culture that employing organization visits the campus for selecting students. They may conduct written examinations and personal interactions and interviews about their knowledge of their subject, exposure outside the institution, general knowledge, abilities and capabilities including suitabilities for their organization. In any institution there are one or two placement officers who are responsible to organize visits of employers for the placements and manage it properly. In **Fig-8.2.** only 13% of faculty members of T1 participate in placement of students [17] where as in case of T2 86% take part in such programme. It is due to the reason that T2, is a multidisciplinary institution therefore, for each discipline separate expert faculty is required for placement, where as T1 being unitary one it may require very small number of placement officer.

Fig-8.3 shows that the overall development of the student includes curricular and extra-curricular activities. Becoming only a book-boom will not suffice to become a practical person to face the challenges in life and the society at various levels in future. Unfortunately, the education system in India provides considerably little time for various programmes of personality development. This is not only at territory level of education but from very primary level. However, efforts are being made there to include the components for extra-curricular activities and personality development programmes.

These activities may include games, sports, debate, drama, music, inter-institutional competition particularly at national and international levels being organized by the sports authority of India. For this aspect 100% faulty member of T1 favour for such activities where as in case of T2 only 92% of faculty members have expressed for extra-curricular activities. Both these aspect are reflected in **Fig-8.3.**



	1.	Yes	No	2.	Yes	No	3.	Yes	No
T1		19	0		15	6		25	0
T2		50	7		47	9		50	6

Technical Institute T1 & T2 Fig-9

The Government of India has initiated several schemes for protecting the welfare of their employees working in both private and public sectors including industries. In private sector there is exclusive welfare officer for sorting out the grievances of employees with employer. Similar situation exists in almost all other private organizations. In the case of public sectors it can be classified in three parts: exclusively governmental organizations, public service units and autonomous organizations. All three sectors are fully financed by the government. Although there are pre- and post supernuatory schemes to look after the welfare of government employees. However, most of the organizations themselves create welfare fund for all employees of their unit. In case of educational institutions [18] although it is not mandatory, a collective decision is taken to create fund for emergency and need based welfare requirements which are normally not covered under various facilities and perks provided by the government. The related questionnaire was posed to the faculty members about their explicit opinion of such fund. In case of T1 100% faculty members agree for such scheme where as in case of T2 about 85% only are in favour of such welfare fund as shown in **Fig-9.1.** In some fair and honest situations many incidences may happen where may not legally possible to support human resources financially to overcome such incidences. Therefore, creation of separate welfare scheme is an appreciative step at the level of institute.

It is known that every country has regulatory laws for managing their inhabitants for their various endeavours

including laws to curve various offenses committed by anti social elements. The basic rights for all country men are there in every country to various situations such as performing duties in any organization for lively hood and behavior with co-workers. The governance structure of any country normally has two ladders- federal generally called in India as Central and State levels. However, this has been further bifurcated at small levels and called district, taluka (tehsil), village etc. This governance is for general purposes of managing the society. But there are no separate laws for educational management that may include its establishment, developing infrastructure and other resource management including the fund generation. So different organizations [19] create their own laws for management and are called as Act, Statutes, Ordinances and Rules. However, normally, all issues of managements are not covered under these statutory laws. In that case provisions lying in federal Act are to be followed. It is, therefore important and desirable that appropriate laws for educational management be designed separately not only for punitive actions but also for reward and encouragement to the human resources working there along with laws from establishment to development and stabilization of various progammes of the institute. For this aspect the faculty members of T1 & T2 were contacted and 70% of T1 & 85% of T2 respectively agreed for separate laws of educational management in **Fig-9.2**. Although majority of faculty members of T1 & T2 appreciate for such initiatives, it seems some of them could not support the same in because of lack of legal exposure and managerial experiences.

Fig-9.3. encompasses that the growth of any institution also depends on promptness and easy communication among all the employees working in any organization. For this, it is pertinent to use electronic tools at various stages. There is still very strong stigma in accepting the financial transaction through electronic mode as it does not have usual signature of drawing and disbursing officer. This has been overcome by the recently developed electronic signature [20] for which confidential keys are made available at both sending & receiving ends. In some cases administrative communication also requires electronic signature to have the authenticity of the same. Normally, it is required for punitive actions. In other cases such as academic and rewards employees accept such communication. This practice is cost effective, saves additional human resources and is time saving. Therefore, appropriate culture and practices are required to have electronic communication in time. 100% faculty members in T1 appreciate timely communication through electronic mode. Where in case of T2 only 87% agreed for such practice in there institute. May be in due course of time such communication may be appreciated by all employees of any organization particularly technical institutions under the present study.

2. Conclusions

Analytical approach with appropriate statistical tools were applied to study scientifically the responses of the faculty members on standardized questionnaire on selected parameters focusing on facilities of two technical institutions adopted for this study and presented in this paper. The choices of technical institutions have been taken keeping in view that in India either there are unitary subject or multidisciplinary subjects institutions. Therefore, technical institute T1 represents singular faculty and T2 has multidisciplinary faculties. Almost all faculty members of T1 and T2 were approached for their views on selected parameters. These parameters were so-chosen that the four important aspects of any institution are covered. These are overall issues related to the institute, student matters, quality of education and research and lastly personal grudges and grievance of faculty members. The Institute related points were its management, transparency and participatory policy, manpower assessment, e-communication and availability of information to all. The delivery of courses, examinations, laboratories and equipments, placements and extracurricular activities are important for students. The quality of education & research includes exposure of all human resources and original academic work which is free from plagiarism.

The matters for retentionship and recruitment of qualified faculty members include the parameters like their work satisfaction at various level including technical facilities, welfare schemes and provision of perks normally not covered under government schemes.

The results of **Figs. 1 to 9** can be summarized that singular area institute excels in all the issues as responded by faculty members. Some shortcomings about the functioning of these institutes have been observed in the present study. It may be rectified by open and visionary approaches along with transparent and participatory management planning and policies of the institutes.

Acknowledgments

The authors are extremely grateful to the authorities of Indian Institute of information Technology, Allahabad and University of Allahabad, Allahabad for providing with the facilities to conduct the research work and complete the present study. We are indebted to Dr. M. D. Tiwari, the Director of IIIT-Allahabad, India for his cooperation and support that he extended unconditionally in present research work.

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