

# ENGINEERING EMPLOYMENT CRISIS IN ALL OVER WORLD EFFECTING GLOBAL ECONOMY

ISHA KAMPOOWALE  
Community Mobilizer  
National Rural Livelihood Mission (NRLM)  
Ministry Of Panchayat And Rural Development

**Abstract :** Engineers are being churned out in spades...But fewer of them are getting hired. Why? This paper's main aim is to create awareness among students and parents about the condition of Engineering Colleges in India. Everyday a new college is opening in every city which are offering BE courses but what about later. Are they offering students practical knowledge or just bookish knowledge is provided to them? Are colleges providing 100% placements to their students after completion of courses? Ragging is banned in our country but is it true? Are students following the rules and regulations of ragging? Nowadays colleges are taking admissions however they want and guaranteeing that future of students are safe in their hands, that placements of their particular college is better than any other colleges when compared. Are colleges seriously trying to place their students in good companies? All these problems are very common and faced by almost every person out there who opt for BE/B.Tech courses. And even after choosing the stream, we have to face other problems like attendance issues, time consuming college days, less practical knowledge is provided more focused on booking knowledge. These are few topics we need to aware others and ourselves so that we can select we need to opt depending on its past and future circumstances. Through this paper I have most covered all the problems that are supposed to be discussed, so that the other parents and students opting for Engineering colleges cannot face the same problem that we have faced. These subtopics are discussed in this paper by giving proper charts and old reports also.

1. RastriMahila Kosh (1992-1993)
2. Mahila Samridhi Yojana (October1993)
3. Swayasjdha

**IndexTerms** - Engineering colleges, practical knowledge, placements, ragging, awareness.

## I. INTRODUCTION

“Graduates are collecting their degrees despite not being skilled enough to be a productive part of the Indian economy.”

India basically produces 1.5 million engineers a year and still most of them are unemployed. To be an engineer or opt engineering as a career attracts a lot of students in India. Most families want their children to opt engineering, they think of engineering as it provide a secure future to them. Instead of knowing the past conditions of passed out students and going through old reports of engineering courses. These are the questions every parent should know answers off before making their child opt any course, it's not only about BE/B.Tech.



Lakhs of students appear in the entrance examination every year dreaming to be an engineer so that they can get a decent package. There are entrance exams for institutions like IITs, NITs but only a few of them manage to clear the cut-off and get admission in such reputed colleges. And the other students who are not able to clear the cut-off, either they prefer taking a year break or knocking the door of private colleges. But going after their dreams, do they achieve what the wished years back while choosing maths stream or they skilled engineers or everything is limited to their certificates only?

Career of a student is not limited to choosing good colleges only. Skills taught us in colleges and the extra courses we do play a more role in getting placed in a reputed company. The required skills offered by the companies and markets are tremendously huge which is actually wrong to expect this much from a fresher student.[2]

Let's discuss about the process of selection of students in any college. Colleges are basically divided into three tiers –

- **Tier 1** : It includes the top central colleges like the Indian Institute of Technology (IITs) and National Institute of Technology (NITs).
- **Tier 2** : This includes the top private colleges of India ranked under best colleges all over the Nation such as BITS, SRM, etc.
- **Tier 3** : All those colleges which are not specifically categorized fall under this category like our local city colleges.

Tier 2 and Tier 3 colleges select most of the students and they are very common among students opting for engineering. Most of the engineering graduates we get are from these two tiers of colleges because presence of these two tiers across the country is larger when compared to Tier 1.

## II. LITERATURE SURVEY

### CONDITION OF ENGINEERING – NOW AND THEN

Earlier, engineering colleges were so less and offered quality knowledge and students who doing engineering they were considered so smart and intelligent. Basically, doing engineering was a proud thing for parents as well as for their children. Nowadays there are so many colleges offering engineering courses that you being an engineer in a no big deal. We find one engineer out of five students. And also colleges offering engineering courses has degraded their value and do not provide sufficient skills and knowledge to students.

Earlier, only those were allowed to do engineering who were eligible for that particular course and who have actually cleared the cut-off. But now getting admission in an engineering college is very easy , it doesn't matters that you are eligible or not, what just matters is...Money. With time, the number of engineering colleges also started increasing rapidly , this introduced the concept of Tier 1 and Tier 2.[4]

It also became a platform for earning money by giving aspirants assurance that their placement is sure , that don't have to worry about future. Because of all these crap, parents believe them and are even ready to give such people money just so that future of their child is safe. But the actual reality is ugly. The colleges are becoming a hub of unqualified engineers which is decreasing the value of engineering and also aspirants hardwork is going to waste. Undeserving people are also getting an engineering degree which is no good for our society and development of our country.

This also happened because AICTE gave approvals to those private colleges also who were not supposed to be running an engineering college and later they forgot to maintain the rules and regulations falling under AICTE rule book. Earlier, students were most focused on innovation and colleges are also offering help to them in getting knowledge and developing skills but now the case is totally opposite.

The graph below shows how number of colleges has been increased every year.[4]

#### Growth of INTAKE of Technical Institutions in the Country (UNDER GRADUATE)

Year	Engg	Phar	Arch	HMCT	Total	Added in Year
2006-07	659717	76030	5085	5840	746672	30432
2007-08	701214	77582	5189	5959	789944	43272
2008-09	753910	78763	5268	6050	843991	54047
2009-10	1093380	80370	5375	6174	1185299	341308
2010-11	1219347	81594	5457	6268	1312666	127367
2011-12	1386083	83041	6894	6295	1482313	169647
2012-13	1565722	85461	8874	6355	1666412	184099
2013-14	1634596	86444	8614	6520	1736174	69762

### PROBLEMS WITH THEIR CAUSES

There is not only a two or three problems faced by engineering students in colleges, the condition is worse. What we have to go through is limited to us only. There is a lot of struggle before going to colleges and it doesn't stops till you are graduated and if you are unemployed at the end , the struggle goes on and on. Let's discuss the issues we face –

#### 1. ADMISSION IN A COLLEGE

It doesn't matters anymore that you have cleared the cut-off or not or your marks are in negative numbers. You surely will get a college and it might be good. This is the condition of our engineering colleges. There are number of quotas available for students through which they can take admission what just matters is that you must have cartons of money and admission is possible anywhere. Counselling system have been started from past few years that can you apply for colleges online and the particular college will select you on basis of your marks. At first, it was considered a fair thing but the scene is different. Every college have agents who bring students to take admission in their college and without playing fair they can provide you admission through counseling also doesn't matter what your marks are. Then comes another Quotas like direct admission, management quota, NRI quota, all these are also indulged in same activites. They take double fees from you and give you a seat in their college.[5]



But this is not a fair deal, the aspirants who have cracked the highest score sometimes are unable to get the colleges they deserve because admissions now-a-days are all about money and who actually deserves to be in a good college are at lower colleges and their hardwork has just gone to waste. Universities are not the temple of knowledge anymore, they just are doing their business and playing with future of aspirants.

### 2. 10 A.M. – 5 P.M. IN COLLEGES

Colleges take a lot of time from their students, seven to eight hours daily. Why? If they are providing proper education and knowledge in those hours, then giving your whole day there would never be a problem. But they just want students to attend college daily, sit through those hours and do what? Waste your time. We have to gain extra knowledge from trainings, internships so that the companies will see how you are different from others. What special qualities you have and how your skills can benefit them and their company. But because of such long hours, students are unable to opt some other courses and even if they get time, they are unable to keep their mind focused because already they spent a lot of time in colleges.



10 am to 5pm time is good when you provide them internships, training, skills so that they don't have to go to some other private institutions to receive them. Then timing of college is preferable. And if not, College hours should be of maximum three to four only. Otherwise let your students rest so that they can do some extra courses in that time.[6]

### 3. ATTENDANCE ISSUE

ATTENDANCE - Engineering colleges are all about it only. Minimum percentage of attendance they need is 75 that too from 10 am to 5 pm as we discussed earlier. But when it come to placements and companies requirements, how you expect students to maintain attendance in college and have a huge amount of knowledge and skills. They are also human, universities and companies need to understand it. To maintain 75% attendance in college is a very big issue and should not be mandatory, ask any student about it. If those hours given in college and attendance is creating our future, then no doubt every student is ready to do so. But just to get



better marks from college and to give main examination we need to completed the 75% attendance task. Colleges don't forward your sheet if you haven't completed the attendance and not able to give semester exam will surely make our career go to place we don't want it to. So, basically college teachers and professors scare us under the name of not forwarding your sheet further and not letting you give internals, externals so that your semester is wasted. Because of such things, we had to attend colleges no matter what happens, doesn't matters if we are not skilled at the end of four years but you need to complete 75% of your attendance.[7]

This is seriously needed to be stopped, so that students can do extra work and trainings instead of wasting their time and energy in colleges just to get few sessionals from colleges. Percentage of attendance is needed cut down so that we can do some skillful

work which will also benefit our future. Universities and even government had to take actions regarding this because this is not leading student's future to anywhere. It's not only the condition of private colleges but government colleges too, what kind of work load, mental pressure, students are suffering from. Everybody need to understand it.

#### 4. IS RAGGING BANNED?



Ragging means when a student's dignity is violated by other students. Ragging is a crime, we all are aware of it. One should avoid ragging and directly inform about it when you see it happening with others. Both the parties are responsible, the one who were taking ragging and the other who were following what he was told to do so. Ragging is a serious crime, it disturbs students mind and health. This was very common in engineering colleges few years back but when many suicides were reported because of it. Government took an action for it...that it must be stopped. What actually happens in ragging in engineering colleges? Seniors tell their juniors to do stuffs which might be embarrassing or way too much for a student to do. But he have to do it, otherwise it would lead to more difficult tasks. Still ragging is continued in colleges under the name of 'Introduction'. It's the same thing.

This is of many types:

- **Verbal abuse:** It's a verbal torture that juniors are given tasks like singing a song or using abusive languages in front of everyone. Juniors are just a 12<sup>th</sup> year passouts, they have no idea about outer world and when they face these things, many of them get in depression or get scared.



- **Physical abuse:** Freshmen are abused physically they had to perform tasks like dancing, acting, forced to remove shirts, sit-ups, etc. This is more embarrassing for students. And if they refuse to do stuffs, they are punished for it.



- **Dress-code ragging:** Juniors are forced to wear what their seniors tell them to and they have to wear it for a whole day either they like it or not, which is rude to anyone. It involves personal space and violates rights of a person.

Highly reputed Indian colleges were the ones who were more involved in ragging because most of them were away from home and used to stay in college hostels. Students were not allowed to complain and some reports showed that they were not allowed to tell it to their parents and not even to teachers. Teachers were also involved with students which is such a shame for universities.[8]

We can see from this report how freshmen were tortured. And if someone tried to complain about it, they were given more embarrassing tasks which led to many suicide cases in campus only. Many of their parents had no idea about what is going on with their child in campus.



Juniors privacy, dignity, rights are so much violated sometimes that it crosses limits of everything and it all led those teenagers to commit suicide because they are that much tortured that they cannot even speak about it to anyone and leads to such disgraceful events that they find no other option other than harming themselves.

That's why government enacted few schemes like anti-ragging scheme and toll free numbers were circulated to every college so that any student suffered or suffering can stand for his/her own rights. Many parents lost their students in ragging cases. That's why understanding the nature of college and getting full report before getting admission in any college is very important.

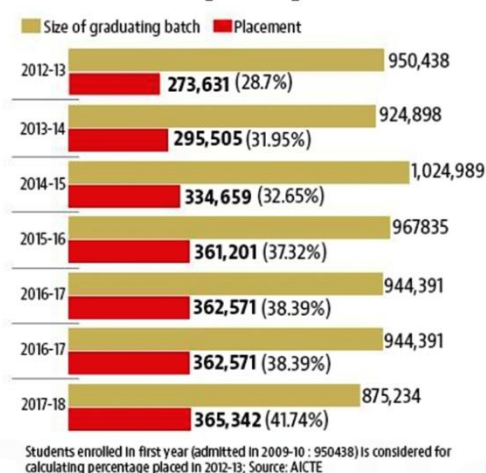
Still, things haven't changed in many colleges, seniors are still taking ragging of their juniors and freshmen still are not able to do anything about it. Strict actions are needed to be taken and most importantly one has to stand for his/her own rights. You cannot depend on anyone now-a-days that someone will help you or any other person. If we find something like this going on in any college, we need to stand for it and see how things changes. It's all still in role, because juniors are scared of their seniors and they think that they have to spend four years with them and seniors might make it difficult that's why they are more afraid to tell about it to anyone.

The main and very important feature of this helpline is that not even the name of victim is disclosed ever and the cases are filed immediately without any delay and actions are taken against those people who were involved in such crimes.[9]

## 5. WHAT ABOUT THE PLACEMENTS?

We do a lot of hardwork and struggle through that four years of engineering course to get what? To get a placement in a reputed company to get a decent payscale and to secure our future. What we get in return? Unemployment.

### Placement percentage over a six year period



This chart shows how many students are applying for admission in colleges and out of it how many of them are getting placed. The ratio will upset you.

The same college who forced you to be a part of their college, they assured you that your future is now in their hands, they will provide you placements but later those are the same people who are not even ready to listen to you. People change when the time changes. True. They have completed their tasks by taking lakhs of fees just to provide you unemployment at the end of the final year. Every college have a board of list that how many companies they invite for placements, we are all aware of that and in reality only few of them come in our colleges that too sometimes prefer students of specific branch only and others are not allowed to sit for that company. If colleges are inviting companies for placements, sometimes the placed students don't receive an offer letter or the package is changed later. Companies requirements from a fresher is so high it sometimes feel that they are not appointing a fresher they want a person who has 4 years of experience. Then, sometimes comes the issue of percentage, when the companies want only two or three students, they raise their criteria so that already half of the public is rejected.[10]



Colleges also sometimes take money from you to let you sit in companies or provide you placement by taking some amount of money from students or there are few agents who also take money to send your resume to the company. Getting placed from a college is such a big deal now. Everything just depends either on your luck or on the amount of money you can offer.

### 6. MONEY AT EVERY POINT

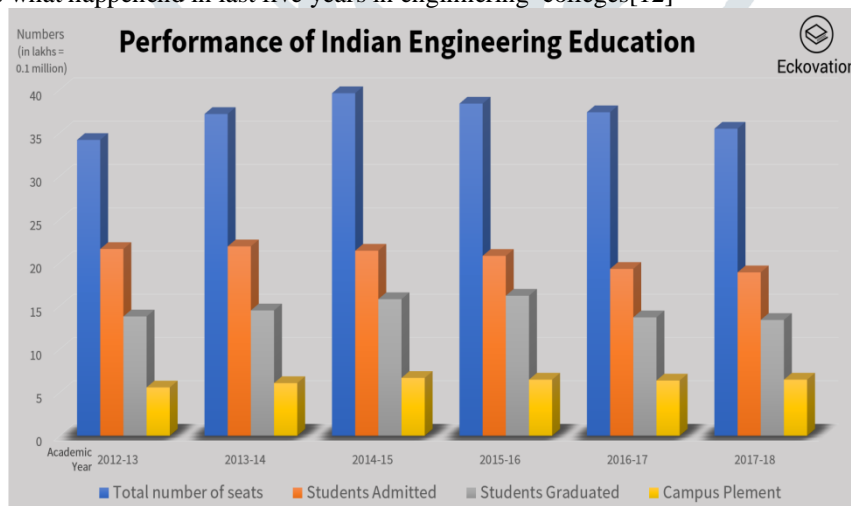
What have we observed from all the problems we discussed. That solution to everything is – MONEY. We have to give money on every point. Firstly, during the admission, if your percentage is not good you have to give money during admissions through quotas or to agents or under the table. Fee structure of colleges are very bad, what they take lakhs for? They don't even provide proper laboratories and not even better classes, they are just taking money to full their pockets and we are readily giving them too. Either we need to stop it or we need to make them understand.



Money is not limited to admission only. We have to give exam fees too to fill forms for examinations that too are in thousands. What seriously our college is providing us? Just a name of their institute.[11] We have to give fees as placement fees also. Still, unemployed at the end. Fees for internships, trainings, certifications of some extra courses we do in those four years. We have to give money for everything with college fees. These kind of procedure is needed to be stopped, if you are taking a lakh per year from a single student then its responsibility of a college to provide him/her with trainings, exam form fees, internships. Instead of taking money for those things too. Giving a lakh for just a name of institute on your marksheets and degree is too much.

### SOLUTIONAL PROPOSALS AND NEW IDEAS

This below chart shows what happened in last five years in engineering colleges[12]



It has become very important that the problems are needed to be solved quickly and immediately before more careers are destroyed. This overall malfunctioning of a system also leads to no development of our country. These kind of education crisis are the basic things which are responsible for low economic, social growth of our society.

1. Only 55-60% seats are getting filled every year because of fall of engineering education. Everyone is aware of engineers condition now and nobody wants their children to pursue career in this stream anymore.

What needed to be done is that the universities have to **gain trust back of parents** and children by providing better guidance and improving some rules and regulations of colleges, so that students are free to do what they want to.

2. **Redesigning system.** There is 30-40% of dropout rate, it means that even after getting admission in a good colleges or universities, students are leaving their admissions and choosing some other streams instead of engineering because when you reach in college, you learn about the department, engineering condition, what were the past conditions. This is a huge dropout rate found in last few years reports because of condition of colleges in India. Universities are very focused on getting students in their college but after getting fees, they forget everything. This system is needed to be redesigned because education system has steeped to very low. Not even professors are doing anything about it nor our government. System had to be redesigned.
3. Every year there are less than 30% **campus placements**. It means that a one person out of 10 in getting a job and the competition is becoming tough and tough everyday. Our youths are unemployed even after getting a BE/B.Tech degree and they do might have a lot of knowledge and skills in whatever the field they want to pursue but there are no hirings, not even colleges are inviting much companies, which shows that universities are more focused on getting fees and nothing else.[13]

Colleges have to invite as many companies as they can and rules are supposed to be set by government regarding placements that every colleges has to offer atleast 90% of placements to their students or their college must be closed if they are unable to fulfill their target.

4. **Rules for companies** are also supposed to be set. That from fresher they should expect less only because freshers don't have any practical knowledge yet. They will learn things while working only and if they are not able to perform well in companies, they can remove them any time they want. But during placements, company expects from students what a 3 years old experienced person knows, which is totally unfair to students.



5. **Quality of education** is one of the major reason that students are approaching less to engineering colleges. Colleges have to improve their education system by appointing only those faculties who actually want students to learn something not those faculties who just goes to colleges to sit in their cabins and receive paychecks. Examination of teachers are also needed to be conducted time to time.



## DATA ANALYSIS

The mentioned data below shows the actual technical condition of engineering in India, these data had been taken from past years reports, basically after the year of 2011 to till this year. The report is based on a sample of more than 150,000 engineering students from 650+ engineering colleges across multiple Indian states.

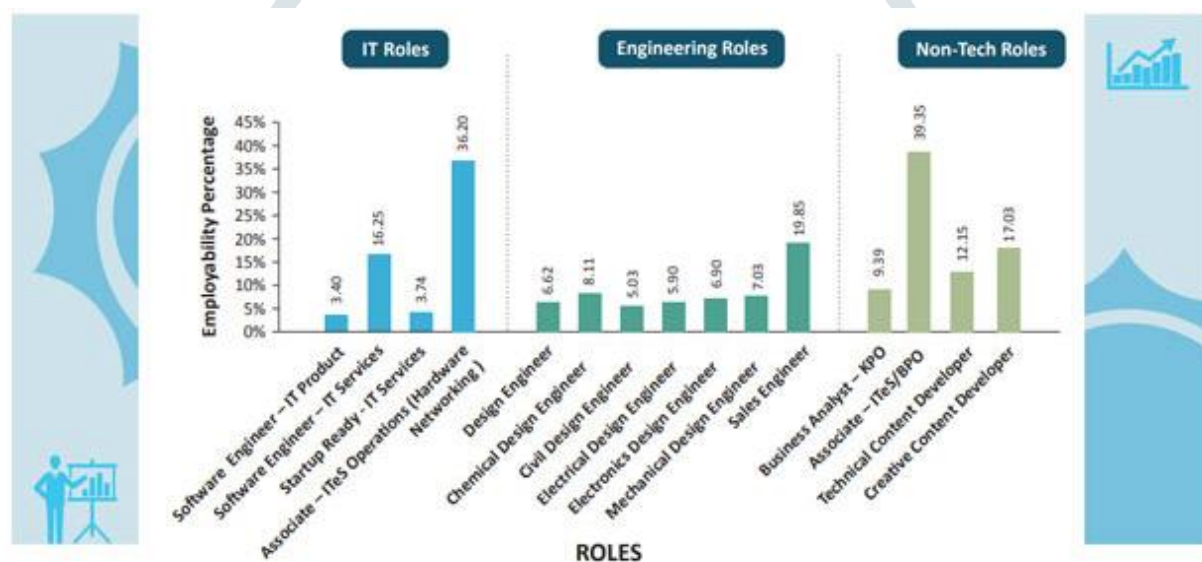
TIER

POPULATION

1	Greater than 2.5 million
2	0.5-2.5 million
3	0-0.5 million

**1. No significant improvement in employability in the last four years**

By the previous large scale study of employability of engineers in 2014. It had found that only 18.43% of engineers were employable for the software sector jobs, 3.21% for software products and 39.84% for roles such as Business Process Outsourcing. Unfortunately, we see no massive progress in these numbers. These numbers as of today stand at: 17.91%, 3.67% and 40.57% respectively for IT Services, IT Products and Business Process Outsourcing. This is despite the fact that the number of engineering seats have not increased in the past year. We are not inferring that all initiatives for employability improvement have failed and there may be pockets of excellence present. However, the need of the hour is to find these pockets and scale them up to make an exponential impact on employability. This is crucial for India to continue its growth story and achieve the PM's vision of India becoming the human resource provider for the whole world.[12]



**Figure 1: Employability percentage of engineering graduates in different roles**

**2. Higher salary aspiration and higher salary for same skill**

This year on, we find that students have higher salary aspirations. Last year the median salary aspiration was INR 310 thousand, which is now INR 340 thousand implying that the market is also paying higher salaries. The median salary for the same skill was INR 282 thousand last year, which is INR 313 thousand this year. This means that talent is getting expensive and we believe this is due to the huge demand of manpower in technology sector and lack of supply. However, it is important to note that this supply is artificially low: more than 25% of employable candidates are beyond the top 750 engineering colleges. This pool of candidates is missed out by companies and to make sure that the war for talent doesn't lead to salaries going out of control, we need to find ways of better meritocratic matching of students with jobs.

**3. More aspiration to work for startups**

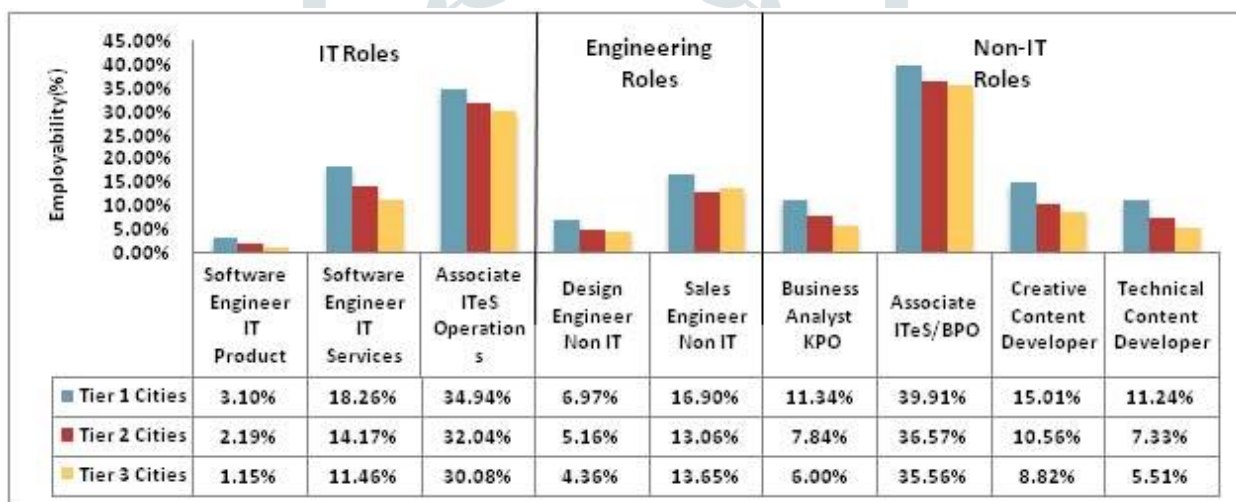
In 2011, it was found 6% students were interested to work for a startup. In this year 2019, it is up by 33% to 8%. Students from tier 1 colleges are most motivated to work in startups as compared to others. It is also observed that inclination of males is strikingly high to work with startups than that of females. Among all of these, more students as compared to last year are interested to work for startups. While this is good news, there is a still a long way to go as only a handful of candidates (8%) are interested to work for startups. Because of the below shown data, startups ideas are chosen by engineering students more.[13]



ROLE	EMPLOYABILITY
<b>DESIGN ENGINEER</b>	
Chemical Design Engineer	1.64%
Civil Design Engineer	6.48%
Electrical Design Engineer	6.50%
Electronics Design Engineer	7.07%
Mechanical Design Engineer	5.55%

**4. Only 3.84% folks employable for startup software engineering jobs**

Investments and growth of technology startups is the new business story in India. Ratan Tata recently said that India is becoming the Silicon Valley of the 1990s. To sustain this growth, we need candidates with higher technology caliber, understanding of new products and requirements and the attitude to work in a startup. With this in mind, we specifically captured employability for startup technology roles this time. Unfortunately, we find that only 3.84% of engineers qualify for a startup technology role. This is a big concern and would surely hamper the growth of startups in India. It may also cause the market to be diluted with a lot of low quality products floating around.



**CONCLUSION**

From the factors we discussed above it is very clear that condition of engineering in our country is not so good. Millions of engineers are getting their degree every year but there are very less number of engineers getting hired in a reputed company and others are just searching for jobs. Every parent who want their student to be a future engineer, there is no harm in dreaming about career and settlement but we need to know about the scope of that particular field. This is very important to clear that before opting any stream we show have detailed knowledge about how past years have been in that stream, what is the present and future scope in that defined stream. Maybe the past year of engineering had been good but we don't know what will happen after three or four years, finding answers of all these questions are very necessary before choosing any field and what will the outcomes of your decision matters the most. Earlier, there were less engineering colleges providing skills and knowledge to students as teachers were also very focused on their students due to less number of students in every section. But now the condition is not at all same. Thousands of colleges have been opened and still are opening every year leading towards disruption of everything. The universities themselves have been unable to shape the direction of education in India. This is not a surprise that teachers are also less enthuziated in teaching their students. It has become a mentality for both students and many professors that students are not children anymore, they can study by themselves and because of this proper education is not reaching students which is in overall reaching to less skillful engineers after receiving their degrees too. Therefore, academic structure, teaching schedules condition of work, teaching environment is needed to be improved by universities. Examination of teachers and professors are also supposed to be conducted related to their teaching stream, it will definitely help us know what teachers are doing in colleges, how much knowledge they still have and how they are improving their teaching skills.



Along with quality of teaching, condition of engineering colleges, laboratories, equipments, facilities provided to students are needed to be checked and observed from time to time to ensure that no problem is faced by students because we have seen it many times that even after paying lakhs as fees in colleges proper facilities are not given to students. This observation is on roll in our India but what happens is that colleges know beforehand that when the officers are coming for observation. This connection is between the observing team and college staffs are needed to be turned off so that proper inspection is done and the truth will be known. The most important thing is in Engineering colleges even after having problems with the faculties or regarding college issue, we cannot raise our voice against it because then there is a fear of losing sessionals, internal , external grades. So students must be free from these problems, there should be another team for listening to student's problems and their name shouldn't be disclosed before anyone.[14]

Issues regarding attendance and how college hours are so long should be solved too. Mostly colleges timing are 9 a.m. to 5 p.m. which takes a lot of time from an student's schedule that he/she is not able to do extra courses or their own work because of such bad timing. Hours given in colleges must be reduced and attendance shouldn't be much of an issue. Colleges want atleast 75% attendance from an student which should be minimized or proper leaves should be given to do extra courses and personal works. Rules are supposed to be regulated by AICTE that only those colleges should be allowed to run who are giving their students 100% placement guaranteed. And if they are unable to do this, that particular college must be closed. Government also has to take proper steps to determine what's going in colleges. These things affect the students mentally also. All these factors are needed to be taken seriously and actions must be taken to secure the career of youths of our Nation. Otherwise, already the unemployment ratio of our country is so big that it will never lead us to a developed country fully.



## REFERENCES

1. "Prof. M.M. Sharma Committee on Strengthening of Basic Science Research and engineering issues', F.No:37-3/Legal/2010 , New Delhi, the January 22, 2010
2. Dr. Deependra Kumar Jha, Vice Chancellor, UPES, Dehradun, developing employable engineering graduates, October 2014, [www.nirfindia.org](http://www.nirfindia.org).
3. Ashok Mittal, Chancellor, LPU, Jalandhar, institutions should empower students, Ministry of Human Resource Development". mhrd.gov.in. Retrieved 2019-04-05.
4. Prof. Anoop Swaroop, Vice Chancellor, Jagran Lake University, lack of insight of industry requirements, issued on april 16,2017, [www.nirfindia.org](http://www.nirfindia.org).
5. Department of Higher Education letter No.F.No.1-19/2006-U.II dated 23.3.2007, F.No:37-3/Legal/2010, about Age of Superannuation.
6. "Technical Education | Government of India, Ministry of Human Resource Development". mhrd.gov.in. Retrieved 2018-07-02.

7. Exercise of educational powers conferred under sub-section (1) of section 23 read with section 10 (i) and (v) of the All India Council for Technical Education Act, 1987 (52 of 1987) the All India Council for Technical Education makes the Regulations.
8. Background and Statutory Provision under AICTE Act Regarding Planning, Promotion and Regulation of Technical Education ,2018-19, 1.1 pg no. 12.
9. Nirvaan Birla, Head, Business Development, Birla Edu Tech, IMPACT OF INNOVATION IN TECHNOLOGY ON EDUCATION, pg no. 13 , F.No:37-3/Legal/2010
10. Dr. Shrihari , Vice Chancellor, GD Goenka University, NEED FOR INDUSTRY READY GRADUATES, www.nirfindia.org.
11. Sudhir Kumar Agarwal, Chairman, Sagar Group, THE CAPITAL CITY IS CHANGING COLOURS, from delhi edition, page no. 19, <http://www.satiengg.in>
12. Prof. M.L. Bhargava, Adviser, SKIT, Jaipur, MAKINGS OF A SLOW REVOLUTION, issued from Himachal Pradesh edition, page no. 22, New Delhi, the January 22, 2010
13. Dr. Anubha Shrivastava, Associate Professor, GL Bajaj Institute of Technology and Management, pg no. 30., Punjab edition 2018, <http://www.satiengg.in>
14. Ambika Misra, CEO, Ambika Institute of Management and Technology, Lucknow edition, 2016, pg no. 26., [www.nirfindia.org](http://www.nirfindia.org).
15. Dr. H. Sadawarti, Pro Vice-Chancellor, CT University, Ludhiana, MAJOR REVAMP REQUIRED IN HIGHER EDUCATION, pg no. 28, New Delhi, the January 22, 2010
16. Prof. S. Gurunaryanan, Dean, Work Integrated Learning Programmes, BITS Pliani, where changes comes very slowly, page no. 35, issued in 2018, <http://www.satiengg.in>

