

Supply Chain Management of Technical Education

Dipankar Mishra and Gurvinder Singh

Abstract—Technical education in India is in demand for the chances it offers in terms of securing a job. This property has been encashed by the private institutes which have opened up in all nooks and corners of the country. But the standard of education imparted by these institutes coupled with the different standards of syllabi followed by the institutes has left a majority of these educated youth, jobless. The dreams of thousands of youth, who pay a handsome amount of money, sometimes with the help of education loans, have shattered.

Supply chain management has been a standard practice to improve the efficiency of industries. Right from the sourcing of the raw materials to improving the production efficiency, supply chain management implements technology and management technologies. The method employed in supply chain management can be implemented in technical education to improve the job ability of the technical students.

Keywords—Technical education, supply chain management, higher education, education management.

I. INTRODUCTION

A SUPPLY chain is a network of facilities and distribution options that performs the functions of procurement of materials, transformation of these materials into intermediate and finished products, and the distribution of these finished products to customers. [1]

Supply chains encompass the companies and the business activities needed to design, make, deliver, and use a product or service. Businesses depend on their supply chains to provide them with what they need to survive and thrive. Every business fits into one or more supply chains and has a role to play in each of them.

There is a basic pattern to the practice of supply chain management. Each supply chain has its own unique set of market demands and operating challenges and yet the issues remain essentially the same in every case. Companies in any supply chain must make decisions individually and collectively regarding their actions in five areas:

A. Production

What products does the market want? How much of which products should be produced and by when? This activity includes the creation of master production schedules that take into account plant capacities, workload balancing, quality

Dipankar Mishra and Gurvinder Singh are with Pusa Polytechnic, New Delhi, India.

control, and equipment maintenance.

B. Inventory

What inventory should be stocked at each stage in a supply chain? How much inventory should be held as raw materials, semi-finished, or finished goods? The primary purpose of inventory is to act as a buffer against uncertainty in the supply chain. However, holding inventory can be expensive, so what are the optimal inventory levels and reorder points?

C. Location

Where should facilities for production and inventory storage be located? Where are the most cost efficient locations for production and for storage of inventory? Should existing facilities be used or new ones built? Once these decisions are made they determine the possible paths available for product to flow through for delivery to the final consumer.

D. Transportation

How should inventory be moved from one supply chain location to another? Air freight and truck delivery are generally fast and reliable but they are expensive. Shipping by sea or rail is much less expensive but usually involves longer transit times and more uncertainty. This uncertainty must be compensated for by stocking higher levels of inventory. When is it better to use which mode of transportation?

E. Information

How much data should be collected and how much information should be shared? Timely and accurate information holds the promise of better coordination and better decision making. With good information, people can make effective decisions about what to produce and how much, about where to locate inventory and how best to transport it.

The sum of these decisions will define the capabilities and effectiveness of a company's supply chain.

II. TECHNICAL EDUCATION IN INDIA

In an era of choices, engineering still dominates. There are 3393 engineering colleges in India with roughly 15 lakh seats across 36 disciplines approved by AICTE [2]. Technical education in India contributes a major share to the overall education system and plays a vital role in the social and economic development of our nation. It is most sought after course, primarily due to the fact that it enhances the opportunity of getting a job. In India, technical education is

imparted at various levels such as degree, diploma, PG and research in specialized fields catering to the various aspects in technological development and economic progress. The intake capacity of institutions offering technical education has increased manifold over the years.

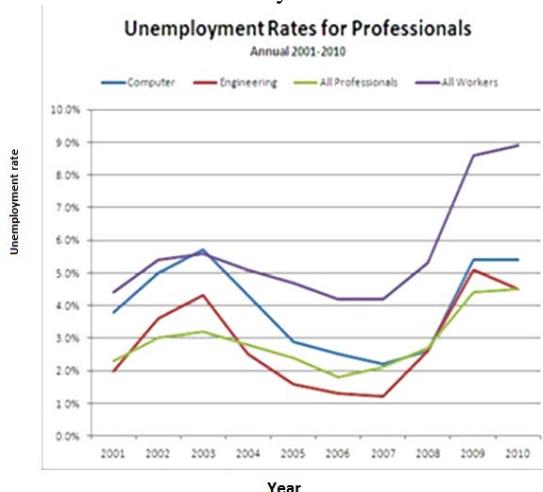


Fig. 1 Unemployment rate of Professionals

Hard to Hire

Percentage of more than 1,000 human-resource professionals* who, in a survey conducted in May of each year, said they had 'increased difficulty' filling the positions of greatest strategic importance to their companies:

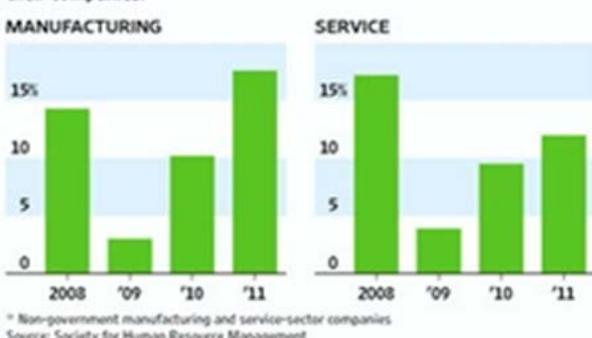


Fig. 2 Hard to Hire Graph

After the boom came the deluge of closure. In 2012 AICTE granted approval for closure of 150 engineering institutes, removing a whooping 15000 seats for various reasons [3]. The primary reasons were the vacant seats in most of the private institutes. Job ability of the students was also a major issue. CRISIL report of 2012 [4], presents that unemployment among engineering graduates was at an all-time high Figure 1. The prominent reasons for unemployment in engineers are:

- Lack of Communication skills
- Problem Solving skills.

According to Sangeeta Gupta, Senior Vice President, NASSCOM. "Our engineers are not unemployable, they just don't have industry-ready talent. In other words, they lack the skills required for the jobs that are available to them." Figure 2 presents the data graphically. Echoes Amit Bansal, CEO, PurpleLeap, "Most graduates display excellent theoretical

knowledge. However, when it comes to problem-solving, they lack basic analytical skills." [5]. Although the premier institutes like the Indian Institute of Technology (IIT) or National Institute of Technology (NIT) are somewhat immune to these problems, they are not completely free from them.

Let us analyze the entire process and also locate the places where Supply Chain Management techniques can be applied to improve the system.

III. ENTRY POINTS

There are three different entry points for technical education in India, one for the Industrial Training Institutes (ITI), which produce the assembly line workers, one for the Polytechnic System, which produce supervisor level workers and one for the Graduate and higher level institutes, which produce the developer, the designer, the researcher and the scientist. In the first case, mid-high school to high school is what is needed. The second case requires a high school while the last case needs higher secondary with a certain percentage of grade.

There is no control over the overall quality of the source material, the students, regarding their ability, communication skills and other related soft skills.

IV. PRESENT SCREENING PROCESS

Excepting for admissions to ITI's, all other entry points have a screening test consisting of objective questions on English and science subjects with mathematics. A merit list is then prepared and students are admitted to various engineering disciplines with respect to the merit list.

V. DRAWBACKS OF THE PRESENT SYSTEM

In this system, majority of the students get into a course for they neither have the attitude or aptitude along with the required soft skill.

VI. IMPROVED SCREENING PROCESS

As the student's inherent skills cannot be changed at this stage, a personal interview stage can be added to the merit list process. During this process the student can also be disqualified from the complete process. The final list will then provide the various disciplines in which the student can be admitted, emphasizing on the ability of the student to get good placement according to the corresponding discipline. Further a list of do's and don'ts can be provided against the students name to help the student to focus the strength and reduce the weakness.

VII. ENHANCING THE SYLLABI

The syllabus that is followed in most of the institutes is hopelessly outdated. There is a huge gap in the technology followed in the industry and the subjects being taught in the institutes. This leads to the industry rejecting the students

during the screening process. Part of this blame should go to the organizations that are entrusted with the syllabi development. Persons conversant with the industry technology and the persons who recruit the students for various companies should sit together with the academicians of high caliber and thrash out the subject contents. This seems impossible in the present scenario for most of the institutes excepting for the elite IIT's and NIT's.

VIII. ENHANCING FACULTY QUALITY

Faculty quality has been a concern in almost all the private institutes and also in most of the low rung government institutes. This is more visible the polytechnic level institutes also where , although the qualifications are at par with the degree level institutes, the standard of the faculty is very inferior to that of the degree level faculty.

Faculty ability, attitude and aptitude should be tested at regular intervals. Weeding out the incompetent may not be completely feasible, but the staff who fail the screening processes should not be upgraded if not relegated and career advancement be stopped. This will increase the efficiency of the staff and provide a healthy learning atmosphere.

IX. INVOLVEMENT OF THE INDUSTRY

The technical institutes depend on the industry for jobs for the students and the industry depends on the technical institutes for their survival. This mutual relation can never be a one way relation. At present, excepting for the premier, institutes like IIT's and NIT's have a strong relation with the institutes. Industry experts regularly visit the institutes, interacting with the students, providing them insights to the requirements of their industry. Students are sent on industrial training during certain period of their study, to learn firsthand the working of the industries. This helps them when they face the interviews for jobs, confidence during their tenure with industry. But this is something not followed by majority of the institutes. Students are also guilty of not taking the industry training serious, treating it generally as a picnic.

X. ENHANCING THE OUTPUT QUALITY

This point is the quality control department of the entire process. Just like the industry, this point in the technical education process should be the place to reject any finished product not coming up to the required standard. Students with borderline standard should be rejected and made to repeat the course and not be allowed to scrape through as being done at present. Further the process of awarding marks should be as strict as the quality control process of any leading industry. Marks should be awarded strictly on merit, setting up tough conditions that will test the mettle of the students.

XI. PRO'S AND CON'S

The system will benefit greatly from the entire process. But this system has its own drawbacks also. Attitude and aptitude are quantities which are not measurable physically. Testing of

these parameters can vary from person to person. Similarly awarding of marks is a point where there may be differences between the evaluators. Human emotion also plays a strong factor in the evaluation of the students at all levels and this may affect the final quality of the students. Teaching faculty in the government institutes may not take kindly to the fact that there can be a stoppage of career advancement. This may also not pass muster in the law courts in the present state of legislation. Further any faculty is as good as the infrastructure available to him/her.

XII. CONCLUSION

Education institutes are those temples where the life of a student is built and moulded. If the mould or the product has a flaw due to which it will not be able to withstand the rigors of the industry, then the process will be treated as faulty. But one has to take into account that this is a process where humans are involved and not any machines. Hence one can never factor the property of human emotions. The above mentioned process can be still more effective if the same is started from the school level, where the mind of the child is fresh and can be molded in the right direction as per the interest of the child. Further educating and counseling the parent to let the child reach his dreams is also a crucial factor which if successfully achieved can lead to a lot of career satisfaction of the child. If one can exercise a certain amount of control over one's emotion, the process can deliver with maximum efficiency.

REFERENCES

- [1] An Introduction to supply chain management by Ganeshan, Ram, Terry P. Harisson, Penn State university
- [2] AICTE Report 12/9/11
- [3] AICTE report 22nd May 2012
- [4] CRISIL report for Ministry of HRD, Govt. of India, 2011
- [5] www.rediff.com/report/12/9/2012