

CHALLENGES FOR YOUNG ENGINEERS IN THE NEXT MILLENNIUM

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CHANGING ECONOMIC SCENARIO :

All of us are living in the times which are changing rapidly. The changes are affecting us individually as well as organisationally. We will have to understand these changes properly and will have to be proactive, the effect of changes are :

- A passive individual and organisation will soon face extinction
- An adaptive individual and organisation will manage to survive
- A creative individual and organisation will be able to enjoy growth

Let us study some of these changes.

a. Liberalisation, Privatisation and Globalisation

We had a protected market for almost 40 years since independence. In the 'License Raj', the organisations who managed to get the license prospered.

Catering to the large Indian market, they grew rapidly. A false feeling emerged that they are a 'growth organisation'. Meeting customer expectations quality of goods and services and innovations were ignored.

The scenario changed in 1991, when India announced its policy of liberalisation. Delicensing, opening of our doors to foreign companies, proposed closure of sick public sector undertaking or making them private and opening of global market resulted in a complete new picture. For many Indian companies now it was a matter of survival.

b. Demanding customer

The sellers' market changed to buyers' market. Customers became demanding. They got the protection in the form of 'Consumer Protection Act 1986'. Organisations soon started realising that their survival and growth depended on generating 'customer satisfaction'.

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c. Marketing Warfare

The competition started becoming fiercer. It came in the form of similar as well as substitute products, from domestic as well as overseas players, from organised as well as un-organised sector. Competition became a civilised form of warfare.

d. Innovation

The product obsolescence started rising. If it was not your own R&D which made your existing products obsolete, in the global market, it could have been someone else's R&D. All organisations had to think in terms of innovation, of every type.

e. Information Technology

Since 1970, we got in the midst of the Third Wave, the information wave. The declining prices of personal computers, user friendly softwares, networking of computers and Internet brought the IT at everyone's doorstep. No one could have ignored this.

Besides these factors, India witnessed tight economies resulting in recession in certain sectors, political instability and cultural changes. While liberalisation offered several opportunities to the entrepreneurs, innovators and efficient people, it posed threats for the lazy and incompetents. The decade since liberalisation has taught us several lessons which we will have to use for the early part of the next millenium.

CHALLENGES FOR YOUNG ENGINEERS :

With this background, we will have to now evaluate what challenges are open to young engineers. When this terminology is used, it is implied that a person could be in the age group of 20 to 35, may be a degree/diploma holder or might have done a course in a technical institute and may belong to any discipline of engineering.

When a person passes out from an engineering school at an age of 20 to 23, he/she has only a vague idea on what they would like to do, what are the opportunities available, what are their own strengths and weaknesses and where lies their aptitude. Let us discuss what are the options available.

a. Executive Careers

A majority of the passing out students will be looking for a job. As engineers, they may get a job in any functional areas, any type and size of organization. The functions would include manufacturing, R & D, materials management, maintenance, service, marketing and many others. The organisation may include large, small and medium enterprises in private, public and co-operative sectors. Each organisation will have an ethos of its own and will provide the opportunities for learning. Those who take initiative, are willing to work hard and believe in continuous learning will find that there are ample challenges and opportunities of growth. It is not that some areas offer more challenges than others. Every

engineer will have to carve out a niche for themselves in relation to their aspirations. Let us consider some possibilities :

- **R & D** : Modifications of existing products, development of new products and processes, taking patents for innovations and so on.
- **Manufacturing** : Developing and working with machines which will be able to improve the productivity, tolerances, quality and reduction in rates of rejection.
- **Materials** : Developing materials which will be able to enhance the value of the product, reduce costs and improve profitability.
- **Marketing** : For industrial products, finding customers, understanding their needs and wants, delivery and generating customer satisfaction.
- **Service** : Equal emphasis needs to be given on 'before sales service' and 'after sales service'.
- **Information Technology** : This will include both the hardware as well as the software. It needs no emphasis here as to what great global opportunities are available in this field today.

It is not possible to discuss each and every functional area. However, it can be emphasised that in the years to come, there is bound to be considerable flexibility. This means, if some one is a civil or electrical engineer, he/she may not necessarily work only in that area. Also, number of engineers joining

management institutes to enhance their managerial talents and effectiveness will be on the rise. The IITs starting Business Schools is already a step in that direction.

b. Entrepreneurial careers :

The trend over last few years is showing that the jobs will be getting scarcer in the years to come. The supply of engineers is going up in geometrical proportions, the demand will be lagging behind. It may give rise to large scale unemployment of engineers. What should the young engineers do? They will have to think of an alternative, that is the 'Entrepreneurial Path'. Again it is not necessary that a chemical engineer should only think of setting up a factory to manufacture chemicals. He/She will have to be 'Market Driven'. The opportunities offered by domestic and global markets will have to be identified and projects will have to be set up accordingly. They could be in Manufacturing, Trading, Services and Others. One should not be surprised that a mechanical engineer starts a strawberry cultivation or sets up a restaurant. At the same, it should not be surmised that he/she has wasted the engineering knowledge gained in the college. On the contrary, it should be welcomed as a step, in becoming independent, in creation of wealth and in generation of employment, all this aiming to make an economically and industrially strong India. Those engineers who have strong entrepreneurial ambitions can get a formal training in 'Entrepreneurial Development' and 'Enterprise Management'.

REQUIREMENTS :

In order to accept the challenges and to tap the opportunities, the young engineers will have to cultivate certain traits in them. Some of them would include :

- **Achievement Motive :** Whether it is an executive or an entrepreneurial career, the young engineers will have to clearly define their achievement motive. A clear focus is needed.
- **Proficiency VS Efficiency :** A Degree/diploma with distinction will give a young engineer the 'proficiency'. However, he/she will soon realise that the industry and business wants 'efficiency'. How to get results will be given more emphasis.
- **Continuous Learning :** After finishing college, the learning should not stop. In the areas of interest, efforts should be made to continue the gaining of knowledge.
- **Market Orientation :** All industries and businesses are eventually going to cater to the needs and wants of the market. Hence, a strong market orientation will be required. This will include understanding customers,

competition and environment.

- **Leadership :** Whether in an executive or entrepreneurial career, those who are aspiring to reach the top will have to develop leadership qualities. This will include developing a vision, optimum utilisation of resources available, as well as handling of people.
- **Teamwork and Networking :** The importance of teamwork cannot be ignored. An engineer, howsoever brilliant he or she is, will require the support of others. Similarly, the challenges can be better tapped through Networking. Building relationships is the need of the day.

For young engineers, the world opportunities are beckoning. They will have to shed their 'Frog in the Pond mentality'. Several of our engineers have shown the way how they are accepting challenges and grabbing opportunities in countries like USA, UK and others. These could be your role models. Many of them were like you when they started. However, they grabbed the opportunities which came their way. Think on a positive note, that, 'if they could do it, why can't I ?'

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