

Role of Indian Universities and colleges vital in employment Generation Can they afford to ignore? At what cost? Who pays? Nations which lead in innovation take away jobs from those who lag.

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Abstract : Stanford university in USA has given birth to as many as 3000 hi-tech start-ups, employing millions of educated men and women, each earning high income. Universities in Australia, China, Singapore, New Zealand are not behind. University gets royalty, millions of dollars each year from these companies which is ploughed back in research to create further more companies. Universities in developed countries actively engage themselves in high end research, innovation and entrepreneurship. They obtain patents and huge royalty on commercialised patents. For example in mobiles, the material cost of a mobile is hardly Rs 500 and the rest in thousands is royalty on patents used in mobile. Besides, a phenomenon is observed, world over, that hi-tech industries especially research based companies are flocking around advanced research & innovation centres in universities for brand new ideas, providing plentiful hi-tech, hi- pay jobs, in turn creating further many more downstream low end jobs. Do universities in India have a mission to give birth to companies? Do they engage in high end research? Have they installed innovation infrastructure? Why they do not yet have when universities abroad have from many years? Indians have high capabilities but unfolded. They do not have global vision, no strategic management and planning, no benchmarking with

world best counterparts. That is the main reason for low employability of Indian graduates, {only 17%} and consequently India remains a less developed country, in spite of high potential. People are good but systems are not.

World experience tells us that vast bulk of job growth comes from advances in new knowledge & new technology, rather than resources like land, labour and capital [Robert Solow Nobel Laureate]. India so as to generate jobs ought to focus its attention directing youths to hi-tech innovation, research and entrepreneurship in universities. Conclusions are drawn so as to increase employability on the lines of Stanford. Increase in state budget for research and innovation is strongly recommended. Not investing adequately in innovation in universities & colleges results in slowing down the pace of Indian economy.

The key factor behind unemployment is insufficient innovation and insufficient entrepreneurship. Innovation is a strong stimulant. Persons with innovation skills in India are in short supply. This is the major barrier in job generation & development.

When shall we realise importance of innovation, and adopt suitable strategies? According to a study as many youths are unemployed in India so many jobs are awaiting able men and women with requisite skills & knowledge. Today opportunities for employment are growing in one direction and our education is growing in another, resulting in mismatch. Consequently, thousands of dissatisfied

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students are going abroad, by paying huge sums of money, a huge brain drain and money drain. Indian universities in the absence of innovation infrastructure have become mediocre, which is very costly. Cost paid is heavy, it is the students who have to pay by foregoing opportunities in life. India should have to put conscious efforts to avoid this situation.

Do the Indian universities & colleges possess global visions & missions to generate new knowledge? Have they nurtured culture to produce new technologies? Visions are in short supply and not the resources. Potential of Indian universities is high, but unexplored. We need to acquire new visions of new world from world class institutions. What are the things which foreign universities teach, but we do not? Unless we teach students skills of innovation, skills of generation of new technologies, skills of discovery of new knowledge, patents & IPR our institutes will remain behind and unemployment will persist. Vector direction of Indian universities and colleges presently is wrong. We need to correct it by benchmarking with world best universities. There exists a big Gap between Indian education on one hand and employment needs on the other, because university courses are diverted from job market needs. Universities must have to do mapping of job market. Gap will have to be bridged, by designing job oriented courses.

Do Indian universities have innovation centres, Incubation centres, Research Parks, Licensing and technology transfer centres, Patent & IPR, Lifelong education and training centres etc. in partnership with industry? These centres are in operation in developed countries from more than 50 years, and by virtue of them their courses are innovative and so job growth is far more. Why we do not have such creative centres yet?

Why students go to universities in foreign? Because foreign universities are world class, innovative in character, our universities are conservative. Foreign universities live today as if future has arrived, we exist today as we existed in past. They teach sunrise knowledge, we teach sunset. They produce leaders, we produce followers. They lead a change we follow the change. They are engines of change, we remain bogies. They are not afraid of change we are. They practice creative destruction, and weed out old. **Their labs are creative in nature, always innovating, discovering. Our labs mostly are testing to understand old theories and technologies.**

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The challenge before India now is to create a knowledge based society. It is that society in which new knowledge is not only used but also generated. The mindset of key people has to be reformed in favour of creating hi-tech entrepreneurship it is then followed on downstream by low tech many times more. **Equipping universities & colleges in respect of innovation infrastructure is a crying need to achieve desired target of job generation.**

We must remember that those who learn innovation in student age remain innovative lifelong and are never jobless. They have a passion for innovation which gives them extra energy to create jobs. World experience tells us that more Innovative regions are found to take away jobs from less innovative. We have to remember that not only machines become obsolete but men also. Retraining of men and women lifelong, fitting to ever emerging new knowledge & new technology has become essential. So as to remain employed in competitive globalised world It is now necessary to build a Learning society consisting of learning organizations and learning individuals. About 30% students in US universities are mid-career students. Can our universities not play these roles effectively?

Innovators are job generators and hence are indispensable Technological innovation, organizational innovation, financial innovation, business innovation, social innovation like by Dr Ambedkar, Phule is an essential precondition for growth, maintaining employment and competitiveness. An innovative person has a mission in life, He has a passion for the cause, and this passion gives him purpose, extra energy to pursue reformation. He consistently strives to improve. He is always dissatisfied with the prevalent. He wants to create new and again new. Innovation is progressing constantly on the efforts of new ideas of such persons. Can our universities adopt the character of innovation and produce such innovative graduates more in number? Then unemployment will not be a problem.

Ideas are the real capital. Ideas are needed to succeed. They come from innovation. Idea generated is job generated. Idea begets future idea. Hence ability to discover new knowledge, new theories and new ideas is far more important. Universities are the crucibles of experimentation. It is their prime function. They have no reason to exist if they do not do so. Universities are not worth the name if they are not innovative. Institutions are the places to create dreams

and to create capacity and imagination in youths to implement dreams. Importance of innovation to the country's economic future should be realised and infrastructure provided. This will avoid the shortage of suitable persons for innovation and entrepreneurship, which is found to be a major barrier in employment generation. The competency of work force today is measured in terms of its ability to innovate. People have to be innovative to see ahead of others the incoming opportunities. India possesses a large pool of youthful work force. This is our competitive advantage. We ought to make them enterprising by global standards to harvest global opportunities. Should our universities not play this critical role?

Commercial exploitation of brand new technology

Invention when exploited commercially is known as innovation. Innovation converts invention in money. Research conducted in universities rarely results in commercial exploitation. Today thesis written mostly remain on library shelf. No conscious effort is made to obtain economic value from them. Students do not get opportunity to learn to convert inventions in to usable goods and services. This reduces relevance & utility of research done so also financial return on investment. It is a good sign that higher education in India is increasing but innovation and acquisition of skills for commercial exploitation, which is the demand of time, is lagging.

Multifaceted centres like Research Parks, VCF, angle networks, IPR centre, innovation centres etc. constitute innovation infrastructure. They create an enterprising ambience enabling students to acquire innovation and research skills. More the commercialization of technology more is wealth generation. Innovation infrastructure in developed countries has generated a wave of entrepreneurship facilitating students to be creative, tapping the global market. The wave of creativity, entrepreneurship, and outward looking culture in India has just started, it is yet to make a good progress. This is the major road block in employment generation.

Innovate or die. Small countries like Singapore, Newzeland have innovation infrastructure. Why big India cannot?

Universities without innovation infrastructure are not worth the name. Innovation infrastructure if provided many of the students would become “**First**

Mover Entrepreneurs” to generate and harvest brand new technology. The universities and students in them would dream high, in tune with global counterparts. Innovation infrastructure is much more than a learning place, it gives an inspiration to students to generate economic surplus and become global players. The role and responsibility of universities should not be limited to merely bookish learning, yesterday's knowledge today. They have to go beyond to innovation and employment generation.

Innovation in Indian universities is conspicuously absent. Students do not get global perspectives. This is a serious lacuna. They live in past while their counterparts abroad are ahead of time. Joblessness is a result of lack of innovation. When shall we realise this?

A new vision of new world, We have to understand that in 21st century traditional methods of working coming from years are going out of use. Obsolescence rate in technology is much faster. Jobs in old technology and in sun set knowledge are fast dying. It is believed that life of a job in today's dynamic economy and fast changing technology is about 7 years. A person is required to change jobs many times in his career. He cannot, unlike in the past, expect to keep doing the same job lifelong. He is required to keep learning new knowledge and new technology. We have to remember that not only machines become obsolete but men also. Retraining of men and women lifelong, fitting to ever emerging new knowledge & new technology has become compulsory. Employers and employees have to be ready for spending time, money and energy on learning and relearning lifelong. So as to remain employed in competitive world It is now necessary to build a Learning society consisting of learning organizations and learning individuals. Will the universities in India show initiative in this direction? Universities and colleges ought to redesign the courses and their contents fitting to new jobs, like robotics, artificial intelligence etc. which were unknown a few years before. This is the critical need. Shortage is noticed in areas like Artificial Intelligence, Digital data analytics, Enterprise architecture etc.

Innovation, Research and entrepreneurship are the prime instruments to create jobs. How are the jobs generated? Where are they generated? What needs to be done to generate jobs in new knowledge and in new technology. The answer is in continuous innovation and in continuous training and retraining

of people. This can't be done without advanced research to be conducted by young energetic students and faculty in universities & colleges in their chosen fields of specialization. They should be equipped with innovation infrastructure. Lifelong education and training centres ought to be opened freshly in education institutes.

Who generates employment? Men or money? Money is a resource which is passive and not active. It needs to be used by men and women who are the only active resource. Money is necessary for generation of jobs but it is the knowledge and passion of human force that plays a driver's role in generating jobs. There is no substitution possible for capability of human force. Human capability spearheaded in a direction of purpose has replaced all the resources including money. Wherever there is deficiency in human development, development in all the sectors remains behind, in spite of abundance of resources. Industries become sick, Crime rate increases, income level, roads, railways, electricity etc all projects are adversely affected. Quality of leadership in all walks of life depends on educational level of man power. Capability of men matter more than availability of resources. Educating people is a long term essential measure to generate employment, and it is sustainable and most effective. India in this respect is weak in global market, although efforts are being made to educate people, they need to be strengthened much more. Nations like Japan, Germany are advanced because they invested in developing competency of man power and in turn they have generated availability of money and wealth. Human Development Index in India is too low, India standing at 130 position in world.

Political parties are giving false promises to people for creating crores of jobs. This is mostly with a view to catch votes. Can they create new jobs? And of what productivity. They can. This requires adoption of appropriate innovation strategies, and effective forceful action there on. To remove joblessness in India it is necessary to lay emphasis on modernising universities & colleges. Will the government be wise to realise this?

Can universities give new ideas to leaders to help industry win.

New Technology Based Firms (NTBF) started by entrepreneurs in university related research parks are

found to be globally competitive. The mortality rate is very high. Universities can provide a powerful engine to launch NTBF and generate hi-tech, high income employment. On downstream side it is followed by low end jobs many more times.

Cambridge Research Park, Limerick university Research Park, almost every university has a Research Park in USA, Canada, Germany. They have been established especially in 84 technical universities in Germany, 125 research universities in USA, 17 universities in Canada. Technology based spin-offs from Sophia Antipolis in France, Oulu business park in Finland, etc. are some famous examples. They are found to be successful in bringing about regional innovation and growth at a fast pace. The author has personally visited many of them. MIT Boston is earning as many as 100 patents every year, which are sold to industry, earning about 20% of its budget. Joblessness in India is increasing due mainly to lack of innovation. This is the key factor behind growing unemployment. So as to generate more employment in Marathwada we must have to start Research Park. Association of University Related Research Park Association [AURP] in USA conducts courses of 2-3 week duration. Our key persons need to attend, to install successfully.

What we observe differently in universities abroad is that private companies in research and innovation are flocking around the university in search of latest knowledge and technology. Almost every university has a Research Park, in which these companies are operating. Students work in these companies in vacations. Research entrepreneurs teach in universities. This makes exchange of innovators easily possible. Interaction between university research scientists and research entrepreneurs is facilitated. Universities spin off the companies, directed by professors and students. Venture capital companies have opened offices on campuses for funding and early commercialization of brand new technologies generated in universities. Universities have become sources of new ideas enabling companies to win. They have become maternity homes for start-ups, where good baby care, without any congenital defects is taken. Universities function like a light house for growth and prosperity of industry. Benchmarking with these world best universities is strongly recommended, for they generate hi-tech, high pay jobs, which we eagerly are looking for.

Conclusion

1. Indian youths have **high potential, but unexplored**. Universities & colleges should have to adopt vector direction to giving birth to companies ,like Stanford rather than merely teaching bookish things. This is the way to generate jobs at high as well as at low ends.
2. In knowledge based economy of today, universities & colleges being knowledge organizations are meant to create new knowledge, new technology innovation and research have to assume **driver's role** in job generation, giving birth to hi-tech start-ups development. Indian institutes should make a beginning to play this role effectively.
3. **Labs in college must always be innovating, doing experiments to find out new, knowledge, theory, and discovery rather than merely testing old theories and technologies.**
4. Universities without innovation and entrepreneurship, without the mission of giving birth to firms are incomplete, irrelevant and dysfunctional. **University/college without innovation infrastructure is not worth the name**. Universities in India, should have forthwith to install innovation infrastructure, to solve the problem of unemployment.
5. **It is the bounden duty of universities & colleges to provide innovation infrastructure**, which leads to quality education and enhancement in student's competency, in turn job generation..
6. Universities have a major influence on nation's capacity for innovation. The role played by them in India is not satisfactory. Can Indian universities produce New technology Based Firms, and how many is a pertinent question to be asked to universities? Do the Indian universities have innovative character?. Education charged with the spirit of innovation, entrepreneurship and discovery, is not luxury, it is the basic need to make education competitive, and to increase employability.
7. Resources are not in short supply, but the visions. Indian Universities must aim high think great to produce leaders enabling industry to win. Universities must have to throw away the old shackles, and install innovation culture. This is no more option but compulsion.
8. Innovation infrastructure is not a financial liability but an asset. Innovation infrastructure generates money for college and wealth for India. If India does not become a centre of technological, organizational, financial innovation there is no other way to assure employment.
9. Public policy on education in general and university education in particular will have to be altered, in favour of research, innovation, and entrepreneurship, enabling them to be globally competitive.
10. Universities ought to aim to produce professional leaders by world standard. They should not produce mediocre, just followers or copy cats. Should they not envision to produce innovative creative globally competent leaders?

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