OPINION PAPER

MARKETING NEEDED TO MAKE UNIVERSITIES GLOBALLY COMPETITIVE

By

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ABSTRACT

The article aims at improving the quality of higher and technical education in India to world class standard. Institutions in knowledge economy are reckoned to be the drivers of development. Indian institutions are making efforts, investing money, appointing professors, students are studying hard but due to the lack of marketing strategy, their efforts do not bring the expected results. Industries do not get new knowledge, new technology from the institutes, and they remain uncompetitive in the global market. Thousands of students with degree in hand are jobless, 25 % of people live below poverty line, India remains a low income economy, with Human Development Index as low as 135. Purpose of the article is to drive deep in the minds of key people, global the winds of change. The institutions are expected to be extrovert, benchmarking the world best institutions. Professors and students have high potential and it can be developed by adopting marketing strategies. The article recommends that we should adopt them without any delay and bring fruits of development to Indian people.

Keywords: Technology Research, Technology Transfer, Campus Culture, Outreach, Research Park, Incubation Centre, Commercial Exploitation, Intellectual and Technological Capital, Venture Capital, Globally Competitive.

INTRODUCTION

Many Technological Universities have five star infrastructure, brilliant faculty and scholarly students, who do possess lot of advanced scientific knowledge needed most by national and global economy. They continuously generate new knowledge through research at Ph.D, P.G, U.G levels. Mechanism for transfer of knowledge from lab to land, in both the private and public universities in India, is however almost absent [1]. True image of universities is therefore not depicted in global market. Indian universities are found to be insensitive to market demands. Government has perfected systems for import of technology, but not perfected systems for technology transfer from universities within the country to industry [2]. Feedback loop today is incomplete. Marketing of Indian university expertise to industry, world over, is the need of the hour. In its absence feedback from Students, Alumni, and Industry to reform Education is not received, as a result what is wanted is not taught and what is taught is not wanted. Productivity of various professions and vocations on this account remain low. 25% people live in poverty; the rate of return on investment due to lack of outreach is far too low. Economic value of the investment in university, due to lack of commercial exploitation, is not fully obtained. Technological universities are expected to be industry oriented [3]. They are expected to be innovative providing ever emerging new technology to industry, to keep them globally competitive. But today their engagement with industry is far too low. So they are misdirected. Universities of today are like an irrigation project of dam built, without canal system. This has resulted in mismatch in skills provided and skills needed. This paper presents in brief, the need & importance of employing world proven strategies, including marketing like Western Schools to make Technology Universities competitive by world standards. What is the experience of western schools? If Indian universities follow the proven methods elsewhere in the world, industry in India will be greatly benefitted.

The article aims at reformation of Indian Technological Universities, Engineering colleges and polytechnics, that they do not remain outdated, teaching all that which they taught for previous generations. They should produce

globally competent Graduate Leaders in Engineering, leaders in industry and leaders for various walks of life. Indian institutes should learn what to teach, how to teach and benchmark with the world best. They should give birth to new technologies and new technology based firms. They should give birth to sunrise technologies and become like "heart" to our body, continuously keep pumping brand new technology in industry, so as to make them globally competitive. They should enable Indian industry to become leader and not remain follower like in the past. Can they become a "Light House" for industry? This paper suggests and gives directions to institutions for reformation.

Scope of the Study

The study encompasses all engineering colleges, polytechnics and universities which are engaged in turning out technological manpower. It covers education, research and technology transfer to industry. The study addresses the educational planners in government, administrators' in private institutions, professors and all the key people who matter most. Most of the institutions in private sector are managed and maintained by politicians. It is observed that they do not have deeper sense of technical education. The article targets at them, to improve the governance of the institutions under their control. Academic culture in most of these institutions is far too weak. Their visions and missions need improvement. It is now not a matter of only appointing more men, or baying more equipment, or constructing more buildings. It is now a matter of adopting appropriate strategies, visions and missions. An institution with lesser resources may give better output than others with higher resource level, if it adopts proper strategies. No region, nation or society, howsoever well endowed with natural resources, can ever prosper on sustainable basis without good institutes of higher and technical education. Indian institutions can certainly turn out better educated, technologically more competent men and women if they adopt the guidelines given in this article. This will lead to better creation of better leaders for construction of roads, railways, water supply schemes and industries. It is to be realised that health of Indian economy depends on health of higher and technical education institutes. The subject of this paper is critical to well being of Indian people.

Universities, colleges are main players to create brave new India. Knowledge is power, but that knowledge which today is relevant and purposeful. Intellectual property is more important than any other property. India cannot progress leaving the institutions behind. In fact it is they who can best push India on the path of progress. They ought to be the engines of development and no bogies. They need to be modernised urgently to create leaders of world class standard, lest India is bound to get mediocre leaders to manage its professional affairs at national and international levels. Leaders matter most in creating future. They should dream big, think great and show commitment to implement dreams to create new knowledge, new theories and new technologies. In knowledge society of today they matter most.

Purpose of the Study

Purpose of the article is to transform Indian economy, industry, and its standing in the world. Purpose is to inform the key people in Higher and Technical Education about the policies and practices, visions and missions being pursued by the world class institutions elsewhere in the world. Indian institutions ought to learn from outside become extrovert and not remain introvert. The world is changing very fast, technological obsolescence rate in high, Indian industry and people must have to cope with. They cannot afford to be stationary or moving slowly in high velocity world technology environment. Indian economy ought to come out of low income and offer higher income and higher standard of living to its people. Dream of India to become a world power will be achieved only if technological institutions improve, not otherwise. If they do not improve, there is no hope to create bright future for India. Purpose is to bridge the gap between Indian institutes and foreign, bring out issues which when attended technical education will improve, and better standard of living will come to people.

Can we not do what world best institutions are doing?

The article traces Indian systems and procedures and makes an attempt to compare them with the world class, so as to improve the lot of people. What counts most now is the intellectual and technological capital of a nation,

hence the paper.

Many western schools, on the other hand, are having well defined and perfected knowledge transfer systems and procedures. They are not only educating students to keep them competitive lifelong but practically generating and aggressively marketing, new technology/ new knowledge and transferring their full scientific capacities to the benefit of society in their vicinity and all over the world. The outreach of technical universities and feedback is far and wide. Thereby they are enriching themselves and augmenting new ideas for the conduct of courses besides providing budget support for future growth [4]. Technological Universities are large in number exist in US, Germany, Japan. By virtue of knowledge, they have moved from periphery to the centre of development and taken the nations to greater heights. They have become the drivers of economic and social prosperity. The visions & missions of Universities are dynamic, adaptive based on sharing experiences with people at large, and not only giving off the shelf irrelevant and outdated course prescriptions like in India [5].

Marketing is Essential [6]

Marketing is a usual practice in profit making companies. Companies earn money by selling their goods and services. In non profit organizations like universities and colleges however, marketing is rare. They consider them to be in sellers market, like in the past. Universities from developed countries have of late, opened marketing departments and are adopting strategies to sell education and technology, in international market. They have been organizing campaigns in India, so also in many other countries, to lure students. They, on campus, have been vigorously conducting scientific research, obtaining patents & IPR and selling technology brands to the whole world. Through technology transfer, they are contributing to human civilization. Thereby they are earning money which is ploughed back to support institutional budget, and contributing to make education affordable. Technology transfer from knowledge organizations to industry to improve productivity has become a major phenomenon. It is considered as the key to industrial development and competitiveness. Technology generation, dissemination, patenting & IPR, are some of the current important issues before the nations. Universities need aggressive marketing to popularise new knowledge and new technology. Will the Indian universities depart from traditional practice and adopt new?

This paper is presented based on the experience in the world of new directions to the Indian universities especially technological so as to make them world class. They should not remain mere examination bodies, with outdated policies and practices, as they are today, producing soldiers fit to do lower end jobs at best in the army of multi nationals. Uniform standard of education all over as is often talked, will not serve any purpose, and rather is a hindrance in achieving excellence. Who wants uniformity? People want excellent education. They know creative and excellent things are never uniform. Students have to be educated in what they like. It is like, a fish should not be taught to fly, so also a bird should not be taught to swim. Freedom to learn as per liking is the need of the hour. India needs reformers, innovators, creators. India needs variety of engineers with capability of creating brand new ideas. Uniform standard should find no place in Technical Education, for it generates mediocrity.

Does India need Marketing of University knowledge and Courses? Universities must have Marketing Departments to know what the Market Needs are and accordingly design Courses and conduct needed Research.

Can India do without it? A nation needs not only soldiers to win a war, it needs Captains and Generals. Producing Graduate Engineers [Soldiers] is good, but not enough. Balanced output of M.Techs, Ph.Ds [Generals] is needed. It is they who give strength to technological advancement. Governments in the world have realised that no city, region or nation, can ever prosper fast and have sustained growth without having world class institutions essentially covering marketing of Higher & Technical Education. They are the main energy/ idea sources, brain power factories needed to bring India at par with developed world. Well educated citizenry in technology is an essential condition for faster growth and prosperity. People's development is national development. They need to be educated, on priority, to the level they are capable for, in a best possible manner. It is

the well educated men and women with globalised imagination, capability and competency, who matter most for productive utilization of physical, financial and intellectual resources. Government is convinced that, to run its affairs ably at National and International levels it requires leaders, leaders in engineering, leaders in industry, and all other walks of life having professional competency nothing less than world standard [7]. Where are such professionals nurtured? Seeds are sown within the four walls of classrooms. Mediocre institutes produce mediocre leaders. They, in ultimate analysis are found to be more costly than the cost of their upgradation. So, it is advisable to spend with priority on modernization. Presence of world class institutions is reckoned to be a differentiating factor between developed and developing nations. Nations develop faster only when world class institutes are within the reach of citizens. If India does not envision building world class technological universities to generate as well as market new technologies, with priority, then India is destined to lose in world brain race. India will then trail behind. Having young population more in India is good; but, not enough. It must be trained to global needs, for which continuous assessment of market needs and sharing experiences with people at large in society is necessary.

World Experience in Technical Universities

Germany in 19th century with the help of its technical high schools is the first country to capitalize on technology. In German language they were then known as, "Technische Hoch Schule". Now they are upgraded to the level of, "Technical Universities". Today, there are more than 84 technical universities, such few names of them are: Berlin Technical University, Stuttgart Technical University, Karlsruhe Technical University, and Aachen Technical University. The author, under a UGC scheme, has personally visited them and studied the organization, technology transfer & management marketing style of them. The technological advancement of Germany is attributed greatly to the successful working of Technical Universities.

USA has more than 100 Technical & Research Universities for example, Massachusetts Institute of Technology, California Institute of Technology, Rochester Institute of Technology, etc. The model of technical universities is now adopted in almost all countries in the world. Japan, Canada, Korea, China has many technical universities. In the name of some universities the word technical may not be there, but essentially their character is technical.

On the campuses of these universities what we notice is that research companies are flocking round them. Technology Incubators, Research Parks, Innovation Centres, Patent & IPR bureaus are distinctly visible. Venture Capital companies have opened offices in campuses in search of new technological ideas for commercialization [8]. These universities are like magnets, which attract not only scholars; but, also Industry, Entrepreneurs, and VCF companies across the world. Taiwan has set up a science town at Hsinchu with some 13000 researchers, in two universities, 6 national laboratories and around 150 companies specializing in Electronics. Tsukuba Science city near Tokyo is another example of technical university-Science park collaboration. Another feature of Japan is that on the periphery of technical universities, there are several specialised research institutes/companies to absorb persons coming out of universities with new qualifications. Students get access in these research labs and researchers get access in teaching, which make teaching, learning, research supportive to each other. Teaching, research and extension thus become more powerful by coupling with each other. This is achieved in Japan by locating research labs on the periphery of universities. Spin off of companies from universities is a common phenomenon, so also spin off of technologies. A foundation is set in MIT with facility of venture capital fund enabling professors and students to start new ventures based on technologies they develop during the MTech/PhD research effort. Every year as many as 20 to 30 New Technology Based Firms [NTBF] are born in MIT. According to a study, around 3000 companies owe their origin to MIT. This is not unique with MIT. It is true of almost all research universities in US, Canada, Australia and China. Universities have become maternity homes for safe birth of hi-tech companies. Indian technological universities will have to follow this enterprising route.

On the basis of successful working of technical universities abroad, it is recommended that, establishing technical

universities with marketing effort is the only way for India to build its Industry and Economy globally competitive. We envision to starting the Technical Universities, not only to award M.E and Ph.D degrees; but, also to become "light house" for industry. We have to get technical university model, with market orientation; otherwise, we will miss the bus or trail behind in Hi-Tech industrial development.

Universities & colleges without outreach, without efficient marketing in modern world are not effective, not productive not regenerative and are non viable in modern sense. .

How to Set up Market Oriented Modern Institutes?

IITs were conceived as world class technological universities. From very beginning, world best professors in countries like Germany, UK, USA, Russia, were invited to shape them. They were mentored by foreign collaborators constantly for 20-30 years. Programs like exchange of faculty, research partnership, global visions & missions, systems & procedures, gave them international character and so they could shine in the world. Establishment of universities even in the developed Countries, today is normally done like this under close supervision, of worlds best professors, some of them from within the country and some from foreign. They are appointed as mentors, as many as 15 to 20, one for each discipline. It is the mentors who accelerate creation of world class academic culture. Universities right at birth must be groomed to be fit for tomorrow. They should not be outdated or handicapped right at birth. Currently, with a view to increase gross enrolment ratio, many new universities and colleges in public and private sector are being set up in India. Should they not adopt such innovative proven approaches? They must, otherwise they are likely to be born handicapped, and removing handicap afterwards is so difficult.

There is a thinking in some circles why collaborate with foreign universities, when IITs within the country are available? Are IITs not good enough to guide? Many new things like patenting and outreach have come up elsewhere in the world after IIT were set up. Good policies and practices for industrial development from elsewhere in the world will have to be incorporated in the newly coming technological universities. It is good to involve existing IITs, but wiser to involve worlds best professors in technical universities wherever they are and remain all along in global network. They will bring to India close interaction with world market.

Envision First Creating Imaginative Technology Leaders

Importance of Technological Academic Institutions in today's knowledge driven society is very high [9]. It is they who are furthering human civilization to greater heights. It is the academicians who provide new knowledge, new theories, new technology and competent manpower to business and industry. They are supposed to provide not only knowledgeable; but, also ethical leaders to government, to the total economy and the world. Industry, society and government in return ought to provide adequate funds to academics to make it grow. India can be richer only by the use of advanced technological knowledge. There is no other way. What kinds of graduate institutions produce and decide the future? If institutes produce mediocre irrelevant to market needs engineers, future of India will be mediocre. If they produce world class relevant leaders, future of India will be world class. Are Indian institutes aiming at producing leaders of global standard? Do we have a mechanism for building leadership in academic institutions like principals, vice chancellors? The well known saying goes, "First we shape institutions, and then they shape us for generations". Do the key people in Government attach proper value for upbringing of youths and provide adequate budget for marketing matching with market pull?

Want to be Globally Competitive?

Then India ought to have many technological universities, of world class standard. Students now demand world class education. They are ready to pay for in terms of time, effort and money. But where do you find such institutions? IITs are very few. Thousands of students to obtain quality education are forced by circumstances to go abroad by spending huge sums of money. Some of them suffer bad treatment in foreign, like in England and Australia in the year 2011. Yet, the number of students going abroad is increasing. Technological Universities and Colleges in India now will have to be competitive by nothing less than world standard. Education has become a global subject.

Foreign universities are marketing their services in India, many have come and many more are coming. They are attracting best of our talent and may soon dominate the Indian scene. Where do the Indian institutions stand in comparison? Let us humbly admit that, Indian institutes are far too behind the world. Have we made a gap analysis between Indian institutes and their counterparts abroad? Why are our universities woefully unsuited to the quality demands of globalization? Why they are far too behind their counterparts in the developed world? It is a national failure that they are not globally competitive. They remain away from market needs. Indian men and women intellectual potential is far too good. They have contributed immensely in American universities and made them forerunner. In India, similar people fail to perform, because they are under poor governance, poor systems and procedures, without market studies. Professors and institutions need to be responsive to market fluctuations.

We need to make introspection, especially in the light of world proven policies and practices and improve governance of technological universities. Do our institutions lack new visions of new world? The present method of governance which is under the "grip of government" although at one time served well; but today, it falls too short of requirement. It needs to be reformed, made flexible enough without any delay and made competitive in global context. How can the technological universities become autonomous in true sense? How can they become knowledge generators? How can they have effective and imaginative governing boards? This is a challenge before Indian academicians. How to face these challenges effectively? It essentially demands the willingness to embrace change. The world under the forces of globalization is changing fast. Only those professors and institutions who change to innovate and again innovate to market ends can educate the students on correct lines. Innovation for social and market needs is almost absent from curriculum.

Technology level of a nation is the key determinant of its economic and social wellbeing. Therefore, efficient organization and management of technology generation and its effective transfer to community in any nation more so in India, is the need of the hour. Will the present technological universities pay adequate attention to these aspects? They create the future of India. Will India remain a technology follower or become technology leader, matters for future of children and grand children.

Performance of institutions in isolation from market forces ought to be discouraged. Fresh initiatives to integrate the working of universities, colleges, industrial estates, chamber of commerce need to be introduced forthwith. Gone are the days when universities enjoyed sellers market. Then they did not need marketing. Now transnational migration of students and high mobility in search of quality has become common. Indian technological universities now have to deserve the rank on National and Global planes on their own merit. They face now competition with Domestic and International at their own door steps. Foreign universities are posing a threat to Indian Higher Education System. Indian universities will stand to gain from globalization only if they learn lessons from their counterparts, and quickly adapt to changing times. Otherwise they may trail behind.

Universities, world over, are getting less and fewer budgets from Government, but are expected to produce more and more. Expectations of students are soaring high. They aspire to make career on global plane. Universities are expected to perform far better than in the past, for which they are pressurised to increase outreach for the welfare of community and generate revenue to support their own activities. Self finance universities and colleges are allowed by law. Universities and colleges are assuming key role in global economic systems, where new technological knowledge and highly skilled people are perceived as critical inputs for economic and social development.

Following observations are pertinent in this regard. They give a hint as to what our universities should be doing now and how they can stay fit and competitive in global market.

Participation in Exhibition

A few years back, the author visited the Hannover Industrial Exhibition in Germany. There was a pavilion meant for universities and colleges. It was most crowded by visitors. Students and Professors were explaining the new researches, emerging technologies, like patents and IPR to visitors. Universities had come from all over the world to

display and sell their research and innovation output to the global industrial community. Visitors came to this pavilion to know which of the new technologies are on horizon and would dominate their business operations tomorrow. Japanese companies in particular were far too ahead, remaining in touch from research stage till completion with the universities not only in Japan but also those in USA, UK, and Europe. It is this strategy which has enabled Japan to become an industrial leader. Good universities are aggressive in tapping the industrial clientele world over. Participation in exhibition presenting new knowledge, new technology, and new theories to create new society is demanded of a modern Indian technological university. If they start doing they will improve and compete ably in the world market.

What is the Use of that Research Which inspite of Potential is not Exploited Commercially?

There are many researches done in universities and which could add value in industry. But, there is no vision and mechanism to market them. Students do research for Ph.D, Masters and Under Graduation. In the absence of marketing mechanism, those remain in library on cupboards. Commercial exploitation is not done, and hence quality of research remains mediocre, less useful and irrelevant, and in turn the quality of education suffers. Full gains from research are not achieved. Many times these type of similar papers are published in National and International Journals; but, patents on them are earned by the foreigners. We need to make most of our capacities and outputs for which a well designed; well connected marketing and technology transfer department in a university is a must. Without that we are losing benefits, under utilising capacities of universities and shall continue importing technology from foreign.

Do our universities participate in industrial exhibitions? Do they have patents & IPR to sell like their counterparts abroad? Can we do this? We can, but we need to have a vision. In India, how many universities have so far obtained patents and marketed them. American universities obtain as many as 1000 patents each year, whereas Indian universities obtain less than 10, and they have no mechanism to market. Their use and application is left to chance.

Technology Transfer from University to Industrial Estate

Can an Indian university propel industrial development? So far it has not, but now time has come. A major reason for the success of the US computer industry has been the development of a host of small firms in Silicon Valley and in Boston. These firms grew directly out of research in the neighbouring universities. Professors have acted as consultants to these firms, new grads have provided the workforce, and research projects funded by government have provided ideas. The companies benefitted, so also the nation with new products, new jobs and new market strength. Chinese universities are not behind, so also Australian. Can the Indian technological universities not do this? They can certainly do. But we need a technology transfer department and marketing to learn and practice entrepreneurship.

Marketing Gives Feedback to Produce Technologies that Can be Sold

A friend of mine, 25 years back went from Pune to USA. He studied masters and PhD and then started a company in Silicon Valley. He returned to India after a gap of 25 years. We received him on Mumbai airport. He was curious to see the progress made by India. We were driving by car to Pune. He was happy to see the new express way, which is as good as in USA. When we came to Pune the author was telling him that they have entered Pune. He was not able to see any signs of his time on roads. He would not believe that this is Pune. He said how Pune can change beyond recognition. We came to Deccan Gymkhana, and he did not see the shops and restaurants of his time, but saw a new flyover. He was not ready to believe that this is Pune. Then we brought him on Laxmi road. He did not see a single bicycle, which at his time used to be crowded. Then we came to a railway station. He did not see a single horse cart. He refused to accept that this is Pune. Then we brought him to the university where he studied. Immediately, he exclaimed, now I cannot refuse. He said the whole city has changed but the university has not. The same old buildings and roads, labs & classrooms, same old procedures and systems in university he could notice.

He said in USA, the Universities are changed faster than the

cities. Universities change first, and then they show the way to cities and industry to change. In India, unfortunately, it is the other way round; universities have become bogies instead of engines. They do not drive; but, follow the change. It is mainly because they are not in touch with industrial and technological market. They have no knowledge/ technology transfer and marketing departments. They have no eyes and ears to sense what the society wants and which way the world is moving. The situation can be changed if marketing departments, marketing studies and surveys are introduced. Marketing department will enable a university to be in navigator's seat having binoculars in hand for distant vision to navigate university activities in needed direction. Lack of marketing strategy is a serious deficiency in our universities.

Creativity, Discovery, Innovativeness Enable Nations to Win in Global Competition

The author was reading an article written by an American author, in the magazine" Fortune". The author of that article, from US was addressing the question, "Can India ever compete with US in software business?" To answer the question, he made an analysis of higher education in both countries and recorded that Indian system is rote learning that is to say it is mechanical, stereotype based on memorization and not creative thinking. Students are taught sunset knowledge, presuming that knowledge is finite. Institutes in India produce too less of sunrise knowledge, new theories. Students are not learning innovation, and hence they do not learn how to discover unknown. They are reflexion centres teaching that knowledge which comes to them from developed countries. It does not focus on creativity, discovery and innovation. He came to the conclusion that, Indian institutions can produce at best followers in technology; but not leaders. On the other hand, thrust of US universities is on producing leaders, discoverers, and creators who obtain patents and intellectual property. It is US which are pumping new technology most in the world market. 85% of world IPR is held by Americans. He said students of today are leaders of tomorrow. Their education is an enabler in competitiveness of the software industry.

He came to conclusions that, a nation creating follower's can never compete with a nation creating leaders, unless in future it changes its strategies and improves. Universities in India need to incorporate creativity, discovery and innovativeness in syllabi and aim to produce leaders, which require market study to increase outreach on continuous basis. Technology generation, its marketing and technology transfer department is now a must, is on critical path, if India has to make a mark in world.

What can be the new Agenda for Technological Universities?

A university by definition is a place where knowledge is generated. They should be technology generators, obtaining patents & IPR, and transferring them to industry. To make this happen, the technological universities should have to set up on Campus Research Parks, Incubation Centres, Patent & IPR Centre, Innovation Centres, Technology Transfer Centres, and Marketing Departments. This is what universities in foreign are doing. Why our technological universities cannot do?

Research Parks and Incubation Centres

It is the success of projects like Cornell's Centre for Advanced Technology that has led many universities all over the world to establish research parks and incubation centres on their campuses. In these parks, space is rented to small, developing companies-often headed by recent graduates- and the university provides facilities as well as scientific and business advice and support. The model is now adopted the world over. Research Parks are providing spring boards for students to swim ahead of all in creative activity. Incubation centres and Research Parks take universities nearer to the market.

Success in the international marketplace in the coming years will depend chiefly on the successful and swift application of new S & T to manufacturing and processes and products. And that in turn will depend on close and effective partnership between university, government and industry. Are these models worth adaption for Indian universities? Yes, so as to be globally competitive.

Is the apex bodies like UGC/ AICTE which have to show the way?

There is a story of two armies which were fighting a battle

with each other. One army had a lion as its captain, but the soldiers were sheep. The second army had a sheep as its captain but the soldiers were lions. The lion captain employs bold strategies, while the sheep captain employs strategies like a coward sheep and looses battle although the soldiers are lions, because the soldiers have to follow the strategies drawn by captain.

It is the strategies drawn by apex bodies like UGC/ AICTE which can enable India to win. They have to make bold decisions like a lion captain. They have not yet drawn knowledge transfer & marketing strategies, nor conducted any studies and surveys. In India, it is only agriculture universities, which have research department with research staff with an extension department, and so productivity is increasing. Knowledge transfer from universities is solving India's food problem, although population has increased three times. Marketing will lead to the improvement in quality of education; make it relevant and purposeful, besides cost competitive. Will UGC/AICTE benchmark with world best technological universities and adopt appropriate strategies? Indian universities do not see beyond UGC and AICTE, who by themselves are behind the world. Our situation today is like the army of lions led by sheep captain.

Foreign collaborators thus far have propelled Indian industrial growth. Can Indian Universities not go nearer to the Industry and contribute?

Most of the companies have foreign collaborations. Truly India is late starter in that industry. Now, enlightened industries are coming forward to join hands with universities to jointly conduct research and innovation. Department of Science and Industrial Research Government of India have started many schemes. It is good that they are recognizing their role and responsibility. They have to play a leading role in innovation and entrepreneurship. Foreign collaborators have so far been transferring technology to industry at high cost and with time lag, besides making us too dependent on them. Industry will be flocking round the technological universities if and only if they generate technologies.

National Knowledge Commission [2006] and Yeshpal Committee Report [2009] have Prescribed Universities to be Enterprising

Both the reports have suggested reforms in governance and increasing outreach of universities. They said creation of new knowledge, discoveries and creative endeavours should be the integral components of higher & technical education. Technology innovation, patent & IPR, technology incubation, entrepreneurship, privatization, Public Private Participation [PPP] are strongly advocated. They further said some institutes are planning to be in top 20 of the world list. They certainly have the potential. But now it is not just a matter of putting more money or appointing more men on the job. It is more a matter of using current and appropriate strategies, including marketing and knowledge transfer. They should work with internal ideas but supplement them with the external ideas from industry and alumni. Winning institutes are those which are flexible, constantly changing with time. Indian universities must have to learn from case examples in foreign countries. How Japan with the help of universities has moved the nation forward? How Germany has maintained leadership by marketing technological knowledge through relay centres? How USA has created technopreneurs in Silicon Valley? All this demands universities to be not introvert but extrovert. National Knowledge Commission has recommended universities to be enterprising. How do they become enterprising? They have to resort to strategies like marketing, outreach, technology transfer through patenting, etc. US academy of sciences in its report said that, "Rising above the Gathering Storm" said

"Civilization is on the brink of new industrial order. The big winners in the increasingly fierce scramble for supremacy will not be those who simply make commodities faster and cheaper than competition. They will be those who develop talent, technologies, techniques and tools so advanced that there is no competition."

These observations are useful to our universities also. Universities can be enterprising only if they have effective knowledge transfer & Marketing Department.

Conclusions

From discussions above following conclusions emerge.

- Marketing is the first and foremost thing for universities to do.

Marketing is not only for profit making companies, but also

for profit organizations. If they adopt marketing they will undoubtedly be more purposeful and qualitative. But for marketing technology level in India is low, productivity is low. Unless universities adapt to marketing, it is less likely that they will be world class, in spite of potential.

Technological universities at this juncture of time must focus on Marketing of Intellectual, technological capability in to saleable goods and services. Public service, carried out chiefly through teaching, was the motive for the creation of the earliest universities and colleges. Even today teaching remains the core of the university's public service. But now in the globalized world, trend of public service extends far beyond, to entrepreneurial activities like technology transfer, Research Park, Technology Innovation, and Patent & IPR etc., which needs marketing. Only this will lead to the improvement of quality of education.

- Technology Universities should show lead in industrial development.

Only classroom teaching is not enough, although essential. Technology clusters, innovation centres, research parks must be started in and around them. This will fire the imagination of young. Technical Education Quality Improvement Program [TEQIP] Government of India through World Bank is aiming at this. Universities must have to think out of box and enable industry to win. This will increase imagination of young generation.

- Technological universities must be responsive to world dynamics

World experience tells us that but for effective "technology push matching with market pull"; universities remain out of tune and isolated, as "Ivory Towers".

- Restructuring and repositioning of Indian technological universities with respect to society and the world market is needed.

True image of universities needs to be depicted in the market for which more effort in marketing is needed.

- Technological universities can accelerate Brain Gain. Thousands of students are going abroad every year. They have been going from Gandhi, Nehru period. This is happening mainly because our universities are highly deficient in knowledge generation & knowledge transfer to the industry and society.

If India creates research based, world class technological universities, and market new technologies, to industry the universities will be providing world class graduates to run India's professional affairs nationally and internationally. India will then tend to become a technology leader.

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