3. HIGHER EDUCATION IN INDIA IN THE ERA OF GLOBALIZATION: SOME REFLECTIONS

*Prem Vrat**

Abstract

This paper highlights the importance of quality in higher education in India in the context of globalization, but provides insights to the current ground realities of higher education with focus on higher technical education system in terms of quality and reach. Demographic dividend potential may be an opportunity lost, if issues of excellence, equity and employability are not seriously addressed. Indian higher education system has to come out of mediocrity syndrome and focus on balanced approach towards quality, access, governance, regulatory framework, research and development, faculty quality and commitment, funding and employability in a global perspective. There is a need to look at the entire educational system in a holistic perspective as an "Academic Supply Chain" and address issues of information distortions at different stages of supply chain leading to 'bull-whip' effect like phenomenon in the planning and design of educational processes and systems. It also examines the socio-economic implications of 'hype' created around few 'elite' centers of excellence, whether it is being overdone manifesting the 'Matthew Effect' leading to ever-increasing 'gap' in the funding and public perception of 'over-hyped' institutions. A suggested roadmap for availing opportunities of globalization and Indian demographic profile and rich innovative talent, to develop a balanced higher education system, is outlined.

1. Introduction

In a recent survey by Universitas 21 (14) Indian higher education system has been ranked 48 out of 48 countries studied, making it the lowest rank with a score of 34.4, while USA is ranked first with a score of 100. Top five countries in the list are: USA, Sweden, Canada, Finland and Denmark; whereas the bottom five are – Croatia, Turkey, South Africa, Indonesia and India. The ranking on all the four parameters – output, resources, environment and connectivity is consistently the lowest for Indian higher education system. Paradoxically, the Indian higher education system is the 3rd largest in the world after China and the USA. This brings out the dichotomy between quantity and quality which needs to be addressed seriously if India is to play any significant role in global educational environment. Growing global economy and intense competition makes higher education sector as a priority sector owing to growing demand for skilled manpower who are globally employed.

2. Indian higher education system: the current Reality

Agrawal (1) has analyzed the Indian higher education system in great detail. National Knowledge Commission (NKC) set up by the Prime Minister, calls it a 'quiet crisis'; others may view it as a 'sick child'. Indian industry points out talent crunch, due to huge skill

*Vice Chancellor and Professor of Eminence; ITM University, Gurgaon (Haryana) & Formerly, Director IIT Roorkee; Vice Chancellor, UPTU, Lucknow

shortages. Thus, Indian education system is plagued with plethora of problems in terms of quantity and quality of education; issues with inclusivity and access; research and development, faculty shortage and lack of motivation and commitment, employability of its graduates; funding, educational governance, international collaboration and academic leadership. For decades, Indian higher education system has been reflecting dominance of mediocrity in terms of almost all enablers and obviously results delivered by the system (10). A striking contrast of aspirations and actual delivery of the Indian higher education system is clearly seen in the following quotations of the First Indian Prime Minister – Pandit Nehru and the current Prime Minister – Dr. Man Mohan Singh (6).

"A University stands for humanism, for tolerance, for reason, for adventure of ideas and for search of truth. It stands for onward march of the human race towards ever higher objectives. If the Universities discharge their duties adequately, then it is well with the nation and the people."

- Pandit Jawaharlal Nehru

"Our University system is, in many parts, in a state of disrepair.... In almost half the districts in the country, higher education enrollments are abysmally low, almost two-thirds of our universities and 90% of our colleges are rated as below average on quality parameters....."

- Dr. Man Mohan Singh

- (in 150th Anniversary address of University of Mumbai).

In India, there are 559 Universities with two million students, making on an average 3500 students per university, whereas in a good public or private funded university in a developed country, there are 20-40 thousand students. Given large university acreage; on an average it works out to 9 students / acre. Similarly there are 31,900 colleges enrolling 15 million students working out to an average of 490 students/ college. Thus, educational institutions in higher education lack critical mass (Tareen, 13). 71 percent post-graduates are from colleges while 80% Ph.D.s are from university. Thus higher education system suffers from lack of seamlessness.

Another key concern is low Gross Enrollment Ratio (GER) which is at around 15% excluding on-line programmes as compared to the world average of about 25%. India spends US$400 per student compared to US$1000 as an average of developing countries; US$2500 in China while US spends US$10,000 per student per year. Thus Indian higher education is very poorly funded sector. Given the current funding practices; thers is enormous difference in funding received by 'hyped' elite institutions, Central Universities; as compared to State Universities and Private Universities. 25% of faculty positions nationwide are vacant and 57% of faculty lack Ph.D. degrees. For Engineering colleges this scenario is still more alarming with very few Ph.D. degree holders teaching in these institutions. According to UNESCO, India has the lowest public expenditure on higher education per student among BRIC nations and perhaps globally.

Table 1 shows some relevant statistics by the World Bank (17) about the 'Knowledge Economy Index', 'Innovation Index', 'Education Index' and 'Information Infrastructure Index' of some countries in 2005.

Table - 1

Country	Knowledge Economy Index	Innovation Index	Education Index	Information Infrastructure Index
Korea	7.59	8.11	7.86	9.00
Russia	5.91	7.50	9.88	4.91
Brazil	5.05	5.02	5.75	5.50
China	3.80	4.42	3.74	4.50
India	2.72	3.58	2.33	2.06

(Source World Bank Report: 2005)

3. Global Higher Education Reforms: An Overview

Since the current era is perceived as knowledge-economy; most forward looking nations have revisited their higher education sector with a view to reforming it to make it globally competitive. This change is being 'driven more by pragmatism rather than ideology' (1). US has always been on the forefront on higher education and research and is further having major investment plans; UK has injected new dynamism in higher education sector through incentives as well as competitive focus. China has amazingly, re-engineered its higher education system with quantum jump in funding, liberalization and policy interventions. In past two decades, China has transformed its education policies by declaring science and technology as well as education as the major strategic driving forces for sustainable growth and development. Higher education system in China has made tuition fees as mandatory, diversify revenue generating sources by permitting affiliated enterprises. China involved private sector – proactively; to contribute and invest in higher education. Special funding was provided to top 100 institutions to upgrade them to international standards. That is why, now, there are more universities in top world rankings from China whereas Indian Universities hardly find a place there. Even Pakistan has increased its public funding for higher education from Rs.3.8 Billion in 2002 to Rs.33.7 Billion in 2007 – almost tenfold increase.

Education in many developed countries gets a high priority and perhaps seen as a process of developing the economy. Particularly in the era of knowledge economy; the intellectual capital is the main focus. The information technology, network connectivity has enabled education to be linked to global society through new initiatives of having mandatory international exposure of their students – particularly for understanding global and local business environments; networking and partnerships, credit transfers, dual-degrees, joint degrees, joint research programmes, video conferencing based and web-based learning. MIT and Harvard University in USA have put on web free 'on-line courses' which can also be used for the purpose of certification.

4. Current scenario in Indian Higher Education System:

In recent times higher education in India has received a lot of attention with the setting up of the National knowledge Commission (NKC) and

National Knowledge Network (NKN). It has increasingly been realized that the demographic dividend – a proposition that India is among the youngest nations in the world with more than 55% of its population being less than 25 years of age – will not be realized unless India enhances the quantum and quality of its higher education system. It is paradoxical that we do not find adequate talent for the jobs that need to be done with globally set benchmarks of performance; on the other hand, there is an army of unemployable graduates coming out every year from Indian universities. Unless we improve our quality of higher education, this demographic dividend potential might even become a demographic liability. Hence, demand for good quality higher education still is much higher than supply. Simultaneously the issue of inclusive growth and distributive justice has also become a key variable in educational planning process (8, 9).

However, there is enormous complexity that clouds the vision inhibiting goal-clarity in Indian higher education system because of which many a times the debates on education have vagueness about the purpose and its quality with strong ideological biases; regional pressures, vested interests and policy paralysis in the process of taking bold steps in looking at education as a nation building process – beyond rhetoric; lip-service and myopic mindset.

Equally perturbing scenario is the quality and quantity of research in Indian Universities and Institutions. Today, research is a last priority career option. 'When in doubt – try it out syndrome' is plaguing Indian higher education system. Percentage budget allocated to research; number of research scholars / faculty; number of research papers in internationally refered journals in India is much behind China. Perhaps, alarmed by this in recent times a large number of initiatives have been taken with many fold increase in budgetary provision. However, many of these initiatives are yet to show an authentic evidence of Indian higher education having come out of the through.

5. Opportunities and Challenges in Higher Education:

There are enormous opportunities for quality education in the country, particularly for professional education – engineering, management, medical, etc. Some positive societal environmental parameters are:-

a. Enormous demand for good quality professional higher education due to demographic profile of India, where higher professional degree is sought after. Thus for quality driven higher professional education, there is an assured supply of admission seekers for quite sometime in the foreseeable future.

b. An Indian parent is willing to sacrifice their personal comfort to afford a good quality education to their ward. They all have a dream to invest in their child's education even if they themselves did not have education.

c. A typical Indian is perhaps genetically an intelligent person with high degree of intellectual potential and is innovative individually if he or she sees a purpose in it.

d. The age profile of the developed world is favourable to Indian demographic profile. If our educational institutions can nurture 'globally employable' youth; then not only they will contribute to develop India, they will be sought after talent globally. In the fertile environment outside India, they tend to shine thereby bringing glory to the nation.

e. Currently many students are spending huge sums of money for education abroad in USA, Canada, UK, Australia, New Zealand, etc. If a good globally benchmarked quality education is available in Indian universities; then this can save lot of foreign exchange of India.

f. There is growing interest of good foreign universities in networking with Indian counterparts – either through twinning

arrangements or as collaborators or as franchisees. This may help add value by actual and perceived quality enhancement by foreign collaborations.

g. There is enormous private equity participation in higher professional education in past two decades. There is enormous amount of good quality physical infrastructure created through private funding which would have been impossible to create through government sources alone. Nearly 95% of professional higher education in India is in private hands.

However, amidst these opportunities, there are tremendous challenges, too. These have impeded the quality and employability of professional graduates generating negative perceptions about the role and intent of private equity participation in higher education. Some of these challenges; concerns and constraint are as follows:

(i) **Imbalance** – the education in India is victim of imbalances of various kinds – imbalance in focus of primary, secondary and higher education, imbalance in quantity vs. quality; imbalance in vocational and higher professional education and lack of seamless interpretation of technical education system; regional imbalance in supply side; locational imbalance and many other kinds of imbalances. An imbalance is a symptom of disease and can be cured only by removing imbalance by addressing parameters that cause these imbalances.

(ii) **Low focus on ERP** (Education, Research, and Planning) sector – Today, education research and planning (all of which require high intellectual inputs) are perhaps the last resort in our career choice. Social esteem associated with these jobs are much less compared to other executive, administrative services. As a result, there is acute shortage of talented, committed, motivated and inspiring teachers, researchers in the country. This in turn is reflecting on the quality and employability of graduates; value and attitudes and discipline on campuses and in society in general. In economically advanced countries, teaching and research are perhaps much more attractive career options. Salary and emoluments are perhaps not the main reason; it is the lack of 'psychic income' by way of social esteem; academic ambience; opportunity for career advancement, involvement in research and consulting and perceived academic freedom and respect that needs to be looked into. Only an inspiring and talented teacher can bring in quality to education. While other factors such as physical ambience; pay and perks are hygiene factors; the job motivators are the parameters that give 'psychic' income. Perhaps an analogy from the cell phone will provide insight on this issue. Physical infrastructure is like a handset of a mobile phone, whereas the faculty is its SIM card. Without a powerful SIM card, the handset may be just a costly paper weight. Our higher education – particularly professional education needs to introspect on this analogy and look at the handset and the SIM card in symbiotic relationship in totality.

(iii) **Regulatory framework**:- Perhaps the regulatory framework needs to do revisit its role. Instead of control and command framework, it needs to look at 'facilitate and nurture' concept of regulatory role. Perhaps the word regulation itself has negative connotation and could be replaced with 'Facilitating' framework with focus on helping, hand-holding, nurturing, supporting quality education with shared perceptions of the 'regulator' and the 'regulated'. A greater focus on quality development, incentives for quality enhancement and faculty development, research support in much larger magnitude, advice on enabling systems and processes that are quality-driven and informing them on parameters that contribute to excellence will yield desired results. Accreditation by a professional, respected, objective and globally acceptable agency alone can be used as a major control mechanism. Efficiency; transparency and supporting attitude should be key watchwords of regulatory framework. Shift focus from approvals to accreditations and benchmarking.

(iv) **Focus on Research**:- Research is a differentiator between higher education and primary (basic) and secondary education. Research focus, research funding, research topics and researcher's quality and motivation levels are perhaps a cause for concern in India. Vrat (15) has identified export of 'knowledge products' as a major opportunity area for India; which is only possible if research and innovation is given major attention and not merely a lip service. Private investments in educational institutions tend to shy away from investing in research (both basic and applied) as these investments do not give immediate returns. Many such institutions treat research as a 'cost-centre'. However, it is the good quality research only that builds global brand of a university. The industry also is neither willing to fund research; nor to hire researchers at attractive packages. As a result, there is less interest of talented persons to pursue research. Perhaps every university – irrespective of form of ownership should have policies in place, supported by systems and finances to ensure that teaching and research are perceived by all stakeholders including faculty as two sides of the same coin. As a general guideline at least 10% of annual budget and 10% of total student enrollments in a university should be research scholars both full time and part time and it should become an important factor in faculty performance appraisal.

6. Concept of Academic supply Chain in Education:

Perhaps one of the major reasons for lack of holistic management of educational systems is that we see education in fragmented segments – viz. basic education, secondary education, higher education and technical education etc. Seen in isolation may lead to imbalances and lead to demand-supply gaps and 'Bull-Whip Effect' (2), so much talked about in the industrial supply chains for products and services. The concept of academic supply chain will look at entire education and 'educational flows' through the supply chain in an integrated manner rather than isolated manner. Fig.1 shows a conceptual framework of an academic supply chain (4) where various segments of educational flows are cascaded. This will eliminate the needless debate on whether higher education is more important than secondary or basic education. Unless quality and numbers in secondary education that enter higher education is excellent; the output from higher education sub-systems will not be excellent. Similarly, unless quality and numbers from basic education that enter secondary is large; the quality of secondary education will not improve; which in turn will negatively impact higher education. The strength, quality and reliability of a chain is governed by its weakest link. Hence all 'links' in a chain needs to be designed with quality and reliability focus, if the quality and reliability of Indian education system is to be strengthened. This analogy can throw enormous fresh insights into a holistic design, operation and management of a quality-driven educational system. All the methods and techniques of designing an optimal academic supply chain; designing performance metrics and investments in the 'flow' of 'academic products' through the supply chain can perhaps be applied in this context. Concept of reverse supply chain could be developed to gain insights about 'recycling'

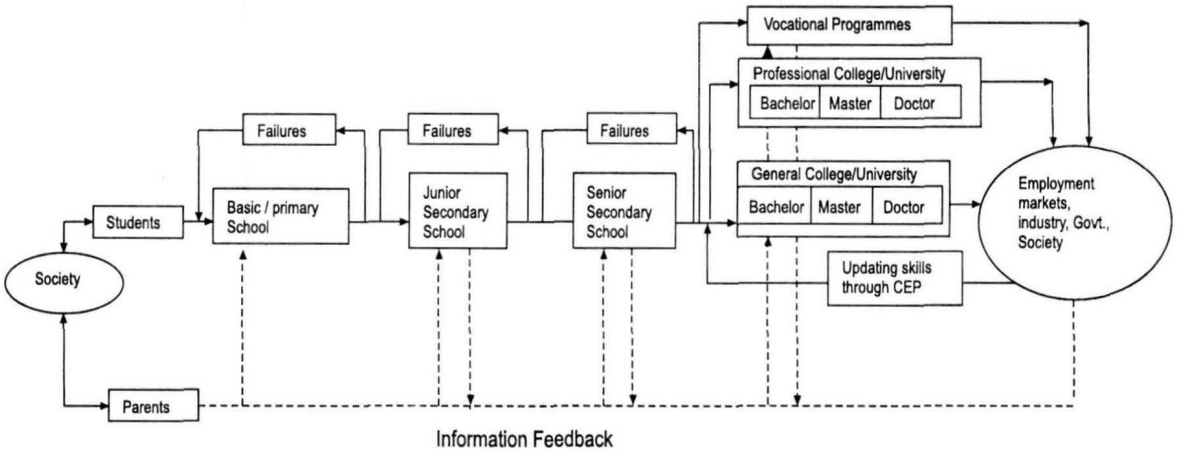

Fig. 1: Academic Supply Chain

of 'academic flows' due to failures or due to need for skill up gradation or refreshers courses. This concept will be integrative rather than divisive, as being perceived at present.

7. "Bull-Whip' Effect in Educational Supply Chain:

One major problem that plagues a conventional industrial supply chain is called amplification effect or 'Bull-Whip' Effect (2). This is the increased uncertainties of demand distortions as the demand at customer end propagates to upstream end of the supply chain. It is now a well established phenomenon in supply chain management and needs to be curbed or eliminated because demand distortions can lead to costly mistakes in capacity planning because of bull-whip effect.

In an industrial supply chain; bull-whip effect is caused due to sequential flow of demand information; from downstream to upstream with time lags and aggregation effects from retailer, to wholesaler, to manufacturer, to supplier of raw materials. Its negative consequences are excessive inventory, shortages, excessive costs, delays, non-competitive supply chains. The reasons of bull whip effect could be aggregation in demand processes and forecasting, long lead times, incentives offered at different stages, pricing and discounts influencing demand and other behavioural aspects. In SCM context bull-whip effect has been researched extensively in past decade and a half. But in academic supply chain context the phenomenon has not been so far investigated. Gagnon (4), Habib and Chamnong (4), O'Brien and Deans (3) have given the concept of educational supply chain for strategic educational planning but the concept is still at a very nascent stage, though its effect is already causing enormous disturbances in the context of (say) technical education system in the country as illustrated in the following sections.

8. Manifestation of Bullwhip Effect in Higher Technical Education:

In this section, demand distortions when demand information travels from customer end to supplier end are illustrated in the context of technical education planning. Since it takes 4-5 years of lead time in training an engineering graduate; parents and admission seekers will be swayed by the current market scenario; but by the time they graduate, the market demand situation would have been different because of long duration of training for B.Tech. and no scope for mid-term correction once an admission is taken. Thus when they graduate, there may not be market demand for the subject they had

chosen. This sends scare upstream and admissions go down, leading to possible shortage when they graduate. Thus in perpetuity shortage and surpluses of skills are experienced and educational supply chain is plagued by hyper sensitivity of system behaviour leading to shortage and surpluses of college capacities created. Two illustrations validate this point. Due to information Technology boom; almost every college increased its intake capacity in highly magnified manner and when actual demand belied expectations, scare syndrome, unfulfilled seats led to the colleges to close down IT departments. Reverse happened in the case of civil engineering. Hardly any private college established civil engineering departments in past 15 years leading to acute shortage of civil engineers now. Thus due to lack of long term demand forecast of technical manpower such distortions will continue to take place. Even in technical education per se; due to the bullwhip effect phenomenon; enormous over capacity in colleges got created which eroded quality, employability and led to faculty crunch resulting in the request of 150 engineering colleges to AICTE to close them down due to lack of admission seekers. One may justify it by saying that let the market forces prevail, but it is a very costly experience. Perhaps the analogy of bullwhip effect in industrial supply chains and strategies to reduce this effect can provide valuable insights to planning of tertiary education including technical / professional education. Similar effects can be seen in loss of interest in science education and also in research. This will lead to acute shortage of scientists and researchers which will then become a craze. Thus system keeps on facing fluctuations in demand and supply.

Since in academic supply chain; output of preceding stage becomes input to succeeding stage; an integrated academic supply chain focus will ensure that each stage performs optimally. IT enabled academic supply chain will reduce demand variability. This also calls for involving students; parents as suppliers of input 'raw material' to educational institutions; and employers (including self- employment) in policy formulation, capacity creation. A greater involvement of all stake holders across the entire educational supply chain will lead to more effective and efficient design planning, operation and control of academic 'flows" into-through and out of educational systems.

9. Quality Variability: A Major Concern in Higher education

As is widely known in quality management; the variability of quality characteristics is the key culprit in quality assurance. Indian education ,in general, and the higher technical education, in particular, is a classical manifestation of this extreme variation in quality. Vrat (16) has illustrated this through an example of wide variation in % students admitted to engineering colleges in a state technical university varying from 22% to 97% who could complete a 4 years degree course in 4 years as a good indicator of quality. He has termed this variation as "world class to third class" phenomenon. The spectrum of quality variation is so extreme that for few so-called "world class" institutions or Institutions of National Importance; there is so much demand almost amounting to craze for seeking admissions. In IIT system for about 10,000 seats every year; around 5 lakhs aspirants toil for years to prepare for JEE with multiple filters even to get into coaching. The fact remains that irrespective of the admission process or mode of JEE pattern; only 2% of aspirants alone can make it to IITs. On the other hand, there are engineering colleges which can not even fill their seats. 150 engineering colleges asking AICTE to close them down this year is a manifestation of the other extreme of quality (or the lack of it).

If Indian education system is to come of age; this extreme variability in quality needs to be addressed on priority basis. A wide spectrum of institutions – Institutions of National Importance, Central / State / Deemed / Private universities, Technical Universities only of "affiliating nature" are perceived to have a very wide spectrum of quality variations. Even the funding pattern and

quantum of R&D funds widely vary across the entire spectrum. On one extreme of this spectrum we have institutions like IISc. and IITs (particularly older ones) which have very good funding, corpus fund endowments, sponsored research; whereas there could be (are) universities in states struggling to make both ends meet and major budget goes on payment of salaries. This wide gap in funding is also not very conducive to overall quality of education in the country.

10.The Matthew Effect in Higher Education

A wide gap in the quality level of technical institutions and other higher educational institutions and universities appears to have resulted in the anomalous situations manifested by the Matthew Effect, a term coined by sociologist Merton (11) in 1968; which takes its name from biblical Gospel of Matthew where "the rich get richer and the poor get poorer". Higher education, particularly technical education seems to manifest this effect in India. If we analyze the budget; R&D funding of some top notch institutions such as IITs and IISc Bengaluru, we will find that 20:80 rule manifested by Pareto's law of maldistribution appears to be valid. Simply stated the Pareto's law says that in a large system there are "Vital Few" and "Insignificant Many". Perhaps 80% of higher technical education budget is spent on 20% of the institutions and 80% of the institutions manage with 20% of the budget. Obviously, with such a gap in the funding, quality variations are bound to be there. Merton (12) also shows the effect of such accumulated advantage in science.

Pareto's Law of maldistribution as the name implies is 'maldistribution'. If Matthew Effect (which is perhaps another way of stating the same) is superimposed on Pareto's Law; these already rich institutions get richer as all major consultancies, R&D projects, foreign tie-ups, etc. go to these institutions because of their perceived quality and 'hype' created around them. While we should be legitimately delighted about these well performing institutions; yet, there is a need for a dispassionate social-cost benefit analysis of the impact of these 'hyped' institutions in terms of their role in the technological development of the nation and their role in improving the general quality of technical education in the country and contribution to industrial global competitiveness of Indian industries through R&D support. In world rankings; even these prestigious, elite institutions do not find much place; whereas Chinese universities which were not there in the list 20 years back are now present in many top rankings globally. Perhaps we need to introspect on this count to avoid symptoms of 'Hype Cycle' (7) proposed by Gartner in 1995.

The hype cycle characterizes the 'over-enthusiasm' or 'hype' that triggers expectations and reaches peak of inflated expectations. The over-enthusiasm and unrealistic expectations; when not fulfilled leads to trough of disillusionment and the failure to meet expectations results in disappointment. Subsequently despite getting out of fashion, the business continues through 'slope of enlightenment' finally reaching the 'plateau of productivity'. This leads to stability and sustainable business. Fig. 2 (a) shows the typical phases of the 'Hype Cycle'.

This analogy can be very insightful to analyze whether some of our 'hyped' educational institutions have reached the plateau of productivity or are still in the 'Peak of Inflated Expectations'. However; the higher technical education in general with huge expansion in past 15 years raising peak of inflated expectations in the society is perhaps going towards 'trough of disillusionment' and perhaps those which survive this trough, will eventually stabilize at their level of 'plateau of productivity', which will be specific to the institution. Perhaps looking at the higher education-particularly technical education from 'hype cycle' approach can moderate our expectations from the system to prevent from 'over-hype' which eventually leads to subsequent trough of disillusionment. Fig. 2

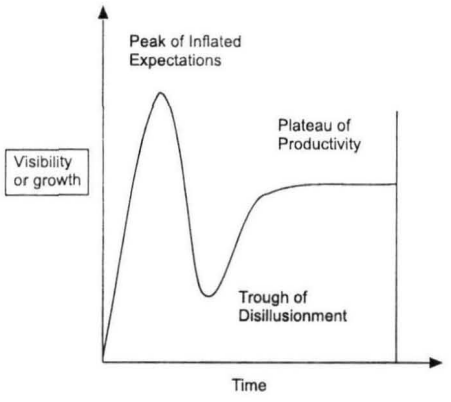

Fig. 2 (a) Hype Oriented Growth

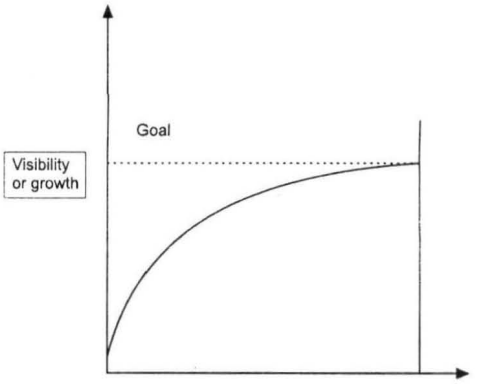

Fig. 2 (b) Balanced Growth

(b) shows the holistic growth without 'hypes' in a goal seeking manner. Perhaps strategy suggested by Fig.2 (b) is a better and planned approach to technical education than hype oriented growth shown in Fig. 2 (a).

11. Suggested Road Map

Keeping in mind tremendous opportunities for India due to increasingly global and knowledge driven economy and demographic dividend potential; the following strategic interventions may identify the roadmap to take Indian higher education system to its desired goal.

I. There has to be a strong national conviction and political will to make 'Education, Research and Planning" as truly respectable and rewarding career options so that the best and the brightest in the society take these professions (which all require intellectual capital inputs) as their preferred career choice. If this happens; these role model teachers and researchers will be able to provide inspirational leadership to our educational systems.

II. Look at education in a seamless 'academic talent supply chain' instead of isolated focus on basic, secondary and higher education with very little system integration. Society should look at education as a part of nation building process; educational institutions as 'nursery of future talent pool' of the society and employers and education be seen in holistic sense for global employability with an appropriate mix of knowledge, skills and attitudinal development of the students.

III. Reduce imbalance of any kind in any educational system which is a symptom of poorly managed system. This calls for meticulous planning, resource allocation, monitoring and quality assurance at each segment of the academic supply chain.

IV. Leverage technology – educational and information; to improve academic productivity; create networked organization with global partnership and share intellectual resource to optimize costs of delivery.

V. In order to develop knowledge products – hardware, software and humanware – emphasize on quality and excellence as a non-negotiable objective. Numbers without quality have no meaning.

VI. Establish facilitating, objective, fair, transparent and efficient regulatory framework to nurture educational system rather than beaurocratic, command and control driven inefficient framework of

regulating educational systems and processes.

VII. Exert any amount of efforts to pro-actively locate and attract outstanding persons of merit to join education and research and enable life long opportunities for them to contribute their wisdom to the cause of education by giving them due dignity, respect and 'psychic income'. Let age not waste their talent if their health permits to contribute and they have a track record of excellence.

VIII. Minimize extreme variations in quality, funding,, processes, and performance appraisal systems as well as compensation packages among various types, levels and nature of education supply chains. Aim at minimizing manifestation of the Matthew's Effect a Hype cycle or Bullwhip Effect in design, planning and operation of educational systems.

IX. Educational institutions should focus – particularly the technical and management institutes on "employability" and not on placement statistics. Package based placement rankings of institutions can lead to distorted perceptions of quality among society.

X. Leverage e-learning, e-library, e-journals, cloud campus, virtual class room concept; networking and global collaboration with flexibility of student / faculty exchange and credit transfers to improve productivity; cost – effectiveness and reach of educational institutions / universities.

12. Concluding Remarks

This paper has attempted to reflect on the current state of higher education in India and identified opportunities and challenges particularly in the context of globalization of economy and emerging knowledge-driven society. It has suggested a holistic approach to education as 'academic talent supply chain' and cautioned against negative side-effects of segmented approach such as information distortions, excessive quality variability and hypes driven promotion of educational systems. It also identifies strategic interventions needed to realize India's demographic dividend in the era of globalization.

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