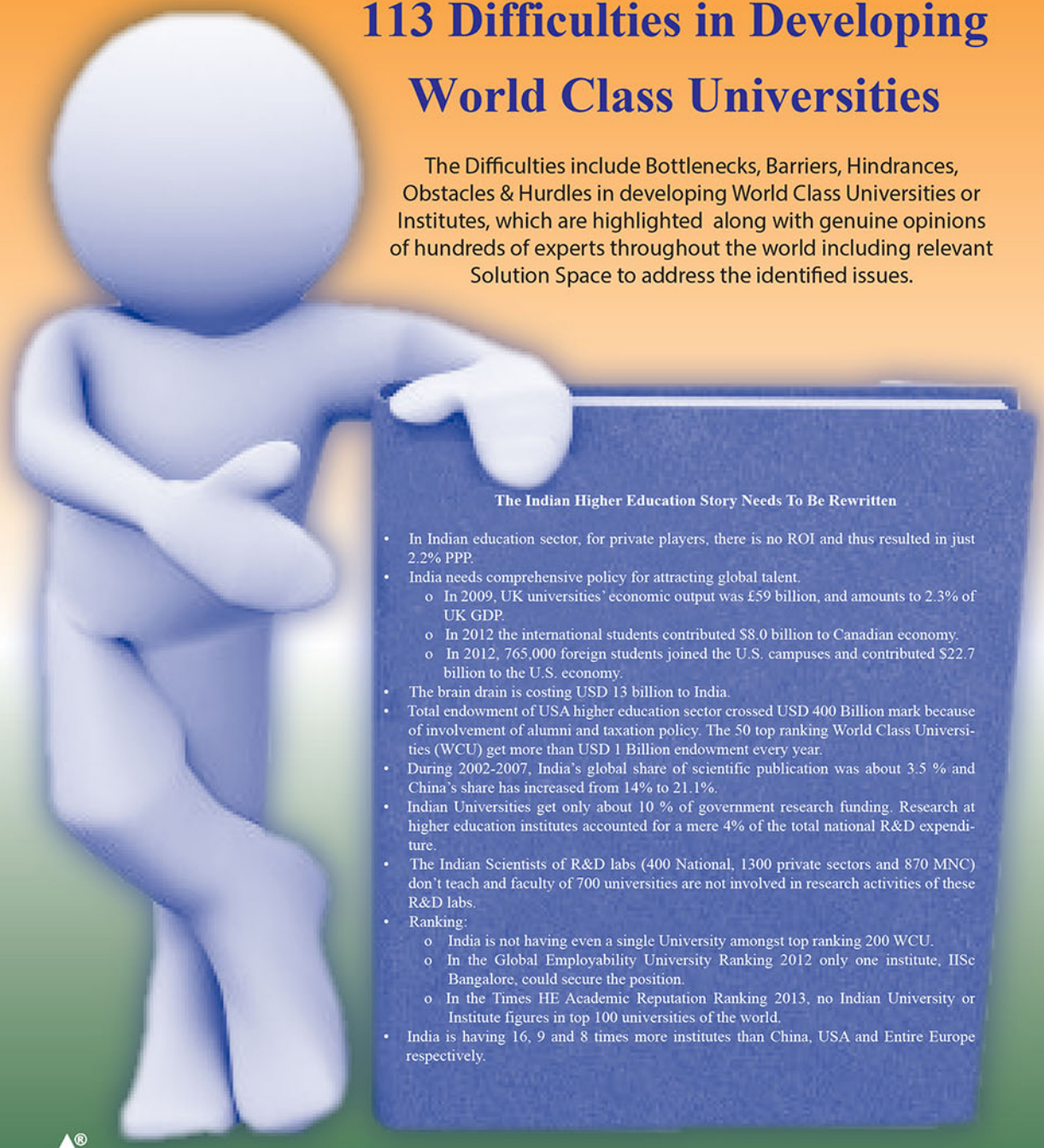
Fourth Title in the Series of Books on World Class Universities or Institutes

113 Difficulties in Developing World Class Universities

The Difficulties include Bottlenecks, Barriers, Hindrances, Obstacles & Hurdles in developing World Class Universities or Institutes, which are highlighted along with genuine opinions of hundreds of experts throughout the world including relevant Solution Space to address the identified issues.



SPD®

Compiled by
Dr. Rajiv V. Dharaskar

113 Difficulties in Developing World Class Universities

This book covers almost every difficulty in developing World Class Universities or Institutes in India along with solution space, which can help to frame policies and strategic plans for optimum results on every front, considering ground realities. This knowledge is essential for every academician, who is interested in overall personal, institutional and national growth.

The difficulties includes: Unable to attract global talent, shortage of faculty, vacant faculty positions, brain drain, social status of teacher, attracting foreign players, working conditions & global standards, not-for-profit clause and PPP model, budget allocation but not spending, UGC budget, 90% budget for operating expenses, reluctant to generate revenue, tax system and endowment, FDI, fee fixation and capitation fees problem, affordability, salary structure and service condition, privilege to public institutes, funding for private institutes, invest in equity market and no carry forward surpluses, poor research outputs, S&T Indicators, citation, number of PhD and research publications, patents, universities and research laboratories should not be separate, R&D in Indian industries, focus shouldn't be on bringing technologies, research motivations, mostly for career advancement, research funding: universities gets 10% & higher education gets just 4%, need of research institute involved in teaching, innovation and creativity, focus of premier institute on undergraduate education, research component at undergraduate level, post graduate facilities, curriculum design problem, missing post-doctoral culture, skewed research growth, virtual brain drain by NMC, alumni association, international accreditation, restrictions on foreign players, academic collaborations, internationalization, threat of globalization lack of manpower may shift the business, complex regulatory mechanism, poor quality of higher education, inadequate freedom, not clear direction, coordination of regulatory bodies, growth of affiliated colleges and universities, recognition from university but not from UGC, overloaded system, top most institutes are not universities, loopholes in legal systems, no undergraduate education at university, need of performance based regulatory mechanism, strange norms, WCU always limited in size and not scalable, needs professional management, freedom and training, 75% not accredited, scattered funding schemes, no objective for any course, rigid curriculum and lack of multidisciplinary approach, choice based inter university credit system, misuse of platform, vocational training, involvement of teachers in politics, teachers union, not-for-profit clause is only on paper, academic performance indicator, education as a service industry, retirement age, state wise policy variations and skewed growth, states reluctance for reforms and implementation problems, parliament over delay in passing crucial bills, GER and economic growth, political involvement, the mindset, technology redefining university, global employability, missing center of excellence, industry-institute interface, technology transfer, incubation centers, industrial income, industry inertia & corporate social responsibility. The views on these issues are quoted and discussed along with possible feasible solutions.

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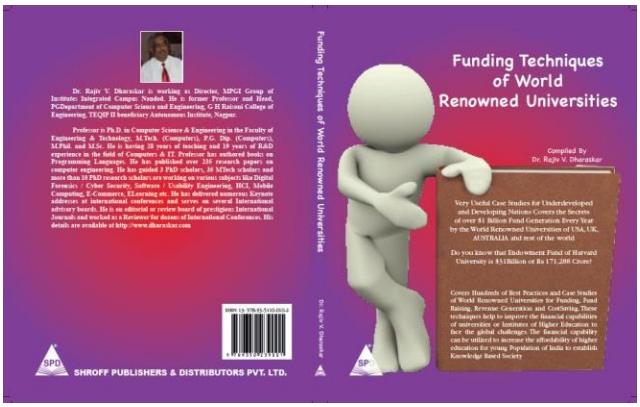
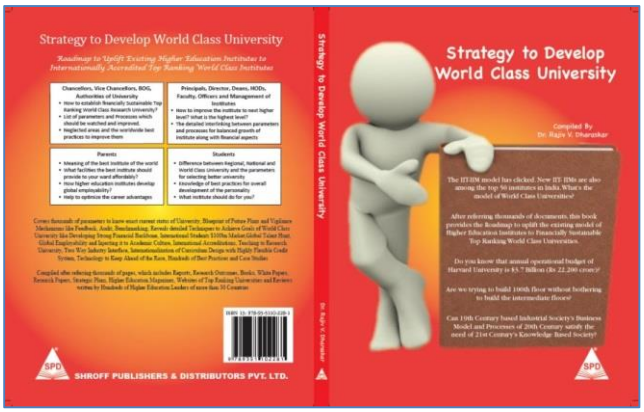
Dedicated To

Dignitaries who are taking keen interest in developing World Class Education and Universities in India	
Hon. Pranab Mukherjee President of India *Great Encouragement for establishing World Class Universities*	
Hon. Padma Vibhushan Prof. Yashpal Former UGC Chairman *Changing the dimensions of Higher Education*	
Hon. Padma Bhushan Sam Pitroda Chairman Knowledge Commission *Major Contribution for Higher Education Reforms*	
Dr. Pawan Agarwal Adviser (Education), Planning Commission, Government of India *Excellent research contribution in the field of Reforms in Higher Education*	
Dr. Jamil Salmi Member the International Advisory Network of the UK *An Author of two World Bank reports "The Challenge of Establishing World-Class Universities" and "The Road to Academic Excellence The Making of World-Class Research Universities".*	
Dr. Philip G. Altbach Professor Boston College, USA *An Author of "The Road to Academic Excellence The Making of World-Class Research Universities: The World Bank Report*	
Dr. Shyam Sunder Professor of Accounting, Economics, and Finance at the Yale School of Management *Excellent Research contribution on Higher Education Reforms in India*	
India can have 'Top 100 World Class Universities' provided there is wholehearted involvement & unconditional support from Politicians, Bureaucrats, Central and State Governments, Administrators, Teacher Unions, Faculty, Students, Alumni and Industry	

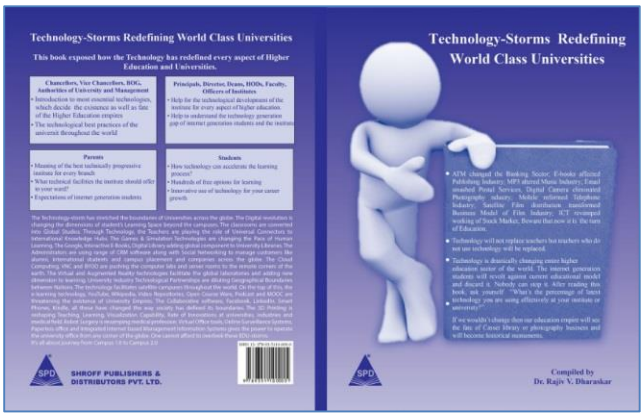
Published Books



Funding Techniques of World Renowned Universities (204 pages, 251 References)



Strategy to Develop World Class University (500 pages, 444 References)



Technology-Storms Redefining World Class Universities (412 pages, 523 References)

Preface

To establish World Class Universities in India, I have written series of books namely,

- "Funding Techniques of World Renowned Universities", Shroff Publication (SPD)
- "Strategy to Develop World Class University", Shroff Publication (SPD)
- "Technology-Storms Redefining World Class Universities", Shroff Publication (SPD)

In these books, I have quoted thousands of Best Practices of World Class Universities in the specific areas where we need to pay attention. While writing these books, I had intentionally avoided the discussion on difficulties in developing World Class Education and Universities. Now it is time to introspect and analyze the Indian scenario. Nobody is responsible for these obstacles and bottlenecks. It's a challenging issue and very difficult to probably present it without hurting anybody. I have tried to avoid sharp and personal comments, irrelevant criticisms on policy matters and many controversial comments. While painting the true picture, I have kept the balance and tried to cover both the sides.

The future of Indian economy depends upon growth of higher education sector. It should be world class if India wants to be amongst top nations in the world. To develop world class education system in India, we must know the actual problems related to internationalization, global talent, funding, research, regulatory mechanisms, role of central and state governments and so on. Unless we remove the hurdles and obstacles, the progress is impossible.

In last 150 years, all the our great generations of Policy Makers, Politicians, Bureaucrats, Visionary Leaders had taken appropriate and balanced decisions, which were most suitable for political, economic, social and international scenarios prevalent during those days. Those were right decisions at right time. As per the demand of the relevant situation, they had taken those decisions. In due course of time the situation and needs had changed. The old solutions became hurdles. The old model doesn't suit the needs of 21st century. While taking crucial decisions about framing the long term policies, the visionary leaders can only decide the positive directions in which the entire nation should move. The results of these policies depend upon hundreds of uncontrollable internal as well as external factors, which are sometimes invisible and unpredictable. One can't blame or criticize them for some accidental or undesirable outcomes. Dr. Sam Pitroda described todays higher education scenario in one sentence "19th Century's Mindset, 20th Century's Process and 21st Century's Needs"

At the 150th Anniversary of University of Mumbai, Prime Minister Manmohan Singh said that (also stated in The Rashtriya Uchchatar Shiksha Abhiyan Report) "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-third of our universities and 90 per cent of our colleges are rated as below average on quality parameters... I am concerned that in many states university appointments, including that of vice-chancellors, have been politicized and have become subject to caste and communal considerations and there are complaints of favoritism and corruption." [91] [92]

Remember that every coin has two sides. For example

- On one side there is a hue and cry about political interference in education system. On the other side criticizers accept that "the capital-intensive professional higher education sector has particularly benefited from the entry of politicians, known for their deep pockets, management skills and fund-raising capability. Because of the initiative of these politicians, India could raise such a huge higher education system, which is largest in the world."
- Most of the educationist says that "Indian higher education system is over regulated". It's partially true but if you relax the regulatory mechanism then there is a danger of uncontrolled malpractices, which no one can afford.
- Few academicians said that "Private participation in higher education system can degrade the quality and they quote few examples." It is partial truth. Always there are exceptions. The 10% to 15% adulteration is common in every country. Don't blame all the private players. There are number of excellent self-financed reputed premier institutes of India established by private players like Tata, Birla, Reliance, Thapar, Symbiosis, Mittal groups etc. and that too before independence or just after independence. The spectacular economic growth of India is just because of their initiative.

While analyzing the national level crucial problems of education sector related to 550 million young Indians, one must consider each and every aspects, hurdles, deadlocks and bottlenecks to get realistic picture. Sometimes highlighting these hurdles is pinching to present generation's Leaders, Policy Makers, Politicians, Bureaucrats, owners of various institutes and all the stakeholders. But they are not solely responsible for current status of the situation. Everybody including old generations, which may not exist in the world today, is responsible for current situation. There are many driving forces, which had pushed the system at this level like political and economic status of the nation, culture as well as mindset of the society, historical background of the nation, availability of visionary leaders, status of industrialization, national priorities and so on. There is no point in blaming anybody. Everybody moved in a right direction but sometimes situation couldn't move in the expected direction. The right way is, with positive mindset, inspect and list out all the difficulties and if possible, with your little intelligence, suggest few directions, which could help to pursue the solutions and so that nation can progress.

The education sector is very peculiar in nature.

- Every industry produces tangible measurable products. But the education industry produces intangible products and processes, which cannot be measured directly.
- The student act as a raw material, finished product, consumer, partner and brand ambassador too.
- The higher education policy is a very sensitive issue and tightly coupled with variety of legal, economic, social, bureaucratic and political issues.
- Mostly problems in education fields are related to "education culture" and can't be changed instantly. Sometimes few decades are required for transforming the educational cultural. To grow the excellent education culture needs freedom and autonomy. If you need faster results then you will have to opt for tighter regulatory mechanisms. If you relax the regulatory mechanism beyond certain limit then economic, social and political forces spoil the systems and create threat to Equity and Access of knowledge. In developed countries, they have invested few decades to develop better 'education culture' and after that relaxed the regulatory mechanism and handed over the control to 'disciplined society'.

In this book I have pointed out 113 difficulties along with the wide solution space (if it exists). I have included comments and views of many experts to get the clarity of each problem. Once the problem is well defined and probable solution space is available then finding optimum solution in given constraint is quite an easy job.

The quality of education depends upon hundreds of inter related factors. Thus partial reforms don't work. This is the major cause of failure of education reforms in many nations. In the field of higher education if you are interested to provide realistic solution then before suggesting reforms you must understand almost every problem in depth. In this book, I have sincerely tried to identify every bottleneck, barrier, Hindrance, Obstacle & Hurdle for establishing world class education system and universities in India. Considering all difficulties and constraints, I even tried to provide reasonably better solution in the last chapter.

The first chapter of this book gives overall introduction of the higher education sector of India. This chapter also highlights the global standing of Indian Universities and Indian higher education system. In addition to this, I have also covered the benefits of World Class University (WCU), characteristics of WCU and list of related difficulties.

The chapter 2 to 8 covers all the difficulties in detailed along with solution space. The chapter 9 to 14 gives various available options and solutions for establishing WCU in India. The chapter 15 gives the possible optimized solution.

I have compiled this information in the form of book for national interest. How to improve the university or higher education institute is always a major question in front of all the academicians. To help them to find this information at one place, I have put these efforts and published series of 4 books. The credit of each point mentioned here goes to respective authors mentioned in the references. I am amazed to see their enormous contribution in the field of higher education. I could refer only few articles written by them and could include very few points in this book. For detailed information regarding any issue, please refer their original articles and if needed search their other articles on the Internet. This is not just 300 pages compiled work but pointers to articles of thousands of pages, contributed by authors, who have spent their whole life for the cause of education of mankind. I am thankful to them.

Many 2013-14 Times Higher Education World Top 200 Ranking World Class Universities like California Institute of Technology (CalTech) (Rank 1), Massachusetts Institute of Technology (MIT) (Rank 5), Georgia Institute of Technology (Georgia Tech) (Rank 28), Korea Advanced Institute of Science and Technology (KAIST) (Rank 56), KTH Royal Institute of Technology (Rank 117), Tokyo Institute of Technology (Rank 125), Karlsruhe Institute of Technology (Rank 154) and Rensselaer Polytechnic Institute (Rank 181) are Universities but use the word Institute for University. Thus, throughout the series of these four books, I have followed the same convention and **used these words "University" and "Institute" interchangeably** at many places.

I have taken maximum care to give the authentic information but in case at some place, if you find some discrepancies then forgive me and help me to correct it in next edition of this book. I am sure; the readers will like and welcome my sincere efforts to enhance the standards of higher

education system. I hope this book will act as catalyst and will help in improving the overall higher education system, which can compete with Universities in developed countries.

Dr. Rajiv V. Dharaskar

About Author

Dr. Rajiv V. Dharaskar is working as Director, MPGI Group of Institutes Integrated Campus Nanded. He is former Professor and Head, PG Department of Computer Science and Engineering, G H Raisoni College of Engineering, TEQIP II beneficiary Autonomous Institute, Nagpur. He had started his career at MIET, Gondia (1984-2008).

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He is an author of the books

- "The Hidden Treasure of C" from BPB Publications
- "Funding Techniques of World Renowned Universities" from Shroff Publication
- "Strategy to Develop the World Class Universities", Shroff Publication
- "Technology-Storms Redefining World Class Universities", Shroff Publication

He has more than 260 research papers to his credit. He has guided 3 PhD scholars, 35 MTech scholars and more than 10 PhD research scholars are working on various subjects like Digital Forensics / Cyber Security, Software / Usability Engineering, HCI, Mobile Computing, E-Commerce, E-Learning etc. He has delivered numerous Keynote addresses at international conferences and serves on several International advisory boards. He is on editorial or review board of prestigious International Journals and worked as a Reviewer for dozens of International Conferences and journals. His details are available at http://www.dharaskar.com

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Brief Contents

Detailed Contents

Abbreviations

AICTE	All India Council for Technical Education
AIU	Association of Indian Universities
ARWU	Academic Ranking of World Universities
ASSOCHAM	Associated Chambers of Commerce and Industry of India
BRIC	the countries Brazil, Russia, India and China
CSIR	Council of Scientific and Industrial Research
DRDO	Defence Research and Development Organisation
FICCI	Federation of Indian Chambers of Commerce and Industry
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
GDP-PPP	Gross Domestic Product Purchasing Power Parity
GER	Graduate Enrollment Ratio
GMAT	Graduate Management Admission Test
GRE	Graduate Record Examinations
HE	Higher Education
IPR	Intellectual Property Right
IRAHE	Independent Regulatory Authority for Higher Education
ISRO	Indian Space Research Organisation
MCI	Medical Concil of India
MHRD	Ministry of Human Resource Development
MIT	Massachusetts Institute of Technology
MNC	Multinational Corporation
NCHER	National Commission for Higher Education and Research
NTU	Nanyang Technological University
OECD	Organisation for Economic Co-operation and Development
PE	Private Equity
PPP	Public Private Partnership
PWC	PricewaterhouseCoopers, multinational professional services firm at UK
QS	Quacquarelli Symonds
ROI	Return on Investment
RUSA	Rashtriya Uchchatar Shiksha Abhiyan
S&T	Science and Technology
TIFR	Tata Institute of Fundamental Research
UGC	University Grants Commission
VIT	Vellore Institute of Technology
WCU	World Class University
WIPO	World Intellectual Property Organization

Chapter 1: Overview, Global Standings, Need and Benefits of WCU

World-class universities thrive in an environment that fosters competitiveness; unrestrained scientific inquiry; and academic freedom, critical thinking, innovation, and creativity. [1][2]

Philip Altbach, Famous American Author & Professor, Boston College points out that: "Everyone wants a WCU; no country feels it can do without one. The problem is that ***no one knows what a WCU is****, and* ***no one has figured out how to get one****. Everyone, however, refers to the concept. Many of those seeking to identify "world-classness"* ***do not know what they are talking about****". [3] [4]*

Confederation of Indian Industry (CII) white paper 2013 stated that "In the new global economy, wealth is no longer measured in terms of natural resources, raw materials, production output or other conventional means. ***Growth is made possible by intellectual capital, human talent, creativity, knowledge, skills and the greatly expanded capacity of people to deal with complex systems****. There can be no progress without right type of education. There can* ***be no elevation without education****." [5]*

Sam Pitroda, Advisor to Prime Minister of India, said that "Prime Minister Manmohan Singh is genuinely concerned about Higher Education as a result six years ago he decided to launch National Knowledge Commission (NKC) with clear focus on education … He was very clear from day one that ***without focus on higher education, we will not be able to beat our growth targets for the next 20-25 years to come.****" [329]*

1.1. Overview of Indian Higher Education System

1.1.1. Overall Picture

In terms of number of higher education institutes the Indian has the Largest Higher Education System of the World, with over 700 universities, over 35,539 colleges, 933,761 teaching staff and 20,297,126 students (student-teacher ratio: 21.7). In terms of students enrolled for higher education, India is second largest system of the world. The report of FICCI Higher Education Summit 2012 namely "Higher Education in India: Twelfth Five Year Plan (2012–2017) and beyond" has highlighted the higher education issues very nicely. [6] [7]

- Number of Universities: 700
    - Institute of National Importance and Other University Level Institutes: 67 (10%)
    - Deemed Universities: 129 (18%)
    - Private Universities: 154 (22%)
    - State Universities: 306 (44%)
    - Central Universities 44 (6%)
- Number of Colleges: 35,539 [7]

The Human Resource Development Minister Kapil Sibal, in his keynote address on 'Diaspora and Education: The Emerging Opportunities' at the inaugural session of the 9th Pravasi Bharatiya Diwas **2011** at Vigyan Bhawan in Delhi, stated that "Today 14 million people are served by 600 universities, 26,000 colleges. But in 2020 considering a gross enrolment ratio of 30 per cent this figure will touch 40 million. So, in the next 10 years we will have to create 1,000 more universities and 45,000 colleges to cater to such demand." [8] [9]

The global picture is very interesting.

SN	Year	Country	Total Number of Institutes	Total Enrollment	Average enrollment per institute
1.	2010	USA	4495	21,000,000	4671
2.	2010	China	2305	21,446,570	9304
3.	2010	Europe	4000	20,000,000	5000
Total USA, China, Europe			**10,800**	**62,446,570**	**5782**
4.	2012-13	India	**35,539**	20,297,126	**571**

Table 1.1: Number of student enrollment per institute in USA, China, Europe and India [6] [10] [11] [7]

For the **62.44** million students of **USA, China and entire Europe** have just **10,800** institutes, whereas in India for 20.29 million students we have 35,539 institutes. That is, **we have 10 times more institutes**. If you follow the path of USA-China-Entire-Europe then

- India should have only 3510 institutes i.e. less than 10% of existing capacity. I felt to understand "**Why India requires 10 times more institutes than total number of institutes of USA, China and Entire Europe?"**

- In 2012, the GER was 15%. Our target GER for 2020 is 30% and would require 2 times more facilities to accommodate about 40 million students. If we follow the path of USA, China and Entire Europe then India would require total 7020 institutes. That is just 20% of India's existing capacity.

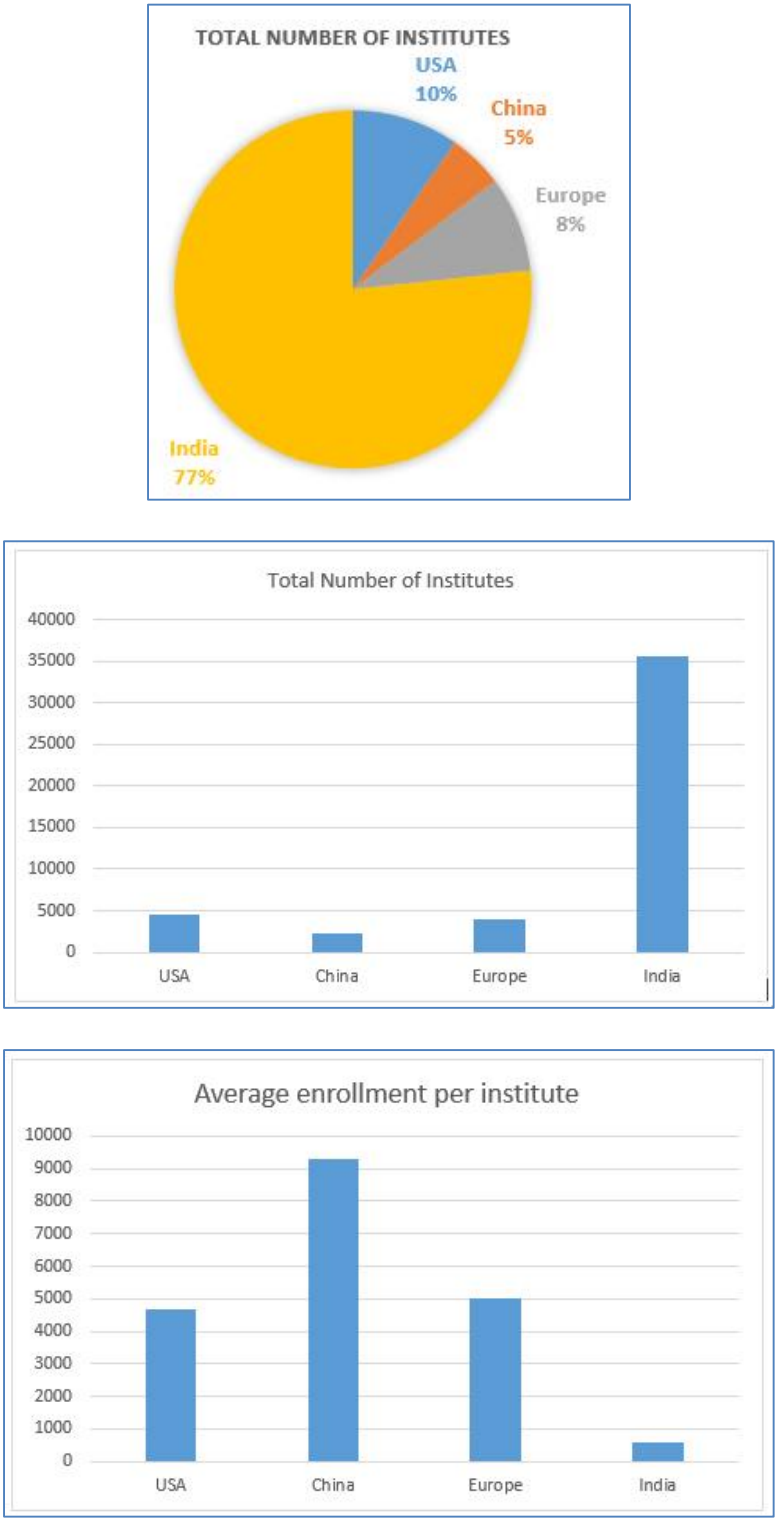


Fig. 1.1: Total number of institutes and Average enrollment per institute

India spends about 11.5 per cent of its total annual budget on education. The expenditure on education as percentage of GDP was 3.1 per cent in 2011–12. [12]

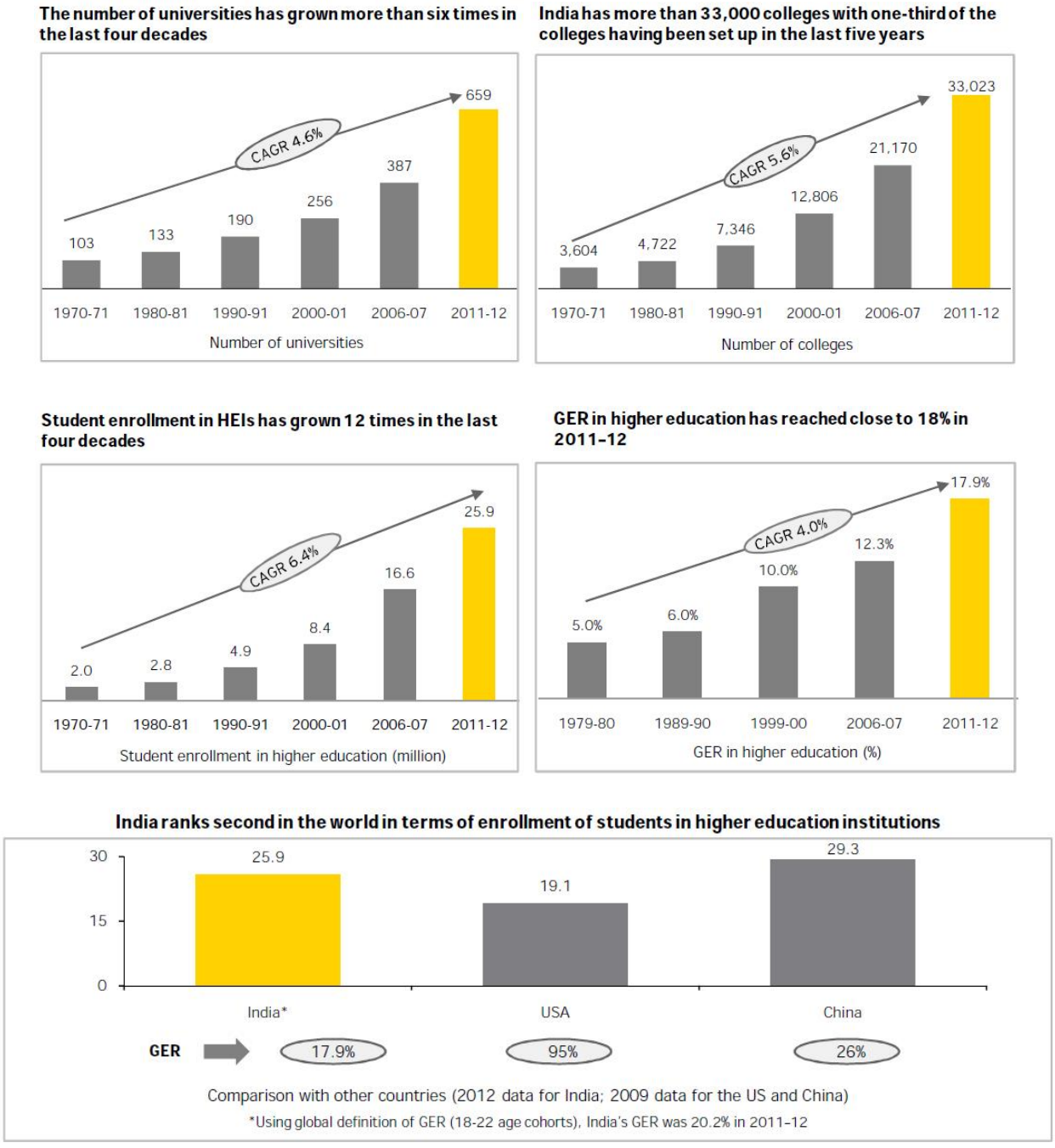


Fig. 1.2: Number of Universities, Colleges, Students and GER [6]

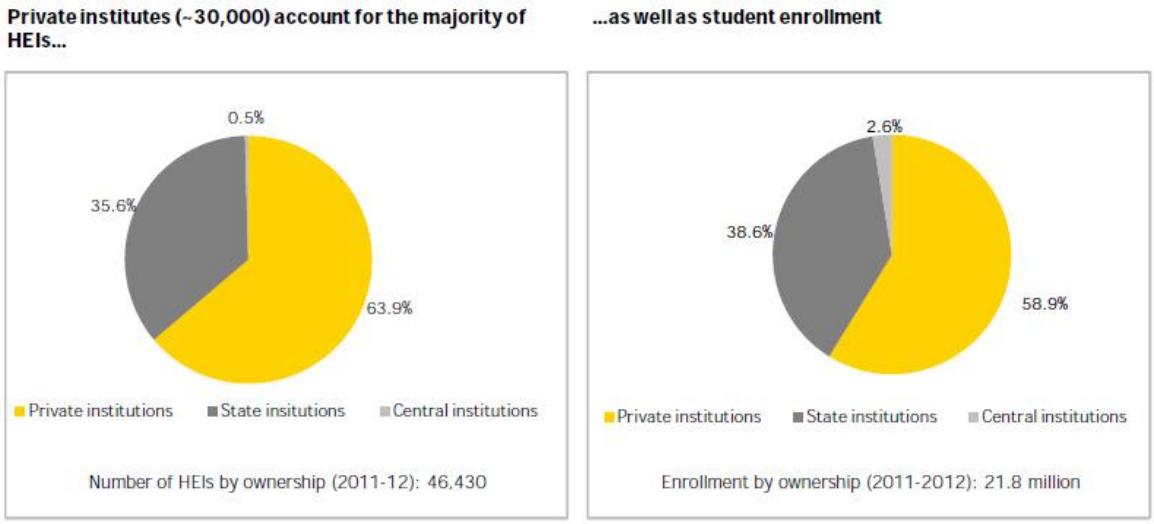


Fig. 1.3: Growth of Private Institutes [6]

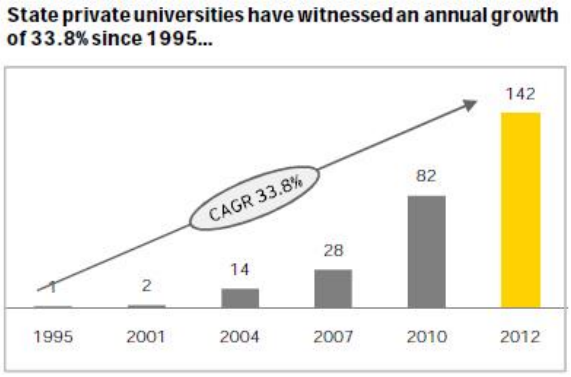


Fig. 1.4: Growth of private universities [6]

1.1.2. Thrust Areas of Five Year Plans

Between the 1st and the 6th Five Year Plans, there was a 20-fold increase in allocation (from 38 crore INR to 764 crore INR) for higher and technical education. Similarly, there was a 12-fold increase between the 6th and 10th Plans (8,877 crore INR) and a 9-fold increase between the 10th and 11th Plans (84,943 crore INR). The 12th Five Year Plan has proposed an outlay of 184,740 crore INR. The share of higher education in the total budgetary allocation for education is 11.89%, while the share of technical education is 4.78%.The 12th Plan approach paper has set a target of spending 25% of the total budget on higher and technical education. Similarly, the approach paper also mentions a target of spending 1.0% of GDP on higher education and 0.5% of GDP on technical education. [15]

The Government has planned expenditure of INR 1,107 billion on higher education during the Twelfth Five Year plan, 1.3 times higher than the planned expenditure in Eleventh plan. The India's higher education system faces challenges on three fronts — expansion, equity and excellence. [6]

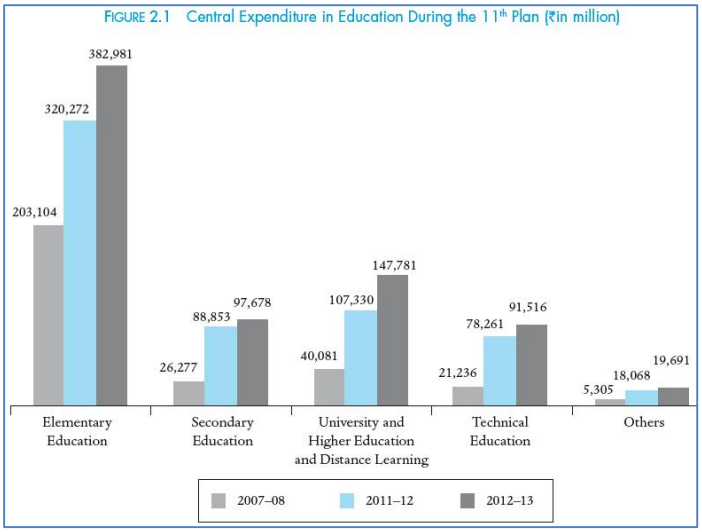


Fig. 1.5: Central Expenditure in education during 11th plan [12]

The Thrust areas of the past Five Year Plans

Sixth Five Year Plan (1980–1985)	Seventh Five Year Plan (1985–1990)	Eight Five Year Plan (1992–1997)
Quality improvement ► Improvement of standards and regulation of admission ► Restructuring of courses for practical orientation and greater relevance	**Focus on research and academic development** ► Creation of research facilities and centres of excellence ► Encouragement of academic mobility and cross-fertilization of ideas ► Restructuring courses offered at first degree level to increase employability	**Funding for developing new departments/courses** ► Strengthening of existing postgraduate departments in terms of laboratories, workshops and library services ► Opening of new specialized courses and departments and doing away with outdated ones
Planned expenditure on higher education (INR billion) 5.3	**Planned expenditure on higher education (INR billion)** 12.0	**Planned expenditure on higher education (INR billion)** 10.6
Annual enrollment growth (1981-85) 4%	Annual enrollment growth (1985-90) 6.2	Annual enrollment growth (1992-97) 5.4%

Ninth Five Year Plan (1997-02)	Tenth Five Year Plan (2002-07)	Eleventh Five Year Plan (2007-12)
Adapting to social and economic changes ► Encouraging relevant courses with a professional focus to enable career development ► Addressing the education needs of under-represented social groups ► Generating revenue through increased university-industry linkages	**Improving quality and relevance of higher education** ► Strengthening of research institutions as well as open and distance education system ► Knowledge and use of new information and communication technology ► Focus on quality, evaluation and accreditation of higher education	**Inclusive growth of higher education** ► Expanding HEIs to eliminate regional imbalances ► Making higher education accessible to all socio-economic strata of the society ► Improving quality of education by promoting research, quality assurance systems and faculty and infrastructure development
Planned expenditure on higher education (INR billion) 25.0	**Planned expenditure on higher education (INR billion)** 96.0*	**Planned expenditure on higher education (INR billion)** 849.4*
Annual enrollment growth (1997-02) 5.6%	Annual enrollment growth (2002-07) 6.6%	Annual enrollment growth (2007-12) 9.3%

Fig. 1.6: Five year plans: 6th to 11th [6]

1.1.3. Insufficient and Inefficient Public Education System, 550 Million People under 25, Inadequate Resources

Even though India spends 3.5% GDP on education, it is not sufficient. The average years of education of Indian citizens is 6 years, whereas China spends 2.2% OF GDP, it's estimated average years of education of citizens is 10 years.

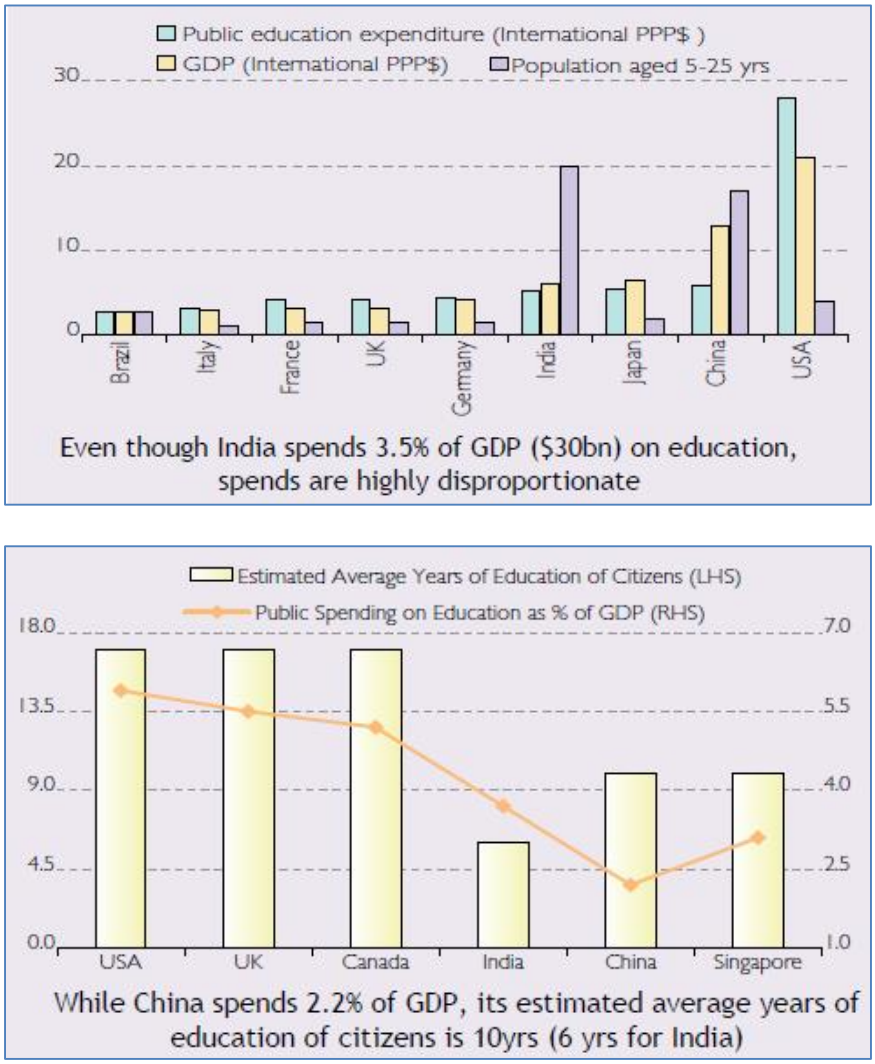


Fig. 1.7: IDFC-SSKI Report: Indian Education System – an 'insufficient' and 'inefficient' public education system [13]

With a median age of 25 years, India has over **550 million people below the age of 25 years**. According to Census figures, **over 32 per cent of the 1.1 billion population is between the age group 0- 14**. This means that the number of people in India needing primary and secondary education alone **exceeds the entire population of the USA**. Since these students will be seeking higher education in India over the next decade it illustrates the sheer size of the Indian education market. Presently about 11 million students are in the Higher Education system. This represents just 11% of the of the 17-23 year old population. The government hopes to increase this to at least

21% by 2017- a target which still falls short of the world average. **With the emergence of India as a knowledge-based economy, human capital has now become its major strength**. This has put the spotlight on severe inadequacies of India's infrastructure for delivery of education, particularly higher and vocational education. Industry chamber has recently reported that **450,000 Indian students spend over USD 13 billion each year in acquiring higher education overseas**. [14]

Government resource allocation is inadequate to meet its own targets (30% GER by 2020) leaving enough scope for private participation. **However, this is still a fraction of the estimated requirements for achieving the targets.** [14]

1.1.4. Over Regulated Sector

The following diagram shows the India's higher education regulatory mechanism. More detailed information is available in chapter 6 of this book.

Fig. 1.8: India Higher Education: Regulated sector [14]

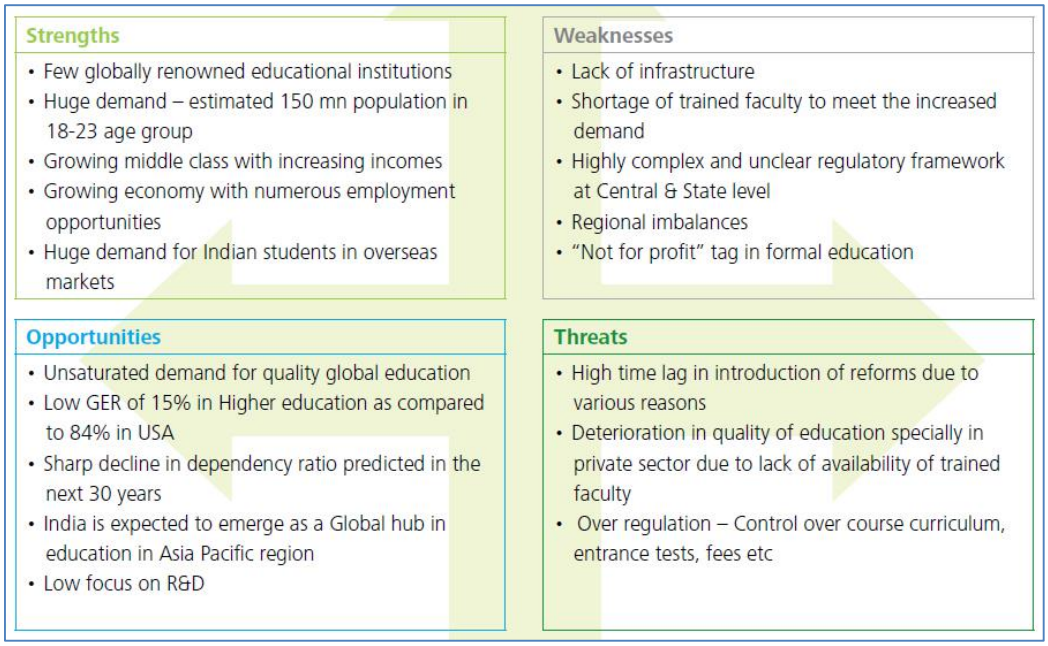


Fig. 1.9: Foreign Investment point of view: SWOT Analysis of Indian Higher Education Sector [16]

Dr. Pawan Agarwal, Adviser (Education), Planning Commission, Government of India, has given excellent SWOT Analysis of Indian Higher Education in his excellent research paper published in ICRIER (see page 137-139 of reference). [17]

1.1.5. Sustaining Overall High & Inclusive Growth of India & Education Sector

Following the 2009 global downturn, the Indian economy enjoyed a recovery, however **growth began to fade again in 2011** and new macroeconomic challenges began to emerge. **GDP rose by 6½ per cent in 2011-12, the slowest annual growth in almost a decade, and has continued to weaken more recently**. This slowdown is only partly cyclical and **reflects the emergence of energy, infrastructure, human capital and institutional bottlenecks**. The rapid economic growth in the two last decades has indeed accentuated the demand for energy and natural resources, for transport infrastructure and **skills**. But supply of these key engines of growth has not been able to keep pace. [18]

Education has a central role in promoting inclusive economic development. It can notably help reduce the share of informal employment going forward and promote social inclusion. **Higher human capital is also essential in supporting productivity and innovation**. **Long-term investment in a small number of elite higher education institutions has helped the development of India's IT and business services sectors and has contributed to the country's strong growth performance during the past two decades**. However, such investments have not, until recently, been matched by broader investment in mass education, leading to inequality and social exclusion of large parts of the population. For example, only about half of the relevant age group is enrolled in secondary education, with many more girls than boys out of school. **The challenge is therefore to improve the quality of education and provide equitable access at all levels.** [18]

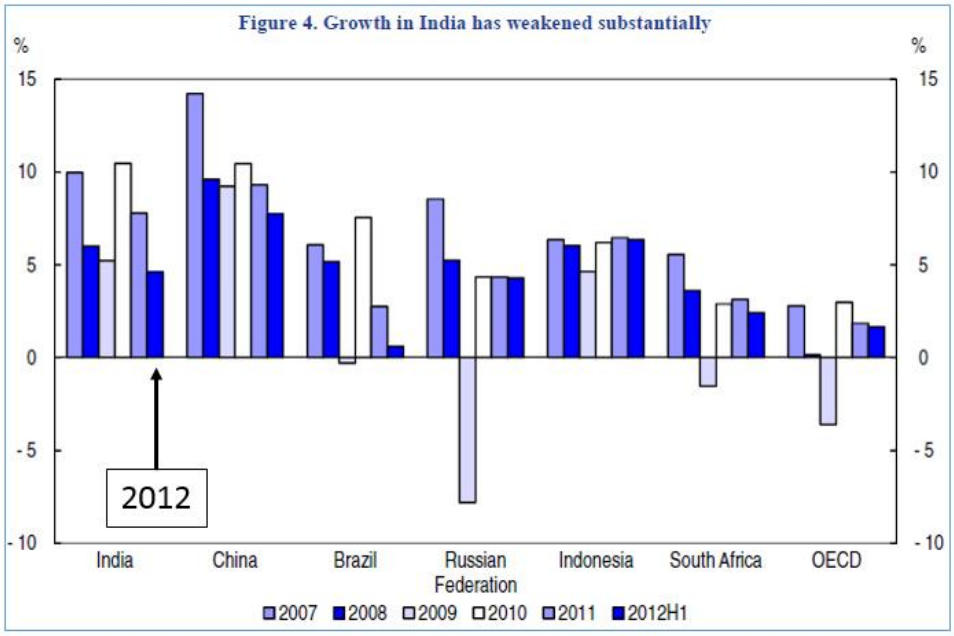


Fig. 1.10: Economic Growth in India has weakened substantially [18]

These considerations have given birth to Rashtriya Madhyamik Shiksha Abhiyan (RMSA), Sarva Shiksha Abhiyan (SSA), Rashtriya Uchchatar Shiksha Abhiyan (RUSA) etc.

The challenges of quality in Indian higher education include:

- Inability to attract sufficiently large number of talented young to lives of teaching and scholarship;
- Separation of education from research;
- Inadequate financing;
- Belief in the adequacy of investor-run colleges and universities, and the financial and political power of such investors;
- Short-term profit orientation on education in a large part of the business community;
- Excessive rent-seeking by well-organized groups and dominance of the university-as-employer perspective; and
- Administrative weaknesses and wasteful expenditures. [19]

1.2. Indian University's Global Standing

Until fifty years ago there were several world class universities in India: Allahabad, Bombay, Calcutta, and Delhi are names that come to our mind. Some of the world's greatest scientists of the twentieth century, such S Ramanujan, Jagadis Chandra Bose, Satyendranath Bose, C V Raman, and Meghnad Saha, did their work in India. As thinkers, Mahatma Gandhi, Rabindranath Tagore, and Sri Aurobindo were giants on the world scene. [20]

The article at Times Higher Education (THE) website stated that "More importantly, however, **Indian higher education fails to fully recognize the value of the most essential resource in such an endeavor, namely talent**. An awareness of the importance of attracting the best talent - students, faculty and administrators - in delivering quality is sorely missing. " [21]

Let us take a basic comparison of research productivity between Zhejiang University in China, 197th in the Times HE rankings, and the University of Delhi, which is one of the better-known public universities in India. A simple search for "University of Delhi" on Google Scholar produces about 30,000 results, compared with nearly 330,000 for "Zhejiang University". This difference becomes even starker, when one considers the relative size of the institutions. Delhi has almost **138,000** students enrolled in formal education programmes against Zhejiang's **39,000**. Such inefficient research productivity reflects not only a lack of recognition of research as one of the core measures of a world-class university but also a lack of an ecosystem of talent. For example, consider the number of PhD candidates at the two universities. Only one in 50 students at the University of Delhi is enrolled in a doctoral programme, compared with **one in six at Zhejiang**. [21]

The following table shows the current (2013) global standing of Indian Universities

SN	University/Institutes	ARWU 2013	THE 2013	QS 2013
1.	Punjab University		**226-250**	
2.	Indian Institute of Science (IIS)	**301-400**		
3.	Indian Institute of Technology, Delhi (IIT-D)		351-400	**222**
4.	Indian Institute of Technology, Bombay (IIT-B)			233
5.	Indian Institute of Technology, Kanpur (IIT-K)		351-400	295
6.	Indian Institute of Technology, Madras (IIT-M)			313
7.	Indian Institute of Technology, Kharagpur (IIT-KGP)		351-400	346
8.	Indian Institute of Technology Roorkee (IITR)		351-400	401-410
9.	University of Delhi (DU)			441-450
10.	Indian Institute of Technology Guwahati (IITG)			601-650
11.	University of Mumbai			601-650
12.	University of Calcutta			701+
13.	University of Pune			701+

Table 1.2: Indian University's Global Standing [22]

SN	University/Institutes	Global Employability Ranking 2013	Super Rich Billionaire Alumni Ranking
1.	Indian Institute of Science (IIS)	35	
2.	Indian School of Business	148	
3.	University of Mumbai		18

Table 1.3: Indian University's Global Standing 2013 [23] [24] [25]

Ranking	University or Higher Education Institute	Points
13	**Punjab University**	**40.2**
30	Indian Institute of Technology, Kharagpur	32.8
34	Indian Institute of Technology, Kanpur	31.9

37	Indian Institute of Technology, Delhi	30.1
37	Indian Institute of Technology, Roorkee	30.1
46	Indian Institute of Technology Guwahati	27.9
47	Indian Institute of Technology Madras	27.6
47	Jadavpur University	27.6
50	Aligarh Muslim University	27.2
57	Jawaharlal Nehru University	25.3

Table 1.4: Position of India: Times HE BRICS & Emerging Economies Rankings 2014 [26]

The global employability ranking and survey 2013 shows that USA, UK and Germany produce best graduates in the world. [23]

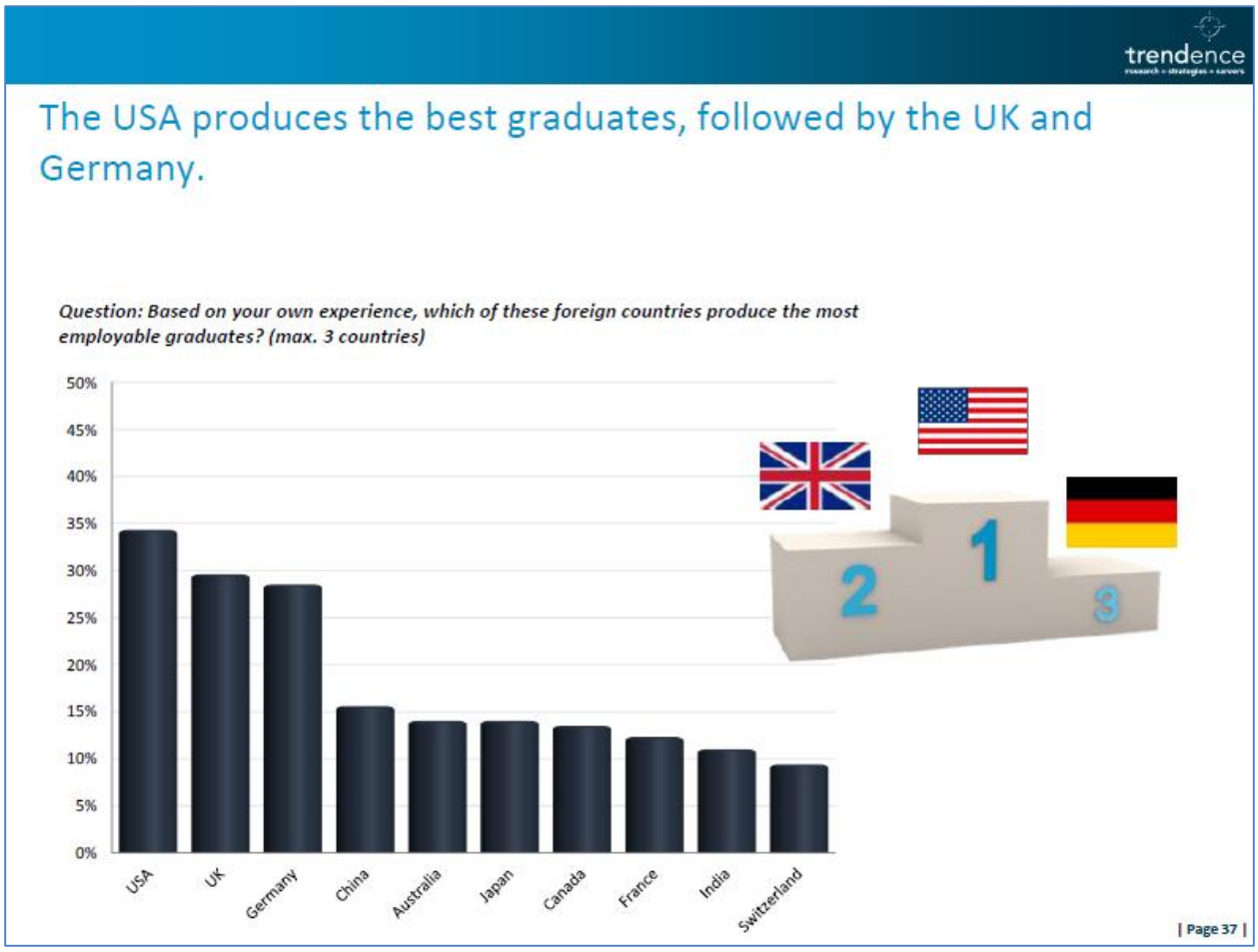


Fig. 1.11: Which country produces best graduates? [23]

1.3. Ranking of 'National Higher Education Systems' of 50 Countries by University of Melbourne

In May 2013, the Melbourne Institute of Applied Economic and Social Research (University of Melbourne) published the ranking of **National HE systems**, based on research of data from 50 countries. The ranking is sponsored by Universitas 21, a global network of research universities. This gives the **comparative strengths and qualities of national education systems around the world.** It's a **benchmarking of Higher Education Systems of 48 countries.** It's important for **governments to be able to benchmark how they're doing**. [27] [28]

The 2013 Universitas 21 ranking of national systems retains the methodology of the 2012 rankings. 22 desirable attributes are grouped under four broad headings: Resources, Environment, Connectivity and Output.

- The **Resources** component covers government expenditure, total expenditure, and R&D expenditure in tertiary institutions.
- The **Environment** module comprises a quantitative index of the policy and regulatory environment, the gender balance of students and academic staff, and a data quality variable.
- The **Connectivity component** has been extended by including measures of web usage in addition to numbers of international students and research articles written with international collaborators.
- Nine **Output** variables are included that cover research output and its impact, the presence of world-class universities, participation rates and the qualifications of the workforce. The appropriateness of training is measured by relative unemployment rates. [28]

The results for each category are combined into an overall ranking by using the following weights:

- Resources (25%)
- Environment (20%)
- Connectivity (15%)
- Output (40%)

Rank	Country	Score	Rank	Country	Score
1	United States	100.0	26	Taiwan	56.0
2	Sweden	85.2	27	Malaysia	52.4
3	Switzerland	81.6	28	Saudi Arabia	52.3
4	Canada	80.0	29	Italy	52.1
5	Denmark	79.8	30	Poland	51.9
6	Finland	79.4	31	Greece	50.5
7	Netherlands	78.2	32	Serbia	50.0
8	Australia	77.2	33	Russian Federation	49.5
9	Singapore	76.6	34	Hungary	49.2
10	United Kingdom	74.9	35	Chile	49.0
11	Austria	71.8	35	Ukraine	49.0
11	Norway	71.8	37	Slovakia	47.9
13	Belgium	71.0	38	Bulgaria	47.7
14	New Zealand	69.7	39	Romania	47.5
15	Germany	68.2	40	Argentina	45.8
16	Hong Kong SAR	67.6	41	Brazil	45.6
16	France	67.6	42	China	44.5

18	Ireland	66.8	43	Mexico	42.8
19	Israel	63.8	44	Croatia	39.2
20	Spain	60.5	45	Turkey	38.9
21	Japan	59.6	46	South Africa	38.1
22	Portugal	59.1	47	Thailand	37.9
23	Slovenia	58.4	48	Iran	37.2
24	Korea	57.6	**49**	**India**	**36.3**
25	Czech Republic	56.7	50	Indonesia	35.3

Table. 1.5: Ranking of "National Higher Education Systems" by University of Melbourne [27] [28]

The first ranked country is the United States followed by Sweden, Switzerland, Canada and Denmark. In this ranking the position of **India is 49 among the 50 nations**. Observe the progress of the following countries

- Saudi Arabia (28)
- Ukraine (35)
- China (42)
- South Africa (46)
- Iran (48)

Since independence, our progress is really nice but for sustainable economic growth there is an urgent need of higher education reforms.

1.4. Views about World Class Universities

1.4.1. Views of Hon. President of India

India's poor show in the global ranking lists has been flagged by Hon. President of India, Pranab Mukherjee since assuming office.

The President of India, Pranab Mukherjee said in his address at the 58th convocation of IIT-Kharagpur (15 Sept 2012) that "At the same time, I feel it necessary to share with you my sense of dismay on seeing, in recent reports, that **not a single Indian University or institute of higher learning, including the premier IITs figure in list of 200 top rated Universities of the world**. Now you may question the survey, but to my mind the more important question is, why? Why are we, a "rising economic superpower", not able to promote our standards to be rated, indisputably, among the top ten or even top fifty or hundred?" [29]

Addressing the 90th Convocation of Delhi University, Hon. President of India, Pranab Mukherjee said that "The time has come to "redefine" the way education is imparted in India as **it is "simply unacceptable" that no Indian university finds a place amongst top global institutions**." [30]

On the occasion of the Annual Convocation of Assam University, he said that "we must remember that once we had world class universities in Nalanda and Takshashila. Therefore, **the dream of**

creating world class universities in India is an achievable aspiration. India with strong scientific and technical manpower has the opportunity to become a major knowledge power in the years to come. To make this dream a reality, we have to invest in research and development." [31]

On the occasion of 7th Vidyasagar Memorial Lecture at Vidyasagar University in Medinipur, West Bengal, The President also referred to the fact of **no Indian University having found a place among the top 200 world-class universities and called for introspection by all concerned**. He said that "We have to think as to what is lacking and what we have failed to put together to get the desired result despite of having no lack of talented teachers and students." [32]

At the Conference of Directors of National Institutes of Technology he said that "It is not difficult to see where our institutions stand today vis a vis the best in the world. In two reputed international rankings of universities – The QS Ranking and Times Higher Education Ranking – not a single Indian university or institution finds place in the top 200. Apart from the leading universities of the West, universities in countries like China, Hong Kong, Taiwan, Brazil, Mexico, South Africa and Malaysia are ranked higher than Indian institutions. The highest ranked Indian institution in the QS Ranking is IIT Delhi, at the 222nd position. Only eleven Indian institutions including seven IITs have earned a rank in the QS list of 700. Not a single NIT is amongst these institutions. **The rankings process needs to be taken seriously** not just for the ranks per se but for the fact that high ranking helps us attract the best faculty from across the world, significantly improve the prospects of good placements for graduating students and provide a benchmark for continuous quality enhancement." [33]

At the Third Convocation of Nagaland University, he said that "As per an international survey, there is not a single Indian university amongst the top 200 universities in the world. There was a time when we had world class universities like Nalanda and Takshashila which attracted scholars from all over the world. We can revive our lost glory. We have the capability to take at least a few of our academic institutions into the global top league. But for that, we have to change the way education is imparted in our higher educational institutions. A culture of excellence should be embedded in our thought process. Every university should identify one department that can be developed into a Centre of Excellence. I call upon the Central universities to take the lead in this transformation." [34]

Addressing the nation on the eve of 67th Independence Day, Hon. President of India said that "A re-ordering of the society can be brought about through the educational system. **We cannot aspire to be a world class power without a single world class university.**" [35]

At the 8th convocation of SRM University Chennai, he said that "**Our universities do not figure in lists of top universities of the world. We must change this**…..The private sector has played a key role in higher education in other countries across the world. Many top universities, including Harvard, Yale and Stanford, were promoted by the private sector…. There is no reason why the private sector in India cannot help build similar world class institutes." [36]

1.4.2. Views of Hon. Prime Minister of India

"It is a sobering thought for us that not one Indian university figures in the top 200 universities of the world today," Prime Minister Manmohan Singh told a conference of Indian vice-chancellors. [37]

On the occasion of laying the foundation for the GKCIET West Bengal, Prime Minister Manmohan Singh emphasized the need for skill development and **world-class education** for the youth. "To meet the demands of the fast-growing economy, we will have to educate the youth and make them skilled. Without skilled manpower, we will not be able to sustain the high growth rate of the economy for long," he said. [38]

1.4.3. Views of Experts

Philip Altbach contends that "India will need to create a dozen or more universities that can compete internationally **to fully participate in the new world economy**. Without these universities, India is **destined to remain a scientific backwater**". [3]

He stated that "India has no world-class research universities. The global higher education rankings include just a few Indian institutions, mainly the Indian Institutes of Technology, which are not universities but rather small high-quality technology institutions. [39]

Philip Altbach stated that "The Achilles heel of Indian higher education indeed represents the traditional universities. The state universities, particularly, are characterized by **endemic underfunding, political interference, often a significant degree of corruption in academic appointments and sometimes admissions and examinations, and inadequate and ill-maintained facilities**. The tremendous **burden of supervising the affiliated colleges** saps the energy and creativity of most universities…. While many official reports have called for the reform of university and college affiliation, almost nothing has been accomplished in a half-century. Starting with the University Education Commission (Radhakrishnan Commission) in 1948-49 and proceeding to the 1964-66 Education Commission (Kothari Commission), numerous thoughtful recommendations for higher education reform were made, including proposals to foster research universities, "decouple" the colleges from the universities, and many others. **A combination of the lack of political will, entrenched academic and at times political interests, a divided political system, and resource constraints have contributed to this gridlock**… Financial and ethical lapses can be seen in some of the new private institutions. Enforcement of standards is lax and regulatory frameworks inadequate – leaving room for such problems as charging high fees for admission, a practice called "capitation fees", tuition fees higher than those allowed by regulations, corrupt practices in admissions, hiring, and the award of degrees, and others. **These issues have tarnished the reputation of the private sector**….. It is much less likely that India will achieve this level of success. **Its current top institutions, the Indian Institutes of Technology, and a few others, are too small and specialized to become world-class research universities, and current plans do not show that India is developing a realistic strategy**." [39]

1.5. WCU: Huge Benefits, Must for Becoming Superpower Nation

World-class universities are a crucial part of a nation's knowledge base and innovative capacity, creating the knowledge and scientific breakthroughs essential to innovation, which underpin long-term economic growth and economic well-being. [40]

To succeed now, a nation must develop its economic, scientific, and technological capabilities so that it can compete with the best in the world. **A nation cannot get this competitive strength without developing world class educational institutions within its boundaries.** Without MIT, Harvard, California Institute of Technology, and other such renowned institutions, would America have got its industrial, economic, and military might? Therefore, if India wants to shake off the '**third world country**' label, then the responsibility of doing so must fall on the shoulders of the nation's elite academicians. They must identify the nation's impediments in building world class educational institutions and remove them with the greatest urgency. For, leaving this task to the Indian politicians and bureaucrats would mean condemning our present and future generations to live forever with the label of 'third-world-citizens.' The recent **US India nuclear deal** and the **Indian IT firm's** outstanding success across the globe are tributes to India's higher educational institutions. These institutions have given the nation the best scientists and technologists who, in turn, have brought glory to India. **Without the Indian Institute of Science, could Banglore have become the global centre for microelectronics**? Could the recognition that India got as a responsible **nuclear power have been possible without BARC's** outstanding contribution to the development of the nation's nuclear capability? [41]

Let's consider the example of WCU at UK. The most recent estimate is that UK universities' economic output is £59 billion a year, and amounts to 2.3 per cent of UK GDP (2009) [42]

Table 1
Overall impact of the higher education sector on the UK economy, 2007/08[1]

	Universities	International students	International visitors	Higher education sector
OUTPUT				
Direct output	£23.44 billion	0	0	£23.44 billion
Secondary output	£32.36 billion	£3.26 billion	£0.19 billion	£35.81 billion
Total output generated (direct plus secondary)	**£55.80 billion**	**£3.26 billion**	**£0.19billion**	**£59.25 billion**
GDP(O)				
Direct GDP(O)	£15.16 billion	0	0	£15.16 billion
Secondary GDP(O)	£15.86 billion	£1.51 billion	£0.88 billion	£18.25 billion
Total GDP(O)	**£31.02 billion**	**£1.51 billion**	**£0.88 billion**	**£33.41 billion**
EMPLOYMENT				
Direct employment	314,632	0	0	314,632
Secondary employment	324,456	27,868	1,163	353,937
Total employment generated (direct plus secondary)	**639,088**	**27,868**	**1,613**	**668,569**
EXPORT EARNINGS				
Export earnings	£2.9 billion	£2.3 billion	£0.14 billion	£5.3 billion

Source: Universities UK economic impact modelling system (2009) constructed for this study

Note: All employment figures are full time equivalents

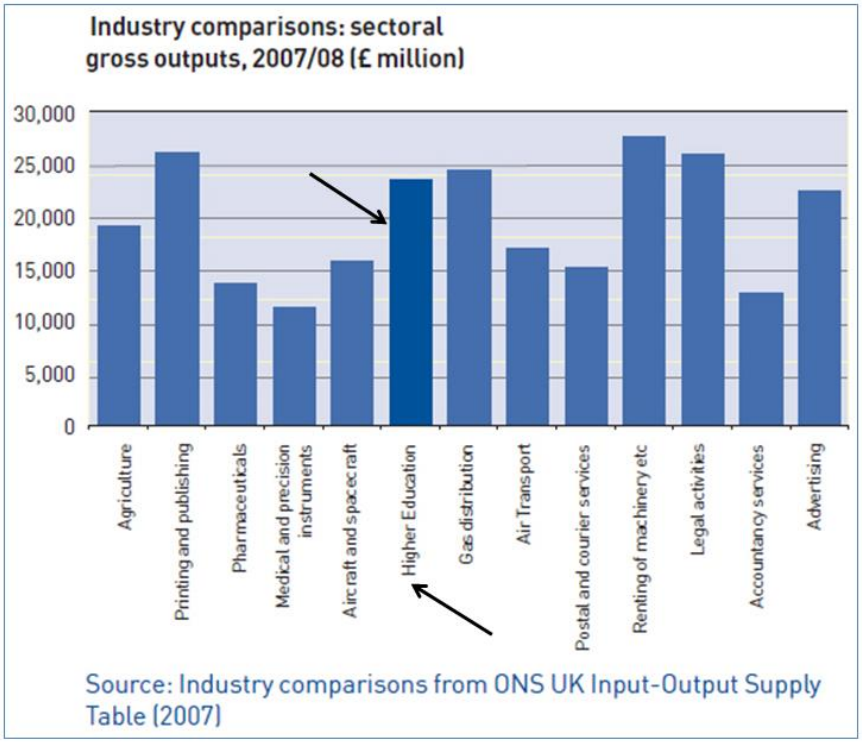
Output generated in the economy by universities, 2007/08 (£000)

University gross output (definitionally equivalent to university revenue)	£23.44 billion
University expenditure	£22.88 billion
Secondary or knock-on output generated in other UK sectors	£32.36 billion
Total output generated by universities (university output plus knock-on output)	£55.80 billion

Source: HESA and the Universities UK economic impact modelling system (2009)

Fig. 1.12: Overall impact of the higher education sector on the UK economy (2007-08) [43]

In UK, the education sector is the major contributor to gross output of the UK economy.



Source: Industry comparisons from ONS UK Input-Output Supply Table (2007)

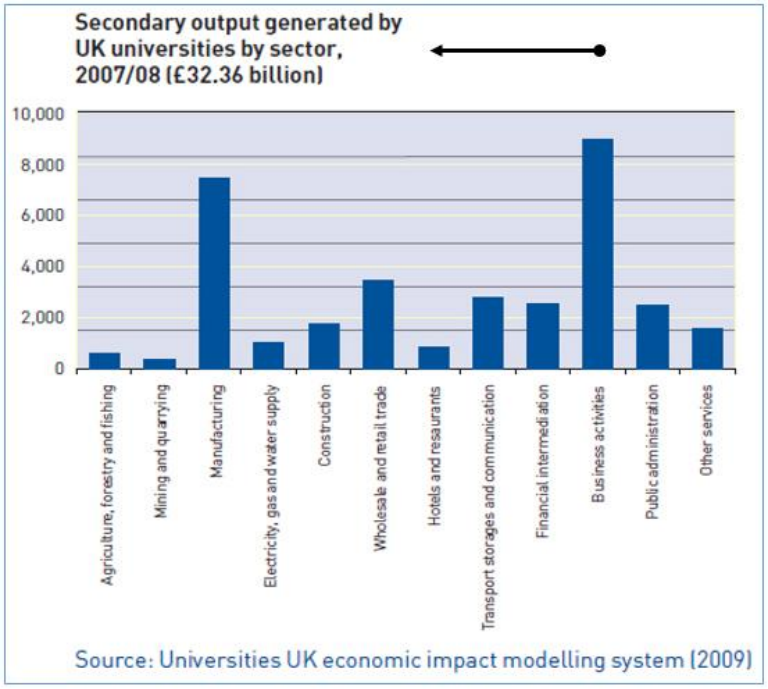


Fig. 1.13: Sectorial secondary output generated by UK Universities by sector (2007-08) [43]

Impact of international student and international visitor expenditure, 2007/08

	Overseas students	Overseas visitors
Total personal expenditure (off campus)	£2.3 billion	£135 million
Knock–on output generated throughout UK economy	£3.26 billion	£189 million
Knock-on employment generated	27,868 full time equivalent jobs	1,613 full time equivalent jobs

Source: Universities UK economic impact modelling system (2009)

Fig. 1.14: UK: Impact of international student expenditure (2007-08) [43]

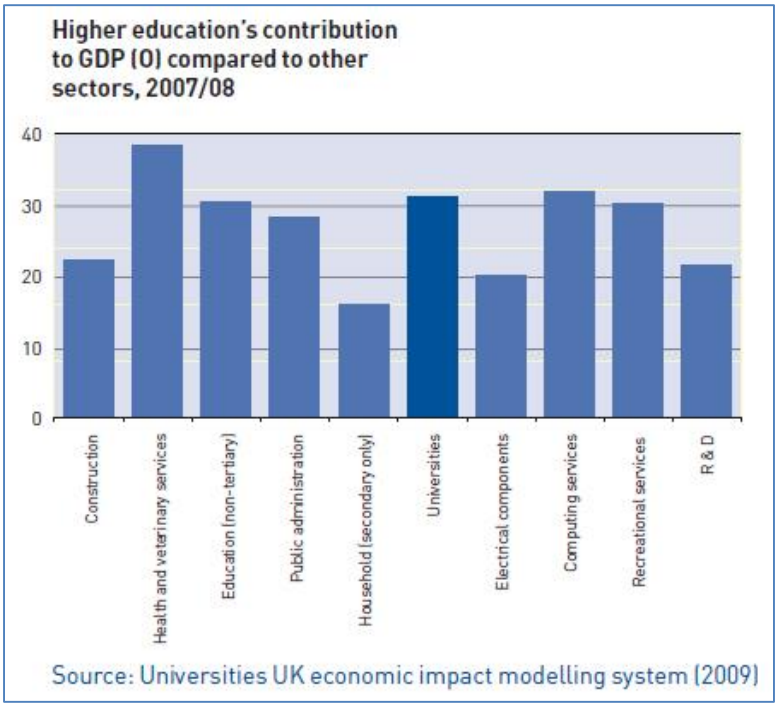


Fig. 1.15: Higher education's contribution to GDP (O) compared to other sectors, 2007/08 [43]

The WCUs are beneficial for the development of entire nation. I would like to highlight few important points from the wonderful 56 pages report of Russell Group UK namely "Jewels in the crown: The importance and characteristics of the UK's world-class universities". [40]

- **International Reputation**: The WCU develops international reputation of the nation. One of the UK Government report said "Britain's universities are fundamental to our character as a country and to our standing in the world." [42]
- **Economic Impact**: It has been estimated that UK universities make a significant contribution to national prosperity, a contribution estimated to be £31 billion to UK Gross Domestic Product (GDP) in 2007-08. The former Director General of the CBI, UK noted that "The UK is well placed to recover from the current global economic downturn because it enjoys strong comparative advantages. One is our university system, with far more world-class institutions than any country outside the US. Another is the strength of our science base". The WCU generates economic and social impacts through a large volume of excellent, leading research. The economic impact of research conducted in WCU focuses on the benefits of university research to new and existing businesses, and shows how research serves as a platform for economic growth in the nation. Researchers and businesses based in the any nations are able to access overseas and global networks for the creation and dissemination of knowledge. The international mobility of researchers and students is also important in generating economic benefits, including:
    - Increased R&D, inward investment and economic activity due to the presence of highly-skilled researchers
    - Improved knowledge flows and collaboration with country of origin, including linkages with the private sector as well as universities
    - Increased enrolments in postgraduate programmes

  - Potential company and job creation by overseas researchers/entrepreneurs.
  - It should be noted that higher education is a thriving sector within the nation's economy in its own right, generating employment and output, attracting export earnings and contributing to GDP. A key study has estimated that in 2007 UK universities generated over £59 billion in economic output and over 668,500 full time equivalent jobs, equivalent to 2.6% of all employment. In overseas earnings alone, it is estimated that the HE sector generates over £8 billion per year. This means that higher education is one of the nation's leading export industries.
- **Global Challenges**: Tackling global challenges through promoting and facilitating multidisciplinary research. Society needs the outputs of research to help identify solutions to complex global issues such as access to energy, environmental change, the ageing population and food security. However, solutions to complex problems such as these are well beyond the scope of any individual discipline. Increasingly governments and business are looking to invest in multidisciplinary research which brings together academics and end users from different disciplines and backgrounds. Such approaches can generate a greater understanding of complex problems, and help to find practical solutions drawing on contrasting approaches from different areas of expertise.
- **International Leadership**: Providing international leadership, advising governments, business, media and accessing the latest breakthroughs in research.
- **Enhance Business**: Brought new knowledge and new perspectives to university-business partnerships, helping businesses to innovate. Shaped the development of new products and services within industry, and helped to improve businesses' strategy, management, and productivity.
- **Better Human Capital**: Produce highly-skilled graduates and postgraduates, giving them the qualities which will be needed by businesses to stay ahead of the competition. WCU produces highly skilled, employable graduates and postgraduates through the delivery of high-quality research-led teaching and supervision.
- **Knowledge Clusters**: Forming high-tech innovation clusters of knowledge intensive activity
- **International Funding**: Attracts investment from business and international sources. The ability to generate excellent research decade after decade reflects the continuing ability of the WCU to attract academic talent, competitively win funding, and their freedom to deploy this funding to invest in high-risk frontier research. This is sustained by a strong commitment from the government to public investment in research and a tradition of collaboration with businesses, charities and international partners. Led to truly world changing discoveries, offering the potential to revolutionize whole areas of healthcare, technologies or our society. These breakthroughs have sometimes led to substantial revenues for universities and for the nation's economy. World-class universities are highly successful in competitively winning funding for research from a wide range of sources, including governments, charities and business, both domestically and internationally. Evidence shows there is a strong complementarity between private and public sources of funding, with increases in public funding leading to increased private funding. More importantly this investment enables leading universities to offer better research infrastructure, educate more students, and undertake more cutting edge research than they would otherwise be able to. Much of this research, education and infrastructure is delivered in partnership with business and other universities, often as part of a long-term collaborative relationship. The attractiveness of the nation's research base to foreign investors is crucial in securing long-term economic recovery. In promoting the

attractiveness of the nation as a location for international R&D, UK Trade and Investment (UKTI) states the success of the UK research base is largely because:

- Companies can get "immediate access to leading research institutions"
- Leading research institutions provide "the means to tap into global networks on the back of their research excellence".
- One study looking at the OECD found that a dollar increase in R&D performed by universities leads to additional industry R&D investment of about $0.6 in the short-run and $3.0 in the long-run.60 Looking specifically at medical research, and within the UK context, a further study concluded that a £1 increase in government spending could lead to an increase in private research spending from the pharmaceutical industry of between £2.20 and £5.10.61 This demonstrates how business investment in R&D is dependent on public investment in university research.

- **Multidisciplinary Research**: World-class universities are uniquely placed to tackle research challenges on this broader, more multidisciplinary scale. A larger, more diverse, group of researchers creates a vibrant intellectual environment which encourages and facilitates the development and exchange of new ideas, and ability to provide solutions. The critical mass of talent and expertise within an institution, and ability to pre-empt the issues of tomorrow, means world-class universities are able to respond much more quickly to meet the challenging timescales needed by business and government. A world-class university has the much needed flexibility to bring together resources rapidly, and to broker collaborations with external partners swiftly, to tackle large-scale, multidisciplinary research challenges. WCU develops multidisciplinary research teams and shared research infrastructure, within and between institutions – for example, in UK, pooling initiatives in Scotland and collaborations in England such as the Science City Research Alliance. Shared infrastructure is important because it enables research-intensive universities to maintain their competitiveness in the face of international competition and to respond rapidly to new research opportunities and priorities. World-class universities attract a critical mass of top talent, which is both sourced from across the globe, and which also collaborates with leading counterparts located around the world. WCU attract and collaborate with the world's top talent, and the importance of this to the delivery of benefits to the economy and wider society, and international competitiveness. The market for higher education has become truly international, with academics and researchers having more choices than ever before about where to live and carry out their work. There are many reasons why academics and researchers choose one country, institution or subject over another. However, a primary consideration is the quality and reputation of the destination department, or institution. Evidence from WCU shows that the primary reason cited by overseas researchers for choosing to come to the country is frequently the quality, relevance and reputation of the research group or department they are coming to join.
- **Attract International Talent**: An analogous case applies to the world's most talented students – international students tend to travel to locations where they will receive the highest quality of education and greatest benefits. The UK is one of the favorite destinations for higher education. World-class universities, with their ability to deliver state-of-the-art research and learning environments, necessarily attract a significant proportion of the world's top talent. World-class universities such as Harvard, Yale, Princeton and Chicago all have a relatively high proportion of foreign-born staff. Over one third of staff at LSE and Imperial College London and average 16% staff of UK universities are of non-UK nationality.

- **Collaborative Activities**: World-class universities not only attract top talent from across the globe, but are also involved in ongoing **collaborations** with talented researchers located around the world. Academics in the world-class universities play a significant role leading and participating in international programmes, as well as participating in international reviews, councils and advisory bodies. The University of Cambridge, for example, has **more than 2,400 international collaborations in 140 countries**. Such collaborations may be informal such as sharing data or equipment (enabling access to the latest developments), or more formal collaborations such as joint research, visiting lecture or professorships, and student exchanges (which benefit undergraduates and postgraduates alike). These relationships are also often the catalyst for larger, more formal collaborations between institutions or groups of institutions around the world. International collaborations rely on **partners** having complementary standing and reliable access to funding and cutting-edge infrastructure. Therefore, the critical mass of top talent and infrastructure located in the world-class universities enables academics and researchers to attract and develop relationships with their **international peers**. Researchers at the leading universities are in demand as research partners, and are well integrated into international networks involving the world's top researchers, research groups and universities. Academics at the world-class universities often lead, as well as participate, in pan-national research activities. In addition, top nation's researchers are in demand as partners in university business collaborations, enabling industry timely access to global developments in research and technology. International collaborations also bring benefits, including enhanced knowledge production and greater research impact. A study looking specifically at the impact of foreign scientists and scholars working in Germany demonstrates the impact of ongoing relationships between domestic and foreign researchers and long-term international networks between different institutions. Such relationships and networks enable the development of global centres of knowledge production, where additional knowledge is generated beyond **which two countries could produce separately**. Moreover, international research collaboration delivers real benefits in terms of research impacts. Evidence suggests that UK researchers with long-term collaborators in the US, Germany and France produce papers with **50% higher impact** (in terms of citations) than the UK research base average. A higher citation rate is also evident with papers co-authored between UK and Chinese researchers.
- **Boost Local Business**: World-class universities have a dual role to play in **building local economic mass** to achieve the benefits of agglomeration. First, as an employer and provider of training, they make a major contribution to the local concentration of people. The literature estimates that a doubling of economic mass (including local people and businesses) can result in an increase in productivity of up to **20%**. Benefits stem from the supply of labor on which firms are able to draw, easier access to inputs and suppliers, and the creation of knowledge spill-overs. The critical mass of top talent located in world-class universities boosts the performance of local knowledge-intensive businesses, and incentivizes additional knowledge intensive businesses to locate nearby. The benefit to businesses from co-location is higher productivity and profitability. R&D companies and venture-backed companies tend to locate near the top universities, and research intensive universities are one of the main driving forces behind the development of high-tech clusters. In UK, R&D facilities in pharmaceuticals tend to be co-located with the highly rated chemistry departments, with innovative businesses in the chemicals and vehicle sectors also having geographic proximity to related research flows from universities. Companies co-located near to 'top-tier' universities choose to collaborate locally,

while those located close to 'lower-tier' institutions show less propensity for local collaboration. This is particularly true for R&D intensive companies. In the US, businesses are attracted to locating in areas where there is a high concentration of highly-cited researchers.

- **Intellectual Property**: Less research-intensive universities which do not generate sufficient IP tend to struggle to attract private venture capital investment. A report by the UK Innovation Research Centre shows that academics in Russell Group universities are more likely to exploit the findings of their research, and engage in commercialization activities (taking out a patent, licensing research outputs or forming a spin-out company) than academics in other universities.
- **Technology Transfer**: World-class universities provide various kinds of incubation facilities for new companies, along with investment and knowledge transfer support. [42] [44]

1.6. The Characteristics of WCU

Well known author Jamil Salmi stated the characteristics of World Class Universities as follows:

- Has an international reputation for its research
- Has an international reputation for its teaching
- Has a number of research stars and world leaders in their fields
- Is recognized not only by other world-class universities but also outside the world of higher education
- Has a number of world-class departments
- Identifies and builds on its research strengths and has a distinctive reputation and focus
- Generates innovative ideas and produces basic and applied research in abundance
- Produces groundbreaking research output recognized by peers and prizes (for example, Nobel Prize winners)
- Attracts the most able students and produces the best graduates
- Can attract and retain the best staff
- Can recruit staff and students from an international market
- Attracts a high proportion of postgraduate students
- Attracts a high proportion of students from overseas
- Operates within a global market and is international in many activities (for example, research links, student and staff exchanges, and throughput of visitors of international standing)
- Has a very sound financial base
- Receives large endowment capital and income
- Has diversified sources of income (for example, government, private companies sector, research income, and overseas student fees)
- Provides a high-quality and supportive research and educational environment for both its staff and its students (for example, high-quality buildings and facilities/high-quality campus)
- Has a first-class management team with strategic vision and implementation plans
- Produces graduates who end up in positions of influence and/or power
- Often has a long history of superior achievement
- Makes a big contribution to society and our times
- Continually benchmarks with top universities and departments worldwide

- Has the confidence to set its own agenda [1] [2]

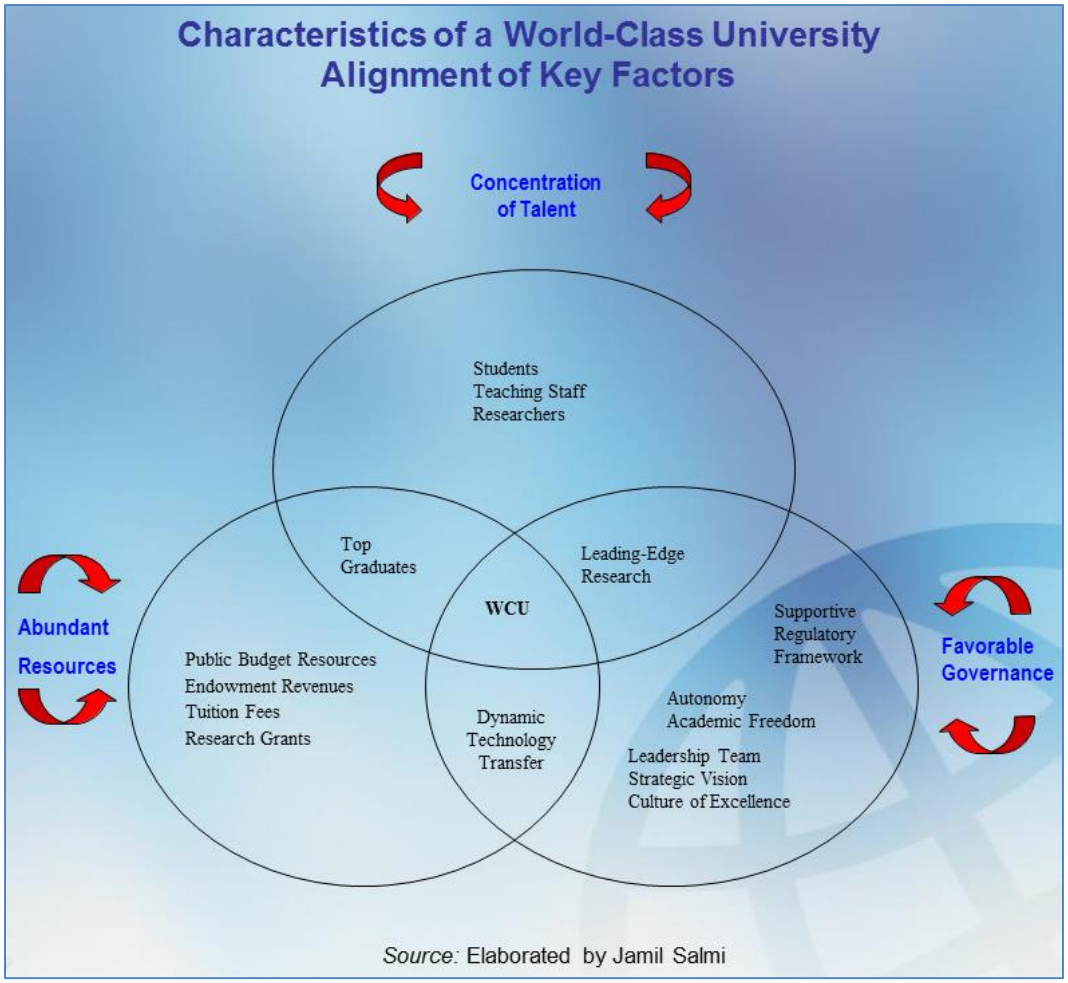


Fig. 1.16: Characteristics of WCU alignment of key factors [45]

1.7. Essential Factors for Establishing WCU and Difficulties

The essential factors for establishing World Class University and corresponding Difficulties with respect to Indian Higher Education System are as follows:

Chapter Number	Essential Factors for WCU	SN	SN	Difficulties
2.	Global Talent	**1.**	1.	International Students
		2.	2.	International Full Time Faculty: Restrictions
		3.	3.	Shortage of Faculty and Very Low Student Teacher Ratio
		4.	4.	Vacant Faculty Positions
		5.	5.	Losing Intellectual Capital and Foreign Exchange

		6.	6.	Social Status of Teacher and Researchers: India doesn't Make Heroes of its Researchers
		7.	7.	Many Difficulties in Attracting Foreign Players
		8.	8.	Working Conditions: Not At Par with Global Standards
		9.	9.	Preference to Local Faculty
3.	Funding and Revenue Generation	**10.**	1.	Not-For-Profit Clause: All Surpluses to Be Ploughed Back
		11.	2.	PPP Model and Not-For-Profit Clause
		12.	3.	Funding Sources
		13.	4.	Budget Allocation but Same Not Being Spent
		14.	5.	Many Indian States: Not Spending Sufficient Money on Education
		15.	6.	UGC Budget: 65% for Institutes Under Central Government
		16.	7.	Indian University Budget: 90% for Operating Expenses
		17.	8.	Indian Universities: Reluctant to Generate Revenue
		18.	9.	Tax System and Endowment
		19.	10.	FDI and Foreign Contribution Regulation Act (FCRA) Anomaly
		20.	11.	Autonomy: Fee Fixation and Capitation Fees Problem
		21.	12.	Affordability of Education
		22.	13.	Autonomy: Salary Structure and Service Condition
		23.	14.	AICTE: Small Magnitude of Funding
		24.	15.	Research Funding Privilege to Public Institutes
		25.	16.	Research Funding for Private Institutes: Overhead Cost Problem
		26.	17.	Can't Invest in Equity Market and No Carry Forward Surpluses
4.	Research University	**27.**	1.	Poor Research Output: S&T Indicators, Citation, Number of PhD and Publications
		28.	2.	Unable to Attract Indian Brains or Global Talent
		29.	3.	Like China Unable to Transform S&T Investments into Scientific Knowledge (Publications) and Commercially Relevant Knowledge (Patents)
		30.	4.	Universities and Research Laboratories Should Not be Separate
		31.	5.	Indian Industries: Not Research Oriented
		32.	6.	Focus should be on Creating and not on Bringing Technologies
		33.	7.	Lack of Research Motivations: Mostly for Career Advancement
		34.	8.	Research Funding: Universities Gets 10% & Higher Education Gets Just 4%
		35.	9.	Need of Research Institute Involved in Teaching: Funding Deadlock
		36.	10.	Research, Innovation and Creativity: "Why Indians, but not India, lead in Research?"
		37.	11.	Focus of Premier Institute: Undergraduate Education
		38.	12.	Conflicting Research Focus: Industry and Government
		39.	13.	Translation of Native Language Publications in to English
		40.	14.	Research Component at Undergraduate Level
		41.	15.	Post Graduate: Facilities, Curriculum Design Problem
		42.	16.	Missing Post-Doctoral Culture
		43.	17.	Premier Institutes: Neglecting Indian Research
		44.	18.	Skewed Research Growth
		45.	19.	Virtual Brain Drain by NMCs
		46.	20.	Research: Trapped within Regulatory Mechanisms
5.	Internationalization	**47.**	1.	Alumni Association: Neglected Activity in India

		48.	2.	Reluctance to Face International Accreditation
		49.	3.	Restrictions on Foreign Players
		50.	4.	Academic Collaborations and Partnerships
		51.	5.	Internationalization: Lack of Keen Interest from Government
		52.	6.	Foreign Institutions: Clustering Around Internationally Known Indian Universities
		53.	7.	Times HE Academic Reputation Ranking 2013: India not in Top 100
		54.	8.	Threat of Globalization: Lack of Manpower May Shift the Business
6.	Regulatory Mechanism	**55.**	1.	Complex Regulatory Mechanism: Over Regulated & Under Governed
		56.	2.	Poor Quality of Indian Higher Education
		57.	3.	Inadequate Freedom
		58.	4.	Quality can't be Simply Improved by Regulatory Bodies
		59.	5.	Not Clear Direction
		60.	6.	UGC: Serious Limitations in Coordination with Regulatory Bodies
		61.	7.	State Government Directorates Became Power Centers
		62.	8.	Affiliated Colleges: Not Proportionate Growth of Colleges and Universities
		63.	9.	Recognition from University but Not from UGC: Funding Problem
		64.	10.	Overloaded System: Not Taking Timely Decisions
		65.	11.	Regulatory Mechanisms, Politicians and Bureaucracy
		66.	12.	Top Most Institutes are Not Universities
		67.	13.	Loopholes in Legal Systems
		68.	14.	No Undergraduate Education at University
		69.	15.	Location Matters: WCU Can't Establish Anywhere
		70.	16.	Need of Performance Based Regulatory Mechanism
		71.	17.	Strange Vice Chancellor Selection Norms
		72.	18.	WCU: Always Limited in Size and Not Scalable
		73.	19.	Discrepancies in Faculty Norms
		74.	20.	University Governance Needs Professional Management, Freedom and Training
		75.	21.	Optional Accreditation: 75% Not Interested
		76.	22.	Funding Schemes: Difficult to Get Timely Information
		77.	23.	No Objective for Any Course
		78.	24.	Rigid Curriculum and Lack of Multidisciplinary Approach
		79.	25.	Resistance for Multidisciplinary Approach and Funding Model
		80.	26.	Need Choice Based Inter University Credit System
		81.	27.	Misuse of Platform of Educational Institutes
		82.	28.	Education Bills: Doubts about Achieving Objects
		83.	29.	Vocational Training Not Within Purview of University
		84.	30.	Along with Funding there is a Need of Autonomy and Effective Governance with Less Bureaucracy
		85.	31.	Indian Planning & Governance: Need Balanced Focus on Tangible and Non-Tangible Resources
		86.	32.	Involvement of Teachers in Politics
		87.	33.	Teachers Union
		88.	34.	Not-For-Profit Clause is Only on Paper: Innovative Escape Routes
		89.	35.	Academic Performance Indicator for Promotions: Not Yet Fully Implemented

		90.	36.	WTO and GATT: Education as a Service Industry
		91.	37.	Not Same Rule for Everybody: Example of IIT and Medical Colleges
		92.	38.	Retirement Age
		93.	39.	Development of Set of Values and Commitment
		94.	40.	Government is Making Serious Changes at a Time When Things Seem To Be Going Very Well
		95.	41.	Lack of Coordination between Govt. Agencies: Conflicting Decisions
7.	State Governments Role	**96.**	1.	Little Coordination between States and Central Government
		97.	2.	Mumbai Budget: Greater than 9 State Governments Budgets
		98.	3.	State Wise Policy Variations and Skewed Growth
		99.	4.	States: Reluctance for Reforms and Implementation Problems
8.	Important Issues	**100.**	1.	Reservation Policy
		101.	2.	Parliament: Over Delay in Passing Crucial Bills
		102.	3.	Largest Young Population, GER and Economic Growth
		103.	4.	Political Involvement, Will and Advantages
		104.	5.	The Mindset
		105.	6.	Technology Redefining University: Not Maintaining Pace
		106.	7.	Global Employability
		107.	8.	Up-To-Date Information at Websites
		108.	9.	Missing Center of Excellence and Focus Areas
		109.	10.	Industry-Institute Interface: Technology Transfer, Incubation Centers, Patents and Income
		110.	11.	Industry Inertia & Corporate Social Responsibility: Section 135 of Companies Act 2013
		111.	12.	India Needs Diverse Higher Education System
		112.	13.	Admission Process: Recommendation Letter
		113.	14.	Excellence Can Only Grow Organically

Table 1.6: Essential Factors for Establishing WCU and difficulties

1.8. No Adhoc Solutions, Need Concrete & Comprehensive Reforms

To effect a major improvement in India's weak academic culture, it is now **widely believed that Indian higher education cannot rely on its own traditions of reform** but needs to engage critically with global trends and debates about strategies of reform. Higher education leaders in India have at last recognized that for India to unleash the energy and creativity of its young people, it **needs universities that are innovative and globally networked**. They have noted that just as India has benefited from opening its economy to the world, so could **its system of higher education benefit from international partnerships**. Such partnerships could not only help to meet student demand but also enable Indian students to develop greater awareness of global issues. International experiences could also prepare them to participate more effectively in the global economy. Fresh thinking about the graduate attributes appropriate for the next stage of India's participation in the global economy can only emerge **when Indian academics and**

administrators are exposed to the world's leading ideas about how higher education can be both economically productive and socially useful. [46]

The past shows that China is capable of dramatic and sometimes unpredictable policy shifts. India, constantly debating new directions, changes gradually and often without clear planning. [39]

Former Union Human Resource Development Minister Kapil Sibal Released Confederation of Indian Industry (CII) Report on "Administrative Reforms in Higher Education" at "AICTE-CII Global University-Industry Congress 2013" on 7th Nov 2013.. This white paper stated that "The aim of this White Paper is to assess the **impact of the reforms initiated till date and those still required** (short-term and long-term). It focuses on key areas which **do not require parliamentary legislation or major policy interventions** like

- **Regulatory reforms** (divergent inspections and norms by multiple regulatory bodies-one window approach);
- Role of accreditation (multiple independent agencies in a decentralized manner);
- Corporate social responsibility (to strengthen industry-academia interface);
- Optimum utilization (common sharing of facilities),
- Expanding the skilled-teacher pool (by using the skills of those who are not directly in education but in other vibrant sectors of economy).
- **Fiscal issues of education sector** (tax concessions, endowments, inability of institutions to garner surpluses for institutional building etc.) " [5]

This white paper identified many difficulties, which can be resolved without any parliamentary legislation or major policy interventions. It's a good partial solution for Indian higher education system.

After reading this book, you will realize that the **real problem is much bigger than this**, which need to address through comprehensive reform by Act of Parliament, as suggested by Yash Pal Committee Report and Dr. Sam Pitroda Knowledge Commission Report.

In addition to this there is an urgent need of fast pace extended RUSA scheme and International Education Hub at Special Economic Zone with attractive market oriented policies.

Chapter 2: Difficulties for Attracting Global Talent

Phil Baty Editor Times Higher Education Rankings, while answering the question "Why have the IITs not made it to the top 10?" stated that "Indian institutions, in general, have ***more restrictions on attracting foreign talent****,* ***exchanges and international recruitment****. Universities need to be attractive to* ***international faculty****,* ***Master's and doctorate students****." [47]*

The article in University World News (2013) "Does India have an international higher education strategy?" stated that ***"India has no major schemes to attract foreign students.*** *The infrastructure required to host international students, in terms of good hostels, trained staff and adequate student advice services, does not exist in the majority of higher education institutions. The numbers of international students – many from Africa in the early days – have reduced in recent years and India has not shown any interest in attracting them back.* ***A student focus, in India's internationalization strategy, is totally missing****." [56]*

There are reports that India faces a ***shortage of 300,000 faculty*** *members in its universities and colleges. It is estimated that the shortage* ***will increase at the rate of 100,000 each year****. These are big numbers even for a country of one billion-plus people and counting. [334]*

The WCU needs global talent like outstanding students from entire globe, renowned international faculty, excellent researchers and academic administrators, who are well versed with technology, business management and are having experience to grow.

Dr. Shyam Sunder, School of Management, Yale University stated that "The challenge of quality in Indian higher education has many roots. Perhaps the most basic problem, and the most difficult to resolve, is that it **fails to attract a sufficiently large number of talented young to the life of teaching and scholarship**. Starved of talent, many colleges and universities become either rule-bound bureaucracies or profit-bound commercial enterprises. As all levels of education are public goods in part, a commercial model does not serve society well. Since learning, scholarship, and good teaching do not lend themselves well to bureaucratic control and measurements of performance, attempts to run universities by rules of civil service curtails their ability to achieve their goals." [19]

2.1. International Students

2.1.1. Size of Global Market and Economic Impact

The international student is a $100 Billion market and one of the major sources of revenue for developing World Class University. The education sector, including expenditure on national education systems, is currently the **second largest sector** globally after healthcare. The **819,644** international students enrolled in U.S. institutions during the 2012-13 academic year pumped more than **$24 billion (Rs. 151,200 Crore)** into the economy. [49] [50] [51]

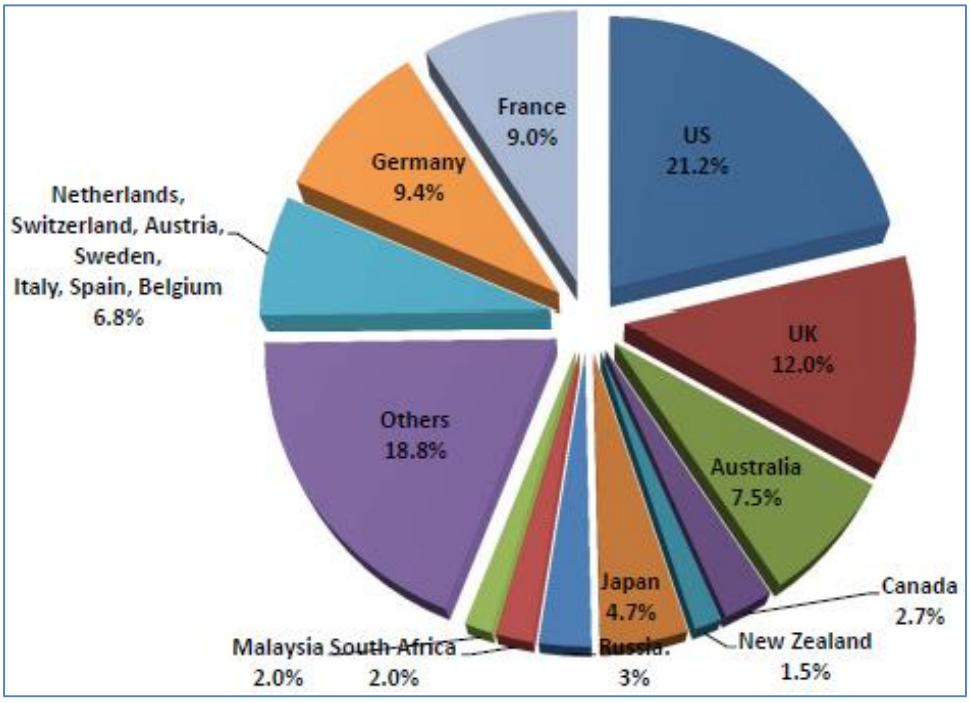


Fig. 2.1: International Student: World Market [54]

The British government released a major strategy for the UK's international education sector "International Education: Global Growth and Prosperity" – that sets out an **ambitious plan to boost the country's international education sector**. In this report, Minister for Universities and Science, UK Mr. David Willetts stated that "Overseas students who come to Britain to study make a **huge contribution to our economy**. Each student in higher education on average pays fees of about £10,000 a year and spends more than this again while they are here. In 2011/12 we estimate that overseas students studying in higher education in the UK paid **£10.2bn (Rs. 103,530 Crore)** in tuition fees and living expenses." [52] [53] [50]

We estimate that in 2010, international students in Canada spent in excess of **$7.7 billion** on tuition, accommodation and discretionary spending; created over **81,000 jobs**; and generated more than **$445 million in government tax revenue**. Overall, the total amount that international students spend in Canada **($8.0 billion**) is greater than our export of unwrought aluminum ($6 billion), and even greater than our export of helicopters, airplanes and spacecraft ($6.9 billion) to all other countries. In total, the annual expenditure of $8.0 billion by international students translated to estimates of almost **$4.9 billion worth of contribution to GDP** and represents about **7% of the GDP** contributed by the overall education services sector in the Canadian economy. [330]

In 2012, 765,000 foreign students joined the U.S. campuses. International students play an important part in U.S. higher education, not only because they contribute roughly **$22.7 billion** to the U.S. economy every year, but also because many academic programs rely on them to conduct research and serve as teaching assistants in key fields of science and technology. [331] [332]

2.1.2. India: Current Status

The recent article of leading newspaper "The Indian Express" (Dec 2013) highlighted the international student status of most prestigious premier institute of India - **IISc Banglore** "One way to improve global rankings of an institution is to attract international students in large numbers. But the 104-year old **Indian Instif Science** (IISc) has not been able to get more than **10 students** since it opened up full-time international admissions in 2010. When it opened full-time international admissions to PhD and Masters Programmes in 2010, **five students joined the institute, followed by seven in 2011, 11 in 2012 and six this year.** Three foreign students joined IISc in 2008 and one in 2009 for short-term courses (3-6 months). At present, the IISc has **33** international students on campus pursuing PhD and Masters Programmes. These students are nationals of Iran, Nepal, France, Germany, Sri Lanka, United States and Nigeria….The IISc does not figure anywhere in the top 300-400 in the Times Higher Education and QS World Universities rankings. Shanghai-based Academic Ranking of World Universities places IISc in the 301-400 rank group. **All these rankings provide weightage for international students."** [55]

Dr. G. Viswanathan, Founder & Chancellor, VIT University, Vellore said that "The Indian government must **liberalize the policies relating to international students in India**. For instance, as of now **private institutes** can only have up to **15% international students**. Public institutes like IITs and IIMs have **never focused** much on this aspect and are doing so only now." [57]

The **National Knowledge Commission** has **strongly advocated** increasing the number of international students, which it says will enrich the academic environment, enhance quality and be a significant source of finance. [58]

The current status of 2013 is not available. As per data of Association of Indian Universities (AIU), in 2008-09, the total 21,778 international student enrolled in India at public and private universities.

International Students in Indian Universities (Continent wise)						
Continents	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Asia	--	--	9849	10493	13400	15437
Africa	--	--	2005	2403	3616	3796
America	--	--	593	654	776	626
Europe	--	--	178	206	238	309
Australia	--	--	55	71	69	81
Miscellaneous	--	--	587	629	592	957
TOTAL	**10936**	**11934**	**13267**	**14456**	**18391**	**21206**

Source: AIU &UGC (2007-08)

Table 2.1: International students in Indian Universities from 2002 to 2008 [59]

The top ten countries from where the international students are coming to India are:

SN	Place of Origin	Number of Students	Percent of Total
1	Iran	2,972	13.6%
2	Ethiopia	1,937	8.9%
3	United Arab Emirates	1,726	7.9%
4	Nepal	1,711	7.9%
5	Afghanistan	1,192	5.5%
6	Saudi Arabia	1,043	4.8%
7	China	873	4.0%
8	Sri Lanka	742	3.4%
9	Bhutan	680	3.1%
10	Kuwait	490	2.2%
11	All Others	8,412	38.7%

Table 2.2: Source of international students to India [60]

R V Shevgaonkar, Former Vice-Chancellor of Pune university said that "The University of Pune and Symbiosis University together make **this city in Maharashtra home to the largest contingent of international students**. We have built special hostels for foreign students and established a centre catering to them, with a liaison officer for international students… The Pune varsities also participated in several international education fairs throughout the year, selling the 'Oxford of the East' concept to many a West Asian." [61]

With close to 1,500 international students, the rather young Mysore University has also scored in the game, attracting students from Asia and Africa. Apart from Pune's Symbiosis, Manipal, another deemed university, has been maintaining a steady flow of international students. [61]

K Ramnarayan, VC of Manipal University, says that nearly half its international students are from Malaysia. "We have had a long-standing relationship with Malaysia, and the health sciences programme that we offer is recognized by the Malaysian government," he says. "This provides us an edge in drawing students from that country. A good number of students come from the US and Canada because of the twinning programmes we have been offering." [61]

It may be noted that in 2008-09, out of the total international students in India, about 27 percent were in distance education programs. Distance education is a useful mode but without crossing national borders. It does not include true spirit of international education—a principal objective to provide cross-cultural experiences. [61]

The preferred Universities by foreign students are:

Top 10 Indian Universities with International Students(2007-08)				
	Name of the Universities	Male	Female	Total
1	University of Pune	2791	1016	3807
2	University of Maysore	859	453	1312
3	Manipal University	537	689	1226
4	University of Delhi	660	471	1131
5	Osmania University	559	123	682
6	Alagappa University	288	280	568
7	Jamia Hamdard, Delhi	337	172	509
8	Bharti Vidyapeeth, Pune	359	135	494
9	Aligarh Muslim University	300	65	365
10	Banaras Hindu University	221	77	298

Table 2.3: Universities: Preferred by foreign students [59]

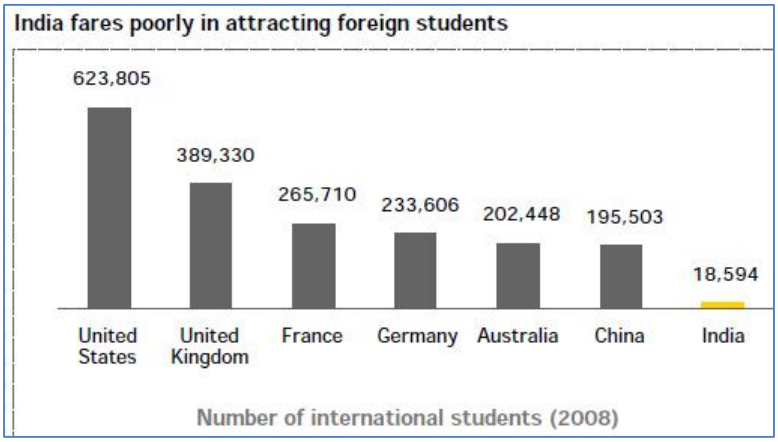


Fig. 2.2: FICCI: Number of International students in India (2008) [62]

The **entrance examination** of many premier institutes is one of the toughest examinations in the world and beyond the capability of many foreign students, which restrict them to attract these institutes. We should consider the globally accepted GRE and GMAT score for admission of international students.

A government committee has already suggested extra help with English proficiency classes, online entrance examinations for some courses to enable more students to apply, additional funds to build

hostels, and mandatory health insurance for self-financing international students. The committee has also suggested streamlining the process of visa extensions, as this requires some students to return home and apply to Indian missions in their respective countries. [58]

2.1.3. Declining African Student

In 1990/91, a total of 6,222 African students, from over 35 African countries, were studying in nearly 100 education institutions in India. At that time, nearly **12,900** international students were studying in India. Thus, the **African student population formed nearly 48 percent** of the total international students in India—showing India as a preferred destination of the African students. The other half of the international student population came, primarily, from Asia and the Middle East, while a small number of other students, from developed countries, had come for a much short-term global experience. The situation is different today, with the number of students from Asia nearly four times more than those from Africa; those from the developed world continue to be at a low level. Over the years, the number of African students has steadily decreased, **declining to about 2,700 in 2009/10**. The African student population is **now only 15 percent** of the international student population. [63]

The reasons for declining the African students are:

- In India, foreign students are not looked upon as income sources.
- Unlike in the case of the developed Anglo-Saxon countries, the Indian government does not collect or publish statistics concerning income or other advantages from international students.
- Indian institutions have not figured well in the top 500 world university rankings. Therefore, international students are unsure whether the quality of education that they may get in India would enable them to compete for jobs in the global market.
- Africa's economic development, the capacity and willingness to pay for higher education has enhanced; and the choice for studying in developed countries is preferred, even though education and living in India is still considered inexpensive.
- The admission procedures for international students, in Indian universities, are very cumbersome with time-consuming visa and document verification procedures. This has been a deterrent for students now having a wider choice across the world.
- India is known to be a hospitable country, and guests are honored and respected. However, there is apprehension that, for reasons of race and color, African students do find it difficult to be accepted in the Indian society; something that India should be concerned about.
- The setting up of the African Union and its new initiative of setting up Pan-African universities across the various African countries, with partnerships from outside Africa, has also helped the students to stay within the African continent and also obtain an international exposure, as part of their education.
- India has not created any major efforts at marketing Indian education abroad. Other developed and some developing countries—such as China—have arranged major marketing and partnership efforts that have attracted African students and weaned them away from India. [63]

Solution Space 2.1

In US, UK, Canada and Australia government's policies and actions are well-defined and synchronized. In India the regulatory bodies never stress upon the importance of international students and premier institute's policies never reflect any genuine interest to attract international students. There should be well defined National policy in this regard.

- The policy must consider the international student as a source of income to nation as well as institute
- Need of international education marketing strategy
- Encourage the Indian society to accept the international students. They should realize that this activity has a great economic impact on the region.
- The policy must provide
    - Easy admission process
    - Streamlining the process of visa extensions
    - Health safety
    - Security
    - Easy credit transfers
    - Standardized system of verification of documents
    - The internationally recognized entrance examinations like GRE, GMAT etc.
    - Increase the number of Scholarships
    - Establish International Office at every institute which will provide appropriate facilities, infrastructure and environment to international students like
        - Hostels
        - Intercontinental food
        - English proficiency classes
        - Problems relating to regional languages
        - Health insurance
        - Provide adequate academic support for our international students
        - Increase the Level of efforts for maintaining welcoming atmosphere for international students and caring attitude of the institute
    - Enhance the International linkage and collaboration level
    - Efforts should be made to improve overall international reputation of the institute
    - Must publish the up to date statistics and publish the same on website.

The detailed discussion on this topic is available in Chapter 07 of the book "Strategy to Develop World Class University".

2.2. International Full Time Faculty: Restrictions

Sixty-one current or former members of the MIT community have **won the Nobel Prize**. They include 25 professors, 24 alumni (including three of the professors), 14 researchers, and one staff physician. Twenty six of the Nobel Prizes are in physics, twelve in chemistry, thirteen in economics, eight in medicine/ physiology, and two in peace. The sheer number of Nobel Prizes that the MIT community has won, by any standard, is impressive. The wide range of subjects in

which it has won the Nobel Prizes is, in fact, more impressive than the mere number of Nobel Prizes that it has won. This list of prizes spans nearly all the prize categories from physics to economics to peace. **It is hardly necessary to stress the beneficial impact these Nobel laureates have on the quality of education in the educational institutions to which they belong**. **They do teach courses for beginners giving them rare insights into the subjects that even the best of professors would find it difficult to provide. Therefore, is it surprising that many of these beginners blossom into high caliber researchers? Thus, the presence of these Nobel laureates produces a virtuous circle. These eminent persons produce high caliber researchers who, in turn, become Nobel laureates and the circle continues.** [41]

2.2.1. Current Situation and Views of Experts

The Non-Indian foreign faculty is missing at universities and institutes of higher learning in India. They are trying to appoint 'Indian Faculty at Abroad' and clamming as "International faculty'. The Brain Gain is still in initial stage. Very few institutes could get Full Time Non-Indian foreign faculty. Not a single IIT or IIM have full time foreign faculty. It's because of government restriction. It's a major hurdle for establishing World Class Universities in India.

Government policies do not support the regular appointment of foreign faculty at Indian institutions. Moreover, the salaries that can be offered would not be attractive to such faculty. [56]

The Indian Institutes of Technology have to wait longer before they could recruit foreign faculty on permanent basis as **Home Ministry has stalled appointments**. The premier institutes **will not be able to recruit even candidates with Overseas Citizen of India (OCI) cards** that give them most economic rights available to the Indian citizens. [64] [65]

Dr. G. Viswanathan, Founder & Chancellor, VIT University, Vellore, stated that "Faculty is an area that needs focus. **As of now international faculty come for a few months** and then head back. While in many US universities we see Indian professors, Indian institutes must also be able to attract good permanent faculty from around the world." [57]

As Philip Altbach and Jamil Salmi argue in their book The Road to Academic Excellence, the quality of faculty is crucial in the making of a successful university. Not only are India's universities **unable to attract sufficient numbers of world-class faculty**, the academic culture, poor salaries and working conditions, and excessive politicization have convinced Indian parents – who play a key role in deciding what their children do in life – that their children should not opt for a career in teaching and research. This has effectively led to the 'exit' of the most meritorious students from a career in teaching and research. [66]

The article published in Indian Education Review has pointed out Internationalization aspect. "It's not that institutes or universities in India are not doing well. These rankings assess several factors and we tend to lose points on many of these indicators, **which include international faculty and international students**. Further, while the rankings look at various subjects, IITs and our universities will lose points on a specific subject like medicine." [67]

Director of IIM-Lucknow, Mr. Devi Singh said that (Jan 2013). "We, currently, **have only foreign PhDs but no faculty**. We have started attending international conferences on the lookout for strong foreign faculty." **None of the seven IIMs has international faculty**. Last year, IIM-Ahmedabad was in talks with an international professor but the deal fell through. For IIMs, recruiting and retaining international faculty is a challenging affair. [68] [69]

Dheeraj Sanghi, former Director, LMIIT, Professor at IIT Kanpur suggests a five year plan which can get IIT's into top 100 world rankings.

- IIT's have a very poor student faculty ratio: Currently at around 28 to 35 and with the increased number of IIT's it has become even more difficult to acquire quality faculty. But quality faculty can be improved by better handling the PhD's and post docs and using that as a faculty development program by giving more financial support for professional development for the faculty.
- International faculty: If we were to believe our bosses, **the problem is that of the government**. **They don't allow permanent jobs to foreign nationals, only 5-year contracts.** And that is the only reason why foreign faculty is not queuing up to take positions in IITs, and IITs don't find it much of value addition if international faculty spends only a semester at the institute, but if a foreign national faculty member with a good academic/research record wants to spend a semester, will teach a course, give a few research seminars, interact with a faculty or two, and a few graduate students, but **will not have any long term collaborations**, isn't it just fine and that will improve our international faculty score Says Professor Dheeraj Sanghi [70]

2.2.2. Scenario at Existing WCU

Let's see the percentage of foreign students and faculty at existing WCU.

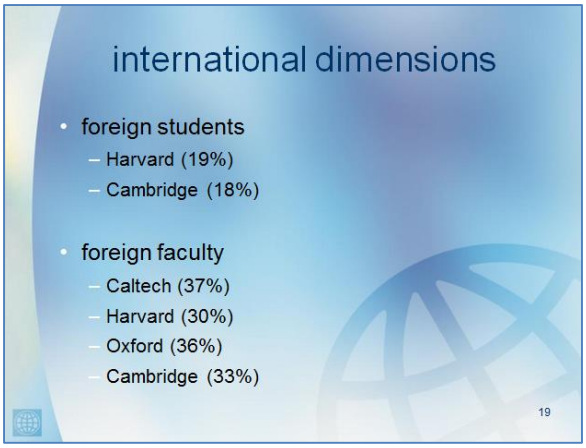


Fig. 2.3: Percentage of International faculty and students at WCU [45]

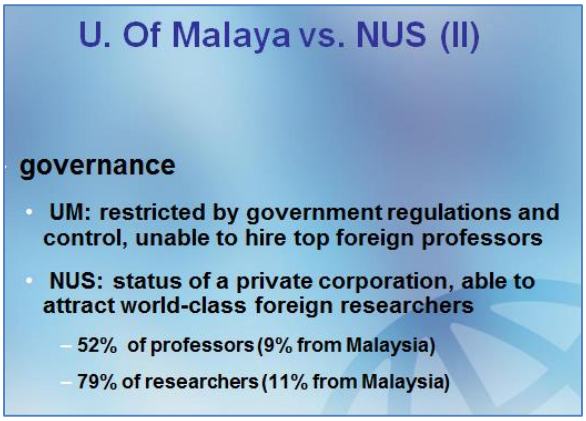


Fig. 2.4: Percentage of International faculty at University of Malaya and Nanyang University Singapore [45]

The Chronicle of Higher Education Magazine stated that "**In North America or in the U.K., there is no dearth of Indians with Ph.D.'s who distinguish themselves in teaching and research**. Few, however, want to teach in India, not even at the IITs and the IIMs. The motto for Indians abroad–certainly those in academe–is still "**anywhere but India.**" How has such a large and populous country, and one where education is highly valued, reached a point where it cannot find faculty members for its most venerable institutions? The problem is in part about salaries. According to a study by Philip G. Altbach of Boston College and Jamil Salmi of the World Bank on academic institutions around the world, salaries at the IIT's are "ridiculously low" compared to IIT graduates who go into the private sector. Salaries have improved significantly since the Indian government approved salary increases in its Sixth Pay Commission in 2006. However, in India's growing economy, housing costs, private-school tuition, and food prices have increased greatly over the years. More importantly perhaps, the Indian state is a poor provider of public goods and services so that many basic amenities have to be acquired privately. Location may be a factor as well. **Mostly, there is a lot of talk and ambitious plans about reforming higher education. They need to first try and change the way Indians think about the profession.** Until then, Indians will prefer to teach on North American, British, and Australian campuses." [71]

Solution Space 2.2

- Need National Policy for Full Time International Faculty for longer duration
- Globally competitive salary structure
- Globally attractive taxation policy for international faculty
- National Brain Gain policy
- Use of variety of tactics to bring talented global faculty
- Infrastructure and facilities to attract foreign faculty

The detailed discussion on this topic is available in Chapter 8 of the book "Strategy to Develop World Class University", Shroff Publication

2.3. Shortage of Faculty and Very Low Student Teacher Ratio

2.3.1. Low Student Teacher Ratio

The student teacher ratio in India (24:1) is very low as compared to good institutions in other countries, 9.5:1 in Sweden; and 13.6:1 in United States. In addition, a major factor that leads to poor quality of teaching and learning as well as lack of research capabilities is the lack of qualified faculty in the higher education institutions. [72]

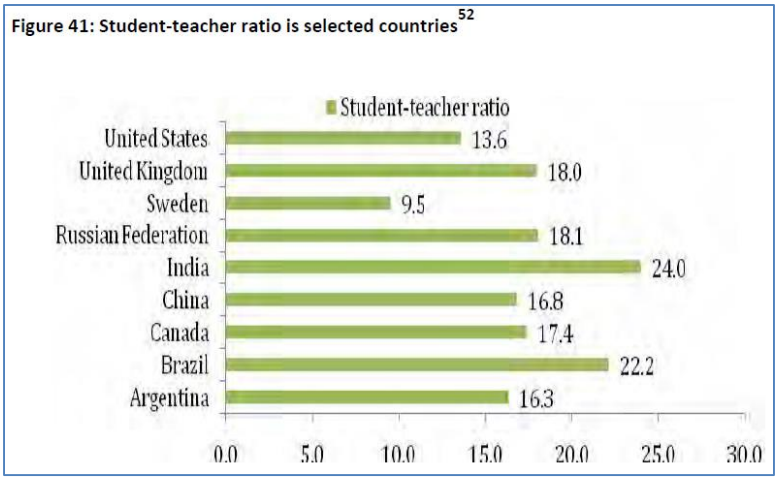


Fig. 2.5: Student Teacher Ratio in selected countries [72]

2.3.2. Shortage of Faculty Hampers Quality

Many institutions also face acute **shortage of experienced and senior faculty**; this **hampers curricular development**, **research initiatives** and the **general management** of institutions. Universities departments and colleges do not suffer from this shortage as severely as affiliated colleges do. Again, many affiliated colleges are privately owned and have limited incentives to employ senior faculty members by paying higher salaries. Many private colleges are now employing teachers on **contract basis** and paying them meager salaries, sometimes on per lecture basis. This defeats the goals of quality teaching and learning. The Supreme Court in its landmark judgment in T.M.A. Pai matter, had severely castigated institutions which do not employ full time qualified faculty. It said that, "teachers are like foster parents to the students. Can we afford to place the future of the country in hands of these hired teachers?" [72]

2.3.3. Fast Expansion

The **fast expansion** of higher education sector resulted in shortage of qualified faculty. An important element in ensuring quality and excellence in Higher Education is the need for adequate number of good faculty in Institutions of Higher Learning. While there has been a two fold increase

in the growth of Teaching Staff over the last decade, this has not clearly kept pace with the growth of Universities and Colleges and Enrolment.

2.3.4. Educating Educators

India needs research universities to strengthen the teaching community. The teaching or training institutes can't produce good teachers.

Dr. Shyam Sunder, School of Management, Yale University stated that "In addition to educating some 4 million new graduates, Indian colleges and universities **must also educate about 40 thousand new instructors each year**. **If undergraduate classroom is the wheat farm, the graduate program is its seed farm. Whether one eats tomorrow or starves will depend on the quality of grain saved as the seed.** At present, Indian universities grant some 17,000 PhD degrees annually across all fields and, in the judgment of many educators, these degrees are of mixed quality. **Graduate programs, like seed farms, are extremely expensive to run, and they yield too little revenue to motivate profit-making colleges**. Profit-making companies do not invest in educating educators, thus exacerbating the problem in India. To create and sustain a good system of higher education, the **Commission will have to have a "seed farm" division of its own to deal with the problem**." [19]

2.3.5. False Picture of Vacant Faculty Positions

Few regulatory bodies are calculating faculty requirements on the basis of sanctioned intake capacity of the institute. To explain the concept, let's consider one hypothetical example (I have not calculated the data in column 3 as per actual complex rules)

Sanctioned Intake Capacity	Regulatory body assume Total Strength of admitted students	Faculty Requirements as per sectioned Intake considering student-teacher ratio 15:1	Actual total Admitted Students in the institute	Faculty Requirements on the basis of actual admitted students considering student-teacher ratio 15:1	False Vacant faculty position
1	2	3	4	5	6
		Column 2 / 15		Column 4 / 15	
240	960	64 faculty members	400	approximately 30 faculty members	34
300	1200	80 faculty members	400	approximately 30 faculty members	50
420	1680	112 faculty members	400	approximately 30 faculty members	82

Table 2.4: False faculty requirements

In many states there is a 15% management quota for admitting students in the institute. To admit more students through this quota with donation, the institutes normally increase the sanctioned intake capacity beyond the limits. They know that they can't admit the students as per enhanced intake capacity. Usually the seats remain vacant. Now number of colleges have increased. Neither management gets donation nor could fill the seats as per enhanced intake capacity. On the top of

that the regulatory bodies are forcing the institutes to appoint faculty as per sanctioned seats (See above Table column 3). This scenario paints false picture about vacant faculty positions.

2.3.6. Strange Rules Create Artificial Shortage

The shortage of faculty is sometimes **artificial**. Many premier institutes like NIT have framed very strange eligibility norms for the post of professor. They fixed 50 years as an upper age limit for the outside candidates. If somebody is interested to switch over to home town from very reputed institute then this rule will restrict him. **If there is at all any shortage of faculty and government is really concerned about it then at least government institutes should not put such restrictions.** Observe the service conditions of existing WCU and Indian premier institutes. **The universities in developed countries are more practical and their approach is more professional.** They never put such stringent conditions if there is shortage of faculty.

In fact, in most of the universities in developed countries, there is no retirement age for teaching faculty. Many faculty members are working even after age of 70 years.

2.3.7. Open the Doors for International Students

When good job opportunities in other parts of the economy reduced the number of native-born students willing to pursue PhDs, the U.S. opened its doors to talent from abroad. There was plenty of young talent from Asia willing to work hard to earn doctorates in the best of U.S. universities, and to go on to become members of their faculties. Given the unwillingness of many Indians to pursue doctorates, **India too could consider opening the doors of its graduate programs to students from abroad, and thereby narrow the gap between demand and supply of talent in academia**. [19]

2.3.8. Minimum Qualification: Allow Graduates of Premier Institutes

Prof. (Dr.) Faizan Mustafa, Vice-Chancellor of NALSAR University of Law, Hyderabad stated that "The proposed promotion of faculty exchange in the plan is one way to compensate for the shortage of good quality teachers. The shortage is acute in technical courses like law, management or engineering because the **best students complete a Bachelors in Technology from IIT or Law from the National Law University in Bangalore, but do not always go for a Masters degree**. The compulsory requirement for a qualification like an MTech or LLM for becoming a faculty member in an Indian university makes us lose these graduates to corporates. Some of them also head overseas to explore other avenues. Undergraduate qualifications should be the minimum requirement for becoming a lecturer in a professional college. These teachers can go on to complete their post-graduation during their tenure as teachers." [247]

Solution Space 2.3

The faculty shortage problem arises because of very rapid expansion of educational institutes in India, which is required to chase 30% GER. The important suggestions to solve this problem are:

- India is having 16, 9 and 8 times more institutes than China, USA and Entire Europe respectively. We don't need more institutes but need more universities and teachers.
- We will have to increase the research universities to produce more teachers as well as researchers.
- The conditions like "50 years age limit for the professor post" must be removed.
- There should not be any retirement age for faculty like developed nations.
- In the growing economy, the native students are reluctant to pursue research. Thus open the door for foreign students to narrow the gap between demand and supply.
- The knowledge of Scientists of R&D laboratories (400 National, 1300 private sectors and 870 MNC) can be utilized for improving teaching in higher education sector.
- Similarly, faculty of higher education sector can be involved to improve the research output of R&D laboratories.
- The entry level qualifications for the post of Assistant Professor should be graduates of Premier Institutes or Post Graduate from other institutes.

2.4. Vacant Faculty Positions

In spite of availability of the staff for many disciplines, the Indian universities couldn't fill the vacancies because of **government sanction procedures**. Any position should not be vacant for more than 2 months.

In addition to the low number of sanctioned faculty positions, faculty vacancy even in sanctioned strength is an extremely serious problem. A large number of faculty positions are not filled due to various reasons such as

- Ban on recruitment
- Lack of funds, and
- Reluctance of states to negotiate the long-term salary burden.

According to the Dhande Committee report, the faculty strength as of 2008 was 699,644 with vacancies close to 40%. Attracting faculty is a big challenge for rural and backward areas because of lack of infrastructural support and reluctance of teachers in moving to non-urban areas. Faculty shortage creates serious hurdles in the proper functioning of a college or university. All activities from the basic functions of teaching and research to curriculum development are compromised. The following table shows the position of Indian universities in 2007-08. [72]

The brain drain is also reflected in the lack of qualified manpower for Indian higher education and research institutions. Across the elite Indian institutes of technology, or IITs, there is a 43% vacancy of faculty posts while half the positions in the national institutes of technology and central universities are vacant. [295]

Table 4: Determinants of Quality and Gaps in Each of the Universities

Parameters	Average of All Universities	Benchmarks (as in A Grade Universities)	Quality Gap
Number of Departments Per University	29	34	5
Age of the University in years (as in 2004)	44	51	7
Number of Sanctioned Faculty Positions per university	287	432	145
Number of filled up faculty position per university	220	329	109
% of faculty positions vacant	25%	0	0
Number of Faculty members with PhD	158	432	274
% of teachers without PhD	24%	0	0
Number of Teachers per Department per University	8	10	2
Number of Books in Library	288,913	352,886	63973

Table 2.5: University Statistics 2007-08 [73]

Dr. Pawan Agarwal, Adviser (Education), Planning Commission, Government of India stated that "There are a **large number of vacancies** and, despite thousands of applicants for each position, selection committees often find it difficult to appoint qualified faculty. There is very

- Little mobility of academics among institutions
- Hiring practices are highly centralized and
- Suffer from inbreeding and nepotism.
- Hiring Practices: It is encouraging to note that several institutions, particularly new central institutions and well-regarded private universities, are adopting innovative hiring practices; these include instituting probation periods of five to seven years for young faculty and offering top-up salaries and variable pay to motivate the faculty. However, much of the rest of the system is inert." [46]

Solution Space 2.4

- There is a need of centralized database of faculty at state and central level. The regularity authorities must maintain this database.
- Adapt effective and efficient recruitment process, which will avoid unnecessary delay in appointment procedures.
- The budget of Mumbai Metropolitan city is greater than 9 State Governments. The economic development of few states is comparatively not good because of industrialization, availability of natural resources or geographical conditions. The central government should provide financial support to these state governments for state university's faculty appointments. Already MHRD has launched RUSA for this purpose.

2.5. Losing Intellectual Capital and Foreign Exchange

Industry chamber has recently reported that 450,000 Indian students spend over **USD 13 billion** each year in acquiring higher education overseas. [14]

According to the study International Mobility and Employment Characteristics among Recent Recipients of US Doctorates by the US National Science Foundation, **around 5,000 Indians join US universities every year** for doctoral studies in these fields. **Only 5% of Indians who go to the US to earn a doctorate degree return home**. [295]

Research, scholarship, creativity, and inspirational teaching occupy the narrow top of the educational pyramid. Education of educators is the "**seed farm**" of knowledge. **A wise farmer saves his best grain to be used as seed for planting the next crop**, even if it means having to bear the hunger pangs in a bad harvest year. A wise society, too, sends its best brains to think, create, and teach the next generation. **India does not.** [19]

Anju Banerjee, Chairperson and Managing Director of Educational Consultants India Limited is of the opinion that in the coming years, twinning programmes may make a small dent in the huge mismatch between the number of foreign students in India — about a paltry 10,000 — and the number of Indian students going overseas for study — **approximately over 2.5 lakh**. Estimates suggest that about **120,000 Indian students enter US universities** and **80,000 students make their way to UK annually**. [74]

Solution Space 2.5

- Like medical colleges there should be national policy that the passed out students should work for the nation at least for few years, so that this precious intellectual capital can be utilized for nation building.
- If we could stop this brain drain by developing WCU at India then this precious intellectual capital can be utilized for nation building. Develop World Class Education system in India to stop this brain drain
- There should be National Brain Gain policy.

2.6. Social Status of Teacher and Researchers: India doesn't Make Heroes of its Researchers

Until the Sixth Pay Commission Report led the University Grants Commission (UGC) to raise government academic pay by 70 percent in 2008, teachers barely had a toehold on the lower middle class rung of the social ladder. Beyond the individual satisfaction such a career may bring them, the middle class ethos in India does not accord teachers a social status as an extra reward. **Matrimonial advertisements—that ultimate indicator of social status in India—often include searches for engineers, MBAs, green card holders, etc., but hardly ever for teachers**. [19]

With the importance assigned to degrees and administrative authority, the encouragement of creativity and originality of thought in young minds, and respect for the power of ideas**, take a**

back seat. It is rare in **India to see the name of a scholar in the public domain** because of his or her scientific or artistic contributions. Rather, the **few names that do appear do so because of their administrative positions and authority**. [19]

As P. Anandan of Microsoft Research India puts it "**India doesn't make heroes of its researchers**." Indian educational and research structures find it difficult to recognize and encourage scholarly achievements **except** through **administrative responsibility**. [19]

In any democracy, if most of the national functions and events are **dominated by military regime**, then we can say that it's a **partial or restricted democracy**. Similarly in higher education, if the **national and international educational events are dominated by regulatory and funding authorities** then any one can imagine the **degree of autonomy and freedom enjoyed** by higher education system of that country. Just compare the **international conferences in India and Abroad** to realize the difference of educational environment and degree of freedom in India. In addition, India, like many other Asian countries, **resorts to age and seniority** as **qualifications for decision-making**. This excessive respect for age puts meritorious young scholars and their heterodox ideas at a disadvantage. [19]

Solution Space 2.6

- This is a problem of Indian culture and tradition.
- The Indian society gives more weightage to government service because of service security and government pension schemes. From 2004, the government has withdrawn the pension scheme, thus government jobs are not that lucrative anymore.
- The 90% faculty jobs are available in private sector. Many times, the faculty of private sector couldn't get salaries as per government rules. From 2006, after 6th Pay Scale the situation has improved a lot.
- Government must come forward to enhance the status of teaching fraternity. In academic circle the status of teacher should be higher than regulatory authorities and policy makers. Observe any National or International academic event in your region, you will realize this fact. Our society gives more weightage to authorities than scientist and teachers. This scenario must change to attract better human capital to academics.
- Recently the Government of India has awarded "Bharat Ratna" to Prof. CNR Rao. It's a right step in this direction.

2.7. Many Difficulties in Attracting Foreign Players

Dr. Rahul Choudaha, Director of Research and Advisory Services at World Education Services in New York, stated that "Many foreign institutions interested in India already know that it is **not an easy country to navigate** and that **its higher education system is even more complex**, due to its **political and legal environment**. At the same time, opportunities to grow and engage are very high. Effective engagement in India not only requires an understanding of the legal and policy framework but also the ability to translate this knowledge into practical and successful models for partnerships unique to each institution's mission and needs. **There is no one-size-fits-all solution for building international partnerships in India.** As the Leeds MET case demonstrates,

institutions are often caught in a "Catch-22" scenario. They can attempt to navigate through India's regulatory and legal labyrinth haplessly, or ignore it, and expose themselves to **considerable risk**." [46]

Solution Space 2.7

There is an urgent need of more professional regulatory mechanism and one window system with nationwide stable, uniform, clear policy and less regulatory legal framework, which should take care of return on investment.

2.8. Working Conditions: Not At Par with Global Standards

Philip G Altbach stated that "Building an academic culture and providing adequate salary and working conditions for the professoriate are crucial for the entire profession, especially important for the top of the academic hierarchy. Indeed, building competitive research universities requires a reasonably well-paid professoriate with working conditions **at least somewhat comparable to global standards, since top academics are part of a global labor market.** [39]

Solution Space 2.8

There is a need of policy for international faculty and it should consider the tactics to attract international faculty. The details are covered in Chapter 8 of the book "Strategy to Develop World Class University."

2.9. Preference to Local Faculty

Mostly all the universities and higher education institutes in India, including premier institutes, are dominated by local or regional faculty. The common practice … of hiring one's own graduates for teaching positions, while common in many countries, creates problems for building a productive and independent academic culture. The university's own graduates may not be the best possible candidates for positions, and they have been socialized into the culture of the institution and find it difficult to do their best creative work." [39]

The UGC Report "University and Society Issues and Challenges 2011" stated that "The Indian Universities were **bound by territorial jurisdiction** which **needed to be phased out** if student and faculty mobility was to be achieved and diversity was to be encouraged…. Mobility of teachers may be promoted through clusters of neighboring Institutions" [211]

Solution Space 2.9

It is natural process but not advisable for developing the WCU. The domination of any type of group develops enormous problems.

Chapter 3: Difficulties for Funding and Revenue Generation

*"**When resources are limited, philanthropy isn't the best practice**." Advocating this mantra, the Planning Commission has retained a suggestion to allow higher education institutions to run for profit in the final draft of the 12th Five-Year Plan. [77]*

*Confederation of Indian Industry (CII) white paper 2013 stated that "Students who want to be 'ready-for-life' (for jobs in industry and other spheres in India and elsewhere) are also demanding world-class education in conventional as well as non-conventional streams of education. A **market-driven approach, adoption of emerging technologies, effective fund raising and deployment backed by right policy framework and hassle-free implementation by the Government** are key to boosting higher education. Can the educators and administrators in the country bring about a paradigm change in the education scenario?" [5]*

3.1. Not-For-Profit Clause: All Surpluses to Be Ploughed Back

Archaic rules mandate all formal educational institutes in India to be run as 'not-for-profit' centers under a society (**registration under the Societies Registration Act 1860**) or a public trust (**Registration Act 1908**). **Any surplus funds generated in the process of running formal schools/ HEIs have to be ploughed back into the same school/ HEI and no dividends can be distributed.** [13]

Not-For-Profit and For-Profit, both Modes are needed in any Country for fulfilling varied aspirations

Not-For-Profit	For Profit
Tax Exempt	Tax-paying
Donors	Investors
Endowment	Private Investment capital
Stake-holders	Stock-holders
Shared governance	Traditional Management
Prestige motive	Profit motive
Cultivation of Knowledge	Application of Learning
Discipline-driven	Market-driven
Quality of inputs	Quality of outcomes
Faculty power	Customer power

Table 3.1: Comparison of Not-For-Profit and For-Profit modes [75]

3.1.1. Views of Experts

In Oct 2011, Government of India's Planning Commission Approach Plan "Faster, Sustainable and More Inclusive Growth: An Approach to the Twelfth Five Year Plan", stated that "The current "**not-for-profit**" prescription in the education sector should be **re-examined** in a pragmatic manner so as to ensure quality, but without losing focus on equity. Private sector growth in higher education (including technical) should be facilitated and innovative **Public-Private Partnerships** (PPP) should be explored and developed in the Twelfth-Plan." [76]

The PWC and Confederation of Indian Industry Report stated that "The key challenge to expanding the higher education sector is the high capital expenditure (Capex) involved in setting up an institution – land, building and physical infrastructure. The **not-for-profit status** prevents both recovery and returns on the capex. **Consequently, only large corporations with deep pockets and a philanthropic mindset can set up higher education institutes keeping out entities that have a genuine interest in the sector but lack the resources**." [15]

The target of 12th Five Year Plan is to increase the GER from 12% to 25% up to 2017 and 30% by 2020. India requires an impressive amount of investment to achieve the goal of doubling its GER. The additional investment requirement may cross Rs 350,000 Crore mark **and cannot be met through philanthropy, or government grants, alone**. In the 11th Five Year Plan, the government allocated around Rs 850 billion for higher education but according to Planning Commission, there is resource gap of about **Rs 2.2 trillion** (Rs. 2.2 lakh crore). For government's expansion plans, it

seems **unlikely** that the Government alone will be able to meet the fund requirements for the higher education growth in Twelfth Plan. [78] [79] [80] [81] [82]

The foreign investors are watching closely the investment opportunities in India. One of the document stated that "The Indian education sector has been recognized as a "Sunrise Sector" for investment in the recent past. … With an estimated 150 million people in the age group of 18-23 years, the sector offers one of the most attractive yet highly complex market for the private/foreign players. Despite some inherent concerns with respect to choice of entity, **not for profit character** and foreign investment in formal education space; the industry does offer various innovative business opportunities, which can be explored for establishing a presence" [16]

IDFC report 2012 suggest that "**multiple models should co-exist** with a level playing field and strict checks and balances. In this context, **for-profit institutions should also be allowed to attract serious education entrepreneurs to invest in the sector**. This should be accompanied by **strict public disclosure of information**." [12]

The Times of India's article stated that "There's no denying that higher education in the country leaves a lot to be desired. The **not-for-profit model** has not only **failed to produce** quality institutes of learning - as exemplified by the inability of a single Indian varsity to make it to the list of top 100 universities in global rankings. It has also proved **unsuccessful in bridging the huge demand-supply gap in higher education**. Unlike the country's finite natural resources, India's human resource is a vast pool of untapped talent and economic energy. But realizing this demographic dividend requires access to quality higher education and skill training. It is precisely to incentivize investments and scale up higher education that **profit-making must be allowed**. At present, private investors are hamstrung by a web of regulations that restricts them at each step - be it hiring quality teaching staff or raising funds through alternative routes other than tuition fees. **Under such circumstances, the not-for-profit model for private institutions has morphed seamlessly into a crony-capitalist model,** breeding an unholy nexus between politicians, bureaucrats and college proprietors**.** Those unwilling to go along with existing cronyism find it unviable to enter the higher education sector. But if profit-making were to be allowed, it would lead to the sort of investment in higher education that's needed to meet demand. The need of the hour is to align social objectives with market incentives. While more colleges would mean better access to higher education, competition among colleges would check tuition fees and ensure quality. **Secondly, taxes on profits that private colleges would make can fund a large-scale scholarship programme for students from economically and socially weaker sections of society.** Meanwhile, the government would do well to adopt the role of a **light-handed regulator**. In this regard, creating a **credible accreditation system** for higher education would be a step in the right direction. **Education in India remains one of the last preserves of the license-permit raj. Reforms in this area are critical to unleash long-term growth."** [83]

The "not for profit" tag associated with the higher education sector has been a **major roadblock preventing private/foreign investment**. The **higher education sector is capital intensive** in nature with requirement under law for procurement of minimum land, construction of built-up infrastructure/libraries/hostels etc. It would be very challenging for any private entrepreneur/ company to commit a huge investment without any return, unless the goal is to fulfill corporate social responsibility. [16]

In **Malaysia, 90% of the private higher is reportedly for-profit**. In South Africa bulk of private higher education is legally for-profit education. Two-thirds of Brazil's private institutions are for-profit. Philippines has 47% of all its students in for-profit institutions. [17]

Dr. Arun Nigavekar stated in his research paper that "In addition to not-for-profit educational institutions, we **should think of creating for-profit educational institutions and work out a new economic approach for enhancing the resources of public institutions**. The participation of the private sector in education will enhance growth and bring in competitiveness. …. **India needs to radically reform her legal structure in the education domain**." [84]

The detailed information on this issue is available in my book "Funding Techniques of World Renowned Universities".

3.1.2. Other Side of the Coin

Mr. Pawan Agarwal, Adviser (Education), Planning Commission, Government of India, stated in his excellent research paper (194 pages) published in ICRIER that "There could be concerns about these for-profit institutions indulging in malpractices. Most of these malpractices, such as not giving valid receipts for fees collected; taking signatures from teachers for fictitious salary payments; collecting donations through dummy foundations; etc. are in fact criminal offences under existing criminal laws and require no special law. What is perhaps required is to **introduce a system of pro-active disclosure of essential information** about the institution by universities and colleges irrespective of the fact that they are public, private or private for-profit institutions. A guide on advertising, promotion and marketing stating as to what constitutes misrepresentation or misinformation would help consumer courts and competition commission to curb deceptive practices. There is a general feeling that private higher education in India is highly controlled and the strict regulations encourage rent-seeking activities. A strong case for deregulating this sector is often made in popular media. Experience has however shown that private providers have done little to build public trust in them. The fact they are not organized could be the reason. Education Promotion Society of India (EPSI) floated by PHD Chamber of Commerce and FICCI-HEN (Higher Education Network) organized by Federation of Indian Chambers of Commerce and Industry (FICCI) raise hopes for organizing **private higher education providers to create public trust in them**. Private higher education in India would flourish and gain respectability only if the providers could organize themselves around **ethical practices** and earn the trust of the general public. This has potential to make government regulation irrelevant over a period of time." [17]

Solution Space 3.1

- The Not-For-Profit clause is the double aged sword. It prohibits Return on Investment (ROI) and become major hurdle for investors. It partially stops the profit making in education sector.
- The higher education needs huge investment, which government can't fulfill. The private participation is must. The private sector will not move an inch without ROI, which needs "For-Profit" clause.

3.2. PPP Model and Not-For-Profit Clause

PPPs involve the government and private players to work hand-in-hand for providing public infrastructure and other services, while jointly sharing the **risks, rewards, investments and responsibility** associated with the activity. Partnerships are established for varied reasons including construction, financing, design and maintenance of public infrastructure. PPP in social sectors such as health and education are sometimes referred to as Public-Social Private Partnership (PSPP). [85]

The Public Private Partnership (PPP) is one of the **best avenues and practical solution** for solving financial issues related to World Class Universities in India.

The FICCI report stated that "Owing to constrained investment, the sector is **unable to cope with growing market demand and global competition**. Increased private investment is thus imperative to expand infrastructure and provide greater access to quality higher education in India. This report emphasizes that public private partnerships could be an **effective mechanism** for attracting much **needed private sector investment** into the Indian Higher education system without diluting the regulatory oversight of the Government and other regulators." [85]

"While the government is increasingly looking at the private sector, it is also important to note that the nature of private participation has changed over the years," said Jandhyala BG Tilak, a professor at the National University of Educational Planning and Administration. "Today **few speak** about private participation, which is based on the principle of **philanthropy, charity** and educational development of the poor. **The private sector of the 21st century is characterized by a strong profit motive**." [81]

India has concluded the financing for expanding enrollments and improving the quality of higher education will come from students and their families in the form of **tuition and other fees**. While government-aided colleges, built and managed by charitable societies, have a long and distinguished history in Indian higher education, the government cannot afford to support virtually free education at more such institutions with massive subsidies. Consequently, a large number of colleges and deemed universities have been opened in the recent decade to be run either as not-for-profit or as commercial operations by investors **seeking a decent financial rate of return on their investments**. This "solution" to the problem of financing higher education has several problems. [19]

Dr. Sam Pitroda, said that "The knowledge commission devised several suggestions such as **deregulation of education through private public partnerships**". He was an invited speaker at PanIIT, an organization created by the alumni of all the IIT's had organized a roundtable on higher Education at IIT Delhi campus. [86] [87]

The Not-For-Profit clause is the major hurdle for PPP model. Because of this clause, the industries are reluctant to come forward for investment in education sector. The PPP model is successful only when there is a business opportunities like healthcare, public transport and infrastructure development. **In 2011 there are only 2.2% PPP based educational projects in India**. The Return on Investment (ROI) is the major problem of investors and private players.

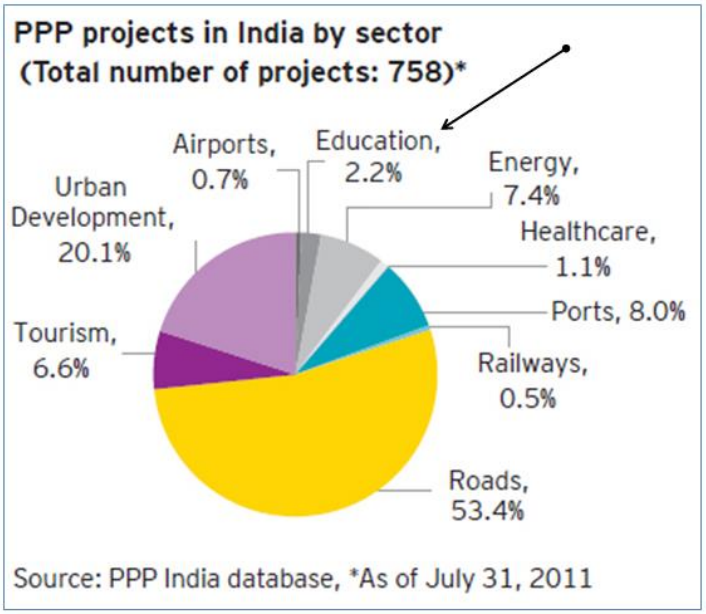


Fig. 3.1: PPP in Education Sector is just 2.2% in India [88]

The PWC report stated that "There has been increasing budgetary allocation over the various plan periods for higher and technical education. Yet these allocations will **not be sufficient** to expand access to quality higher education across the country. **India needs over 150 billion USD worth of investments in the higher and technical education, over the next decade.** The government of India (as well as many states) has recognized the need and importance of private-sector participation to meet the overall demands in the higher and technical education sector. **In the past few years, the government is also facilitating the adoption of various public-private partnership models**." [15]

Public private participation is being encouraged in view of the India's inability to meet the **requirement duo inadequate resources and poor management**. According to World Bank public private participation database though India has the 5th highest value of public private participation of any developing country it is still one of the lowest as share of GDP. In India Public private participation accounts for only about **8% of GDP** while it is 51 % in Argentina, 41% in Malaysia and 37% in Philippines. According to FICCI, demand for higher education is growing at **20% a year**, while the supply of higher education is growing at just **11% a year**. This **demand-supply gap** leaves private higher education institutions with vast potential. [89]

For PPP the system should have
1. A relative sense of equality between the partners.
2. Mutual commitment to agreed objectives.
3. Mutual benefit for the stakeholders involved in the partnership.
4. Joint gains.
5. Autonomy of each partner and
6. Fair returns to investment and effort. [89]

Solution Space 3.2

The "Not-For-Profit" clause is the biggest enemy of PPP Model. The private players will be ready to invest money only if there is lucrative ROI.

3.3. Funding Sources

3.3.1. Budget of Harvard is Greater than HE Budget of Whole Country

Great universities, especially the top 10 or 20 do have enviable track record, long history and, of course, huge budgets. **Harvard's annual budget** is about **4.2 Billion dollars** in 2013, (even at 64 rupees to a dollar, it is about Rs. 26880 crores) while as our entire higher education outlay for 2013-14 is Rs 16,210 crores (up by 20% than last year when it was Rs 15,458 crores) which also includes technical education (~ Rs 7300 crores - of which 2200 cr is for IITs, 1300 cr for NITs and 330 cr for IIMs). **So, Harvard University's annual budget is more than that of higher and technical education expenses for the whole country.** [22] [90]

3.3.2. Indian Scenario

Universities in India face financial constraints. Only 0.7 per cent of India's GDP is spent on higher education (NKC 2009), which is lower than countries such as the US (2.9 per cent), UK (1.3 per cent) and China (1.5 per cent). In general, about 75 per cent of maintenance expenditure is spent on salaries and pensions, and 15 per cent is absorbed by claims such as rents, electricity, telephones, and examinations. [12]

The Indian Higher Education system is over Dependent on Government Funding. One of the senior academicians, who want to keep his name anonymous, said that "Neither they are interested to generate revenue through patents, alumni association, international students, business incubation centers nor the regulatory bodies allow them to earn money from On-Campus or Off-Campus businesses or from Equity Market or Real Estate. On the top of that, Educational Philanthropic culture could not be cultivated and flourished in nation. How they can establish WCU? How they will arrange the funds? Are they serious?". "Keep in mind that, through tuition fees of private institutions and public funds for government institutes, one can't build WCU."

Another senior academic authority, who is interested to hide his identity, said that "For decades the system got over scaffolding (support) from public money. They forget how to stand on their own feet. In developed nations most of the faculty earn from consultancy and research outcomes and not solely dependent on salaries. We must develop self-sufficient and competent environment to change this mindset to become WCU".

Philip Altbach and Pawan Agarwal stated that **"India is a global leader in terms of gross domestic product (GDP) spent by public and private sources on higher education**. At 3% of GDP (1.2% from public and 1.8% from private sources), India spends more than the United States

(1% public and 1.6% private) and Korea (0.7% public and 1.9% private) on higher education. This suggests a **limited scope for further increase**, although more is required since, in absolute figures, investment in higher education does not measure up in international terms. Furthermore, there is an **urgent need for effective and efficient use of funds** to promote both equity and excellence." [91]

The Rashtriya Uchchatar Shiksha Abhiyan (RUSA) Report stated that "Innovation and creation of new knowledge are the major areas in which universities in the developed countries have an edge over their Indian counterparts. Investment in R&D in developed countries is not limited to public funding, **funding from the private sector especially industry is equally important**. This has helped universities and industries in such countries maintain their competitive edge. **An analysis of "global R&D investments" shows that the bulk of such investments are coming from private sectors.** For example countries like USA (32.4%), Japan (13%) and China (9.2%). India's share remains low at 2.2%." [72]

Lord Swraj Paul said that "I believe, on average, higher education in India is substantially **underfunded**. We need to invest more money into advancing educational excellence and we need to encourage more endowments supported by private funds. This has begun in some areas but needs to be accelerated if it is to produce any visible results in the near future." [92]

3.3.3. Funding Sources of Existing WCUs

Estimated sources of university income, 2007/08

Source of income / Type of income	(£ million) UK public sources	UK private sources	International sources (public and private including EU)	Totals
Funding council grants	8,508	0	0	8,508
Tuition fees and education grants	2,636	1,731	1,887	6,254
Research grants and contracts	1,997	1,176	548	3,722
Other services rendered	492	734	245	1,471
Other general income	681	2,037	259	2,977
Endowment and interest	0	508	0	508
Totals	**14,314**	**6,186**	**2,939**	**23,440**

Sources: Analysis derived from HESA

Fig. 3.2: UK: Estimated sources of university income (2007-08) [43]

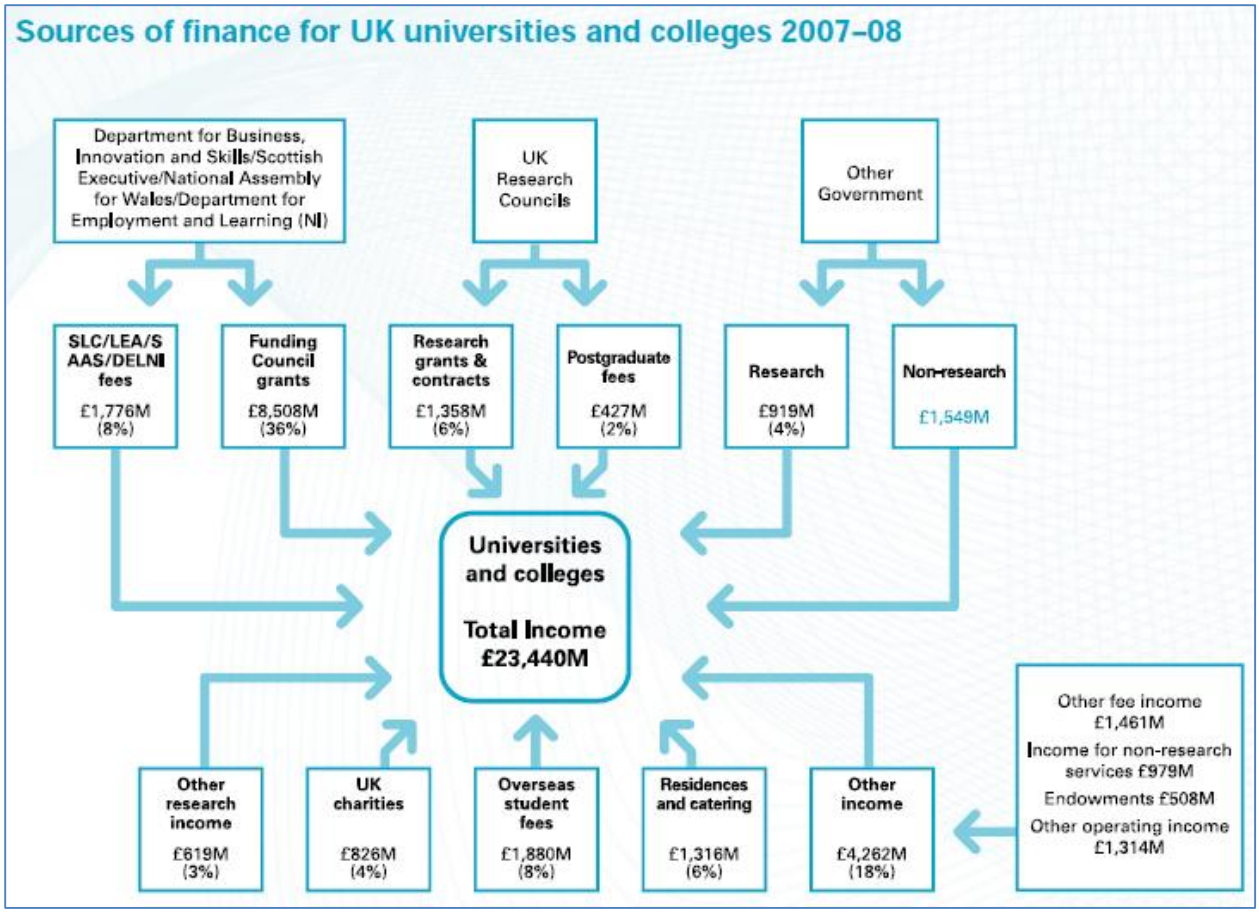


Fig. 3.3: Sources of Funding UK Universities (2007-08) [42]

Comparison of US and UK Endowment Levels

US Institutions	Endowments Assets (2005 million $)	UK Institutions	Endowment Assets (2005 million $)
Harvard University	25,460	Cambridge	6,080
Yale University	15,200	Oxford	5,320
Stanford University	12,160	Edinburgh	340
University of Texas	11,590	Manchester	228
Princeton University	11,210	Glasgow	228

Fig. 3.4: Endowment Funds of US and UK Universities [45]

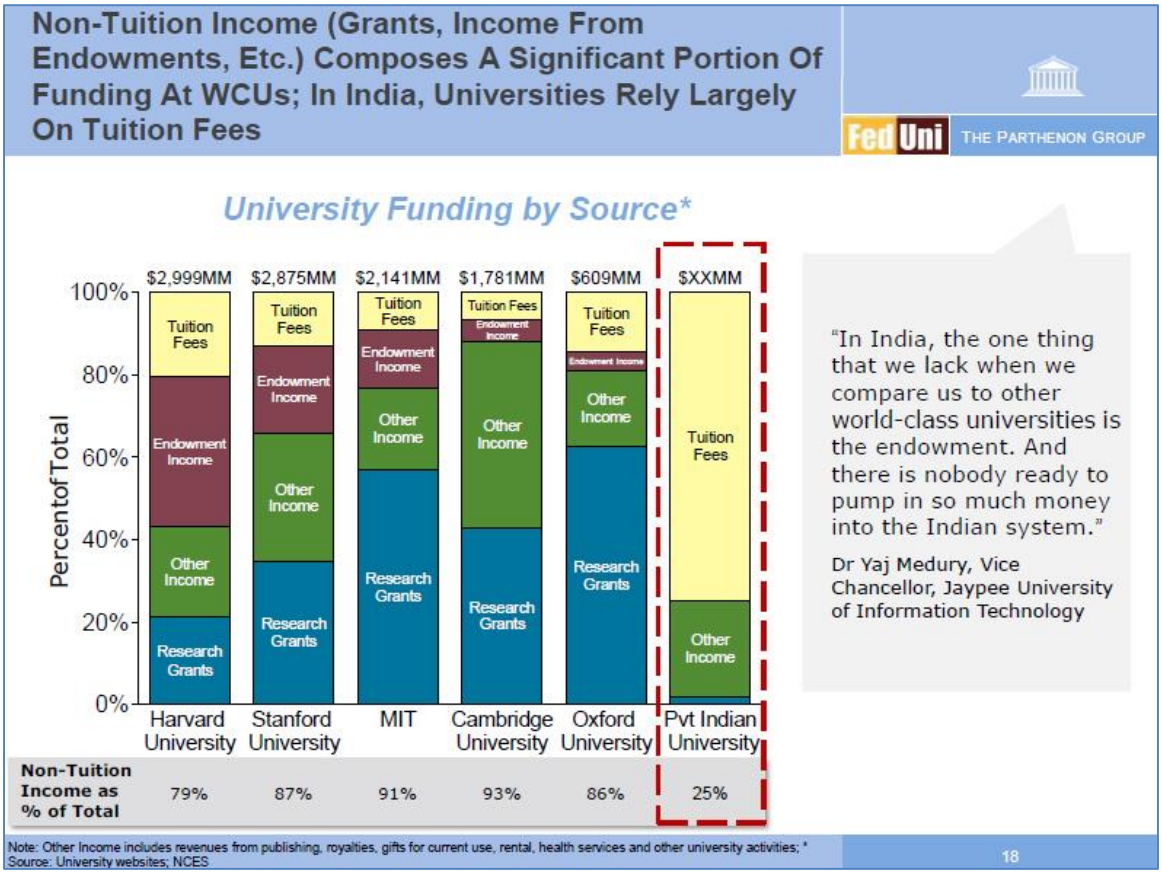


Fig. 3.5: Funding at WCU [93]

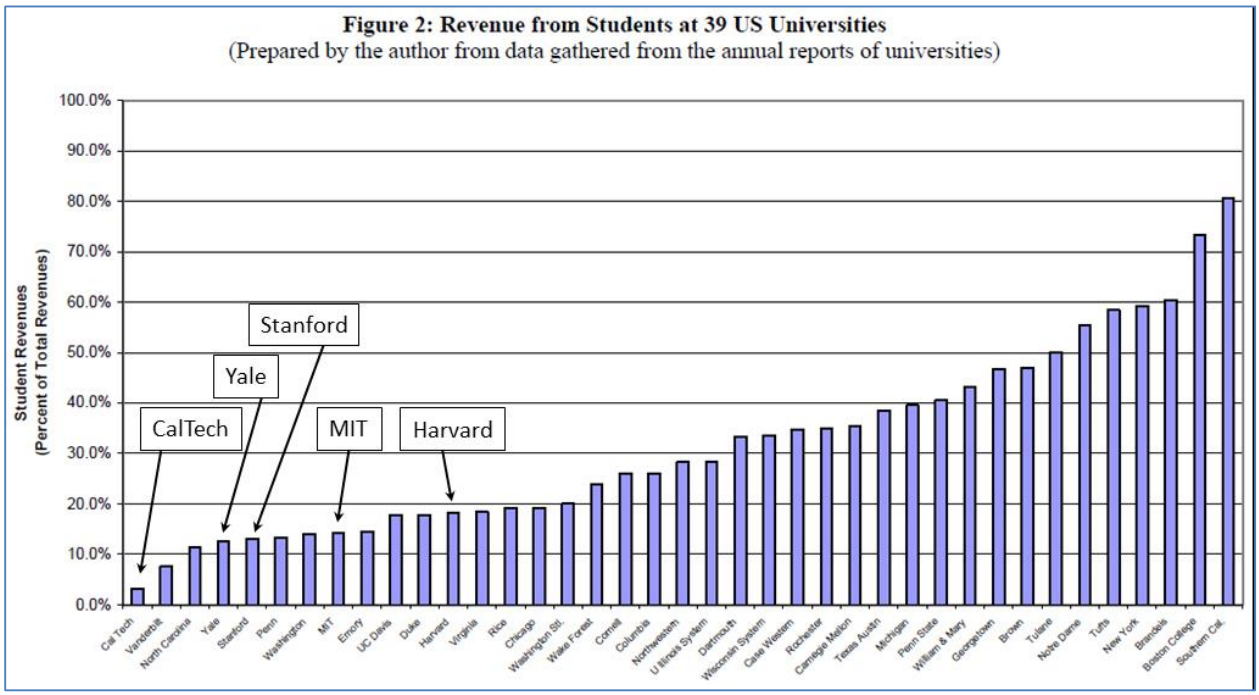


Fig. 3.6: Funding from students fees in percentage of total revenue of 39 US Universities [19]

Fig. 3.7: Government Funding: Percentage of GDP and Per Student [45]

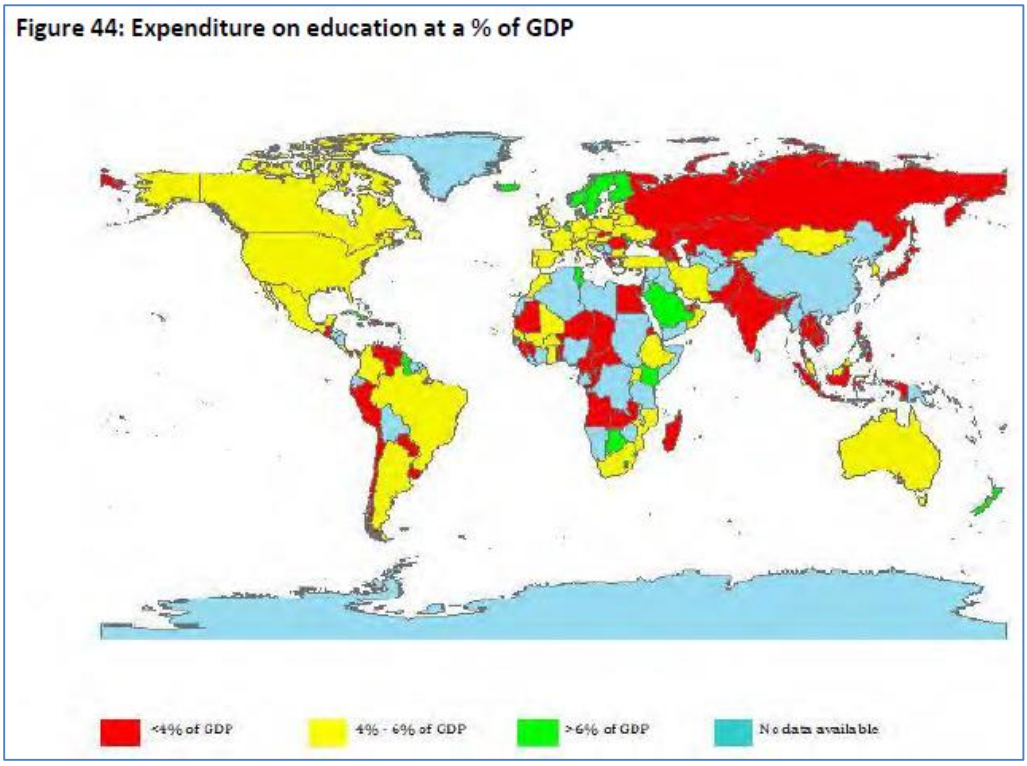


Fig. 3.8: Expenditure on education at a % of GDP [72]

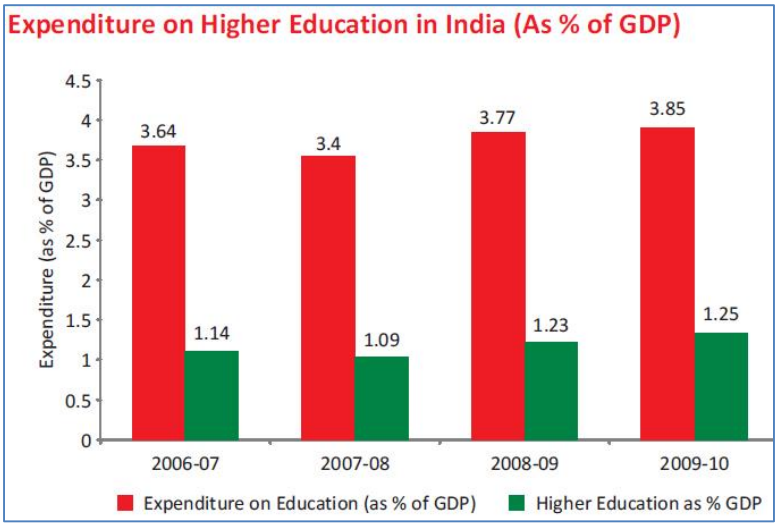


Fig. 3.9: Expenditure on Higher education in India as a % of GDP [72] [94]

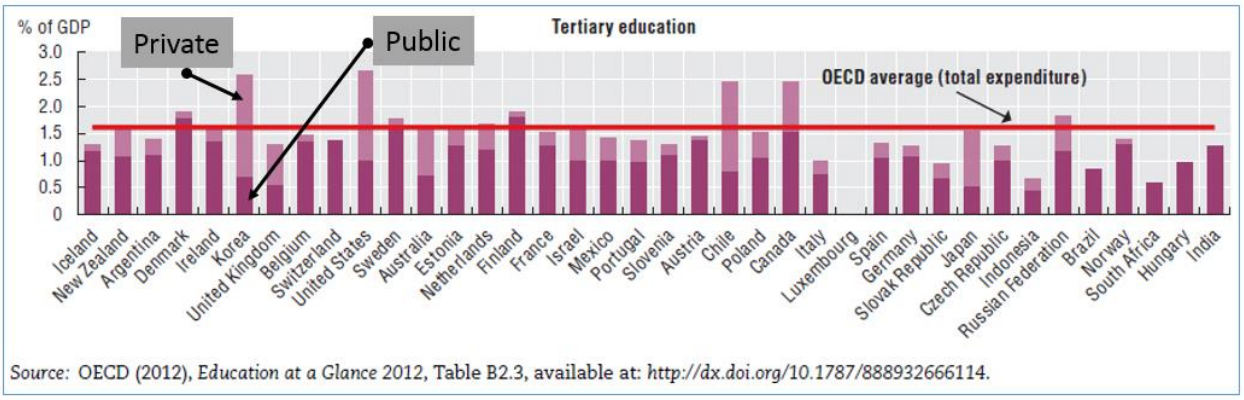


Fig. 3.10: Public and Private Expenditure by country as % GDP [333]

The U.S. provides an example of a high quality, diverse, deep system of higher education that is accessible to most segments of population. It is also a system in which the private sector plays a major role at all levels. However, the role of the private sector takes the form of philanthropy and management. While there is much diversity across colleges and universities, student fees generally account **for less than half the operating and capital budgets**, with the rest coming from **donations, research grants, royalties and licensing, and auxiliary services**. In contrast, even the genuinely not-for-profit colleges in India derive close to 100 percent of their revenues **from student fees**, because the revenue from other sources is small. In colleges run for profit—whether **overtly or covertly**—the revenue from students must be sufficient not only to pay for all the expenses, but also to earn a return on their investment. With little incentive to spend on innovation, research, and doctoral education, **this financial structure is a serious obstacle to raising the quality of education** provided by the institutions which account for most of the growth in enrollments. [19]

The Universities and higher education institutes throughout the world adopt various revenue generation techniques like

SN	Revenue Generation Techniques	SN	Revenue Generation Techniques
1.	Endowment Professor Chairs	2.	Selection of Disciplines
3.	Endowed individual Courses and Degrees	4.	Use Social Media to Attract Students
5.	Sponsored Events	6.	Effective Student Services Center
7.	Funding for Clubs, Special Interest Groups, COE	8.	Hybrid Degrees
9.	Endowed Fellowships, Scholarships	10.	Innovative Competitions
11.	Donation for Long Term Investment	12.	Mobile Plans
13.	Private Equity (PE)	14.	Entrance Test
15.	Venture Capital (VC)	16.	Meeting Charges
17.	FDI Investment	18.	Accommodation
19.	Government Research Funding	20.	Campus Catering Service
21.	International Funding Organizations	22.	Mall
23.	Foreign Government Funding	24.	Book Stores
25.	Foreign Non-Governmental Funding Organization	26.	Partner With Booksellers
27.	Industry Funding	28.	Partner With Discount Smart Card Company
29.	PPP Funding	30.	Power Generation
31.	Industrial Joint Initiatives	32.	Internet Business
33.	Patents	34.	Premises Rent
35.	Technology Transfer	36.	Spare Capacity Utilization
37.	Incubation Center	38.	Custom publishing
39.	Short Term Training Programs	40.	Research for Local Businesses
41.	E-learning Revenue Generation	42.	Insurance
43.	Overseas Campus	44.	Surplus Selloff
45.	Collaboration with Foreign Universities	46.	Movie Theatres
47.	Multi Campus	48.	Alternative Energy Sources
49.	International Students	50.	Software Development Division
51.	Franchise or Licensing	52.	Advertisement
53.	Academic Industry Partnership Courses	54.	Property Revenue
55.	Meta University	56.	Hotel Business
57.	Non-Degree Programs	58.	Natural Gas Wells
59.	University Innovation Clusters	60.	Phone Company
61.	Cluster College University	62.	Chain of Hospitals
63.	Expansion of Service Sector	64.	TV Channels, Radio and Magazine
65.	Consultancy Revenue	66.	Manufacturing
67.	Tuition Fee Structure	68.	Information Security Services
69.	Invest in Website	70.	Fully-owned Subsidiary
71.	Boost Enrollment	72.	Estates Activities
73.	Earn while Learn	74.	Faculty-Student Ratio
75.	Students Fund Management		

Table 3.2: Revenue generation techniques of world renowned universities

Solution Space 3.3

Out of hundreds of options of Revenue Generation and Funding, we are utilizing very few. Our Universities are over dependent on Government funding or tuition fees. Most of these revenue generation techniques are not feasible in India because of legal restrictions and regularity framework. Thus

- Indian Universities are unable to develop their financial strengths and can't compete eith global players
- Foreign players think that our nation is not a suitable place for extending their campuses, which is a biggest hurdle for internationalization process of Indian universities

The detailed information is available in my book "Funding Techniques of World Renowned Universities".

3.4. Budget Allocation but Same Not Being Spent

In the 12th five year plan the total budget allocation for higher education is Rs. 1,84,740 Crore [78]

The Times of India article stated that "The fourth year of the 11th Plan has just begun. Of the Rs **84,000 crore** allotted for higher and technical education in the plan, **the ministry has not even spent Rs 30,000 crore**. The infrastructural development of many of the new Indian Institutes of Technology and the Indian Institutes of Management has not taken off. The Planning Commission, which conducted a review of the 11th Five Year Plan (2007-2012), is likely to slash budgetary allocations for higher and technical education by nearly half the original amount." [95]

S B Nimse, Vice Chancellor, SRTM University talking about his expectations said, "I am hoping that this time government will double the budgetary allocation this time as in 12th FYP Planning Commission has proposed for three fold increase for the higher education. But, the most important thing is that the **MHRD and UGC should able to spend the money on time** as it is major problem. Budgetary provisions are ok, what we need is a less **bottleneck in its implementations**. During 11th Plan we were **able to spend only 20 per cent of the allocations** which is not sufficient and therefore we need to remove the bottlenecks in implement them fast" Dr. Nimse added. [96]

Prof K B Powar, Chancellor, Dr. D Y Patil Vidyappeth (DPU) said, "This really does not matter **what matters is how much of it is used** that matters, government has been increasing its allocation every year but we find that **most of money remaining unspent**. We have to seriously look at this issue find ways to properly use the money for improving the quality of higher education." [96]

Professor R Govinda, Vice Chancellor of the National University of Educational Planning and Administration in New Delhi said that "**Under the 11th Five Year Plan, 50% of the funds allocated to higher education could not be utilized**. Even with less allocation, we need to improve implementation and usage of funds." [97]

Solution Space 3.4

- This issue is related to government internal mechanism. They can analyze and rectify the issue.
- The RUSA can handle this issue if implemented effectively.

3.5. Many Indian States: Not Spending Sufficient Money on Education

The University Grants Commission (UGC), established in 1952 and awarded statutory authority in 1956, is responsible for the development of higher education, **allocating and distributing grants from the Central Government to all eligible central, state and deemed universities** based on an assessment of their needs. **Universities established under the Acts of Parliament are eligible for both development and maintenance grants**; those established **by State legislatures are eligible for development grants only**. [44]

The real game changers in Indian higher education are State Universities. They form the bulk of the education system, and hence **exercise a greater control over the education system** in India when compared to the Centre. Plans can provide direction to the education system along with large scale financial backing; however, if the States are not involved, large scale changes will not happen….**The State governments are hardly spending anything**. Most of the funds for new institutions are being pumped in by the Centre. However, the Central government only establishes IITs, IIMs and Central Universities. It cannot meet the larger target of expansion which will happen only if the states do their bit. [99]

R Govinda Vice Chancellor, NUEPA stated that "**The State governments are hardly spending anything**. Most of the funds for new institutions are being pumped in by the Centre. However, the Central government only establishes IITs, IIMs and Central Universities. It cannot meet the larger target of expansion which will happen only if the states do their bit." [98]

Solution Space 3.5

- The UGC provides only development funds to state universities. The maintenance fund to state universities is the responsibility of state governments. The economically strong states don't have any problem but other states can have problems.
- The linking of Funding to Quality is the only way to improve the quality of higher education system in India.
- The scheme like RUSA can handle this issue, if implemented effectively.

3.6. UGC Budget: 65% for Institutes Under Central Government

Resource allocation is also skewed. The NKC had pointed out that nearly **65 per cent of the UGC budget is used for meeting the operating expenses of the central universities** and University of Delhi colleges, leaving only **35 per cent for the rest of the universities in the country**. [100]

The role of central government in funding of higher education is limited and uneven. With handful of central institutions that cater to less than **two percent of the students getting nearly eighty five percent of central allocation for higher education**, while other institutions that cater to much larger numbers are starved of funds, there is something unjust about the current system of allocate of central resource for higher education. [17]

Solution Space 3.6

- The government funding is limited and distributed among central universities, premier institutes, state universities and research laboratories. Most of the premier institutes are under Central Government. The UGC provides development as well as maintenance funds to them. Thus 65% funds goes to these institutions.
- The 35% funds goes to 306 state universities and 283 state private and deemed to be universities, including 36000 colleges.
- On the top of this Research Laboratories consume major budget.
- Under the present funding model, the institutes are over dependent on government funding.
- This funding model is unsuccessful and needs major reforms.

3.7. Indian University Budget: 90% for Operating Expenses

The NKC Report pointed out that "Within the ambit of whatever resources are available, more than **90 per cent of the grant goes towards meeting operating expenses**, leaving very little for institutional growth and capital assets." [100]
In the U C Berkeley University is the topmost **US Public University**, spends **27% of the budget on research activities.**

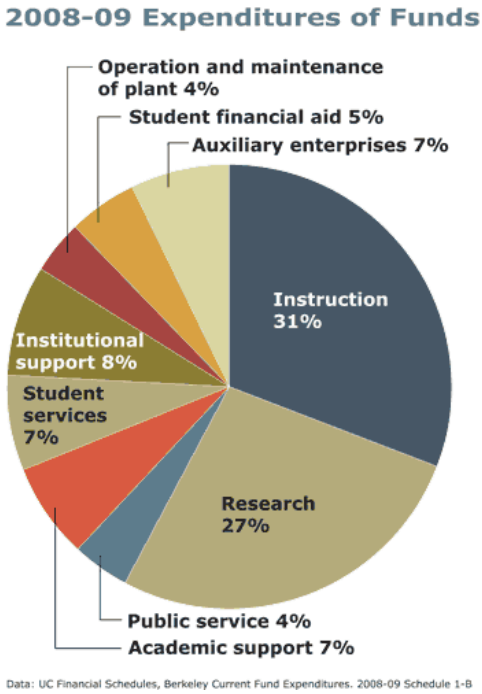


Fig. 3.11: U C Berkeley Top **Public** Universities of USA: Expenditure [101]

The article in Live Mint, The Wall Street Journal, rightly pointed out that "Our universities are looking at a grim future. Stone broke, **most Indian universities are still like coyotes baying at government grants to meet basic expenses**. **Their idea of financial planning is working out ways and means of getting funds from the government and the University Grants Commission.** As a consequence they pay teachers poorly, have archaic facilities, offer few grants for research and have virtually no global connect. By contrast the best American universities are thriving even after offering large doses of **financial aid to needy students**. And that's because of the **generous endowments** these universities pull in from grateful students and donors. According to a Bloomberg News report, net of financial aid, the **fees paid by Yale's students covers less than a tenth of the university's budget**, while the **endowment brings in about four times as much**. America's best universities **raise funds through a combination of tuition fees, grants from the government, patents licensed to private companies and donations**. And while this covers some **60% of their budgets**, the rest comes from their endowments, with universities such as Harvard, Yale and Stanford working on growing these revenues by investing them. **That's what our universities need to learn to do.** They need to become savvier and operate in the context of a modern economy: raising funds through innovative mechanisms, judiciously investing the money raised with help from professional fund managers. Harvard's endowment fund, one of the largest in the world, is invested in a wide range of asset classes ranging from **emerging markets, commodities, absolute hedge funds and private equity.** It has a long-term track record of returns which is the envy of institutional investors. Nor is it the only one—Yale and Stanford have better returns. What our universities need is the equivalent of a chief investment officer, someone like David F. Swensen, the chief investment officer at Yale University for the last 28 years, who manages endowment assets and investment funds totaling $19.4 billion." [102]

Solution Space 3.7

To establish World Class Education System and Universities, We need to learn revenue generation techniques of existing Public World Class Universities. Our financial model of the university is out dated.

3.8. Indian Universities: Reluctant to Generate Revenue

The National Knowledge Commission (NKC) had stated that "**fees constitute less than 10 per cent of total expenditure in our universities** … The problem has been compounded by the UGC method of providing grants-in-aid to bridge the difference between income and expenditure."

The Indian Universities are solely dependent on government support and reluctant to generate revenue. They are not ready to move towards self-sustainability. Even the government is not insisting it. The following figure shows the percentage of revenue from student fees in the **U C Berkeley, the top most Public Universities of USA**.

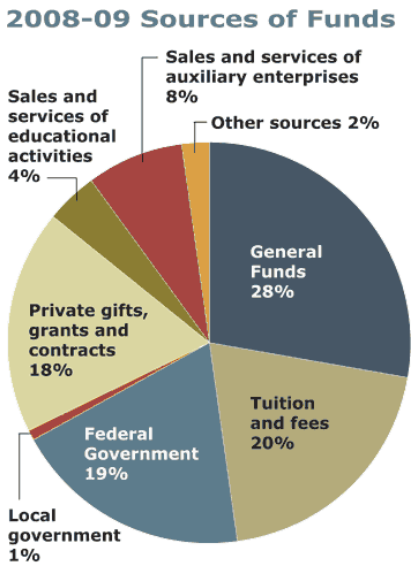


Fig. 3.12: U C Berkeley Public Universities of USA: 20% student Fees [103] [101]

The U C Berkeley, Public Universities of USA gets just 40% from government and tuition fees. They are generating remaining 60% income from various sources. The following figures shows the Indian scenario. The Indian Universities and regulatory authorities must learn a lesson from American public universities.

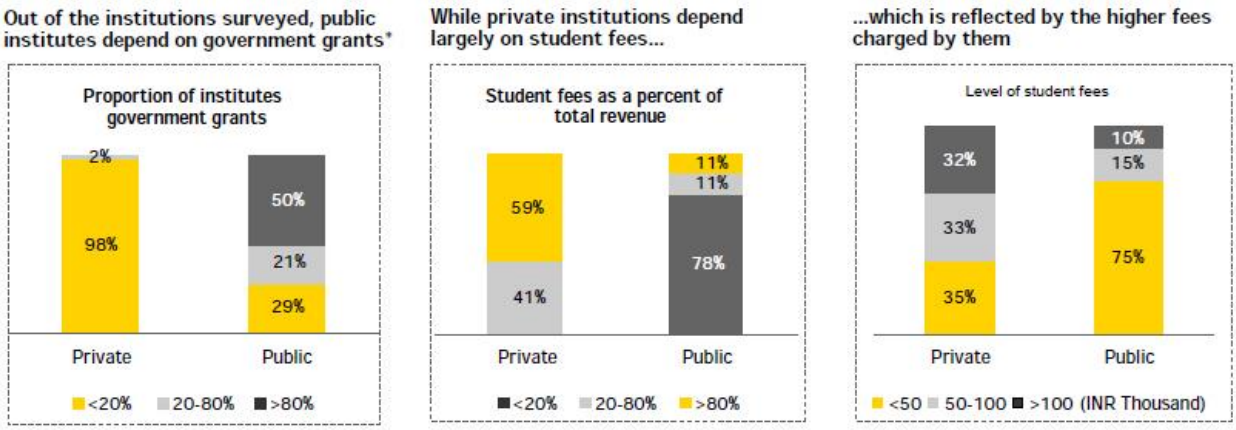


Fig. 3.13: FICCI Summit 2009: Our survey indicates that private institutions depend largely on student fees while public institutions depend on government grants, even as both generate little revenue from alternate sources [62]

Solution Space 3.8

- Any government can't satisfy full funding requirement of World Class Education system. The only option is the revenue generation through variety of ways. Since independence every public institute or university is mostly dependent upon pubic funding. Nobody insisted upon self-sustainable model. The self-sustainability can't be developed overnight. To develop any new culture requires few decades. It is the responsibility of Government, Politicians, Policy Maker, Legislators and Regulatory mechanism. It requires political will too. Already we are too late. Learn a lesson from existing WCU and adopt the techniques immediately. When resources are limited, philanthropy isn't the best practice.
- The detailed information is available in my book "Funding Techniques of World Renowned Universities".

3.9. Tax System and Endowment

3.9.1. USA Tax System

The American tax system, which provides for **tax-free donations to non-profit institutions** such as universities, is a major factor in permitting the growth of world class private universities. Research universities have the ability to raise significant funds through various means, but no substitute exists for consistent and substantial public financial support. Without it, developing and sustaining world-class universities is impossible. [4]

3.9.2. Indian Tax System

Implicit disincentives in the current tax and trust laws provide very little incentive to raise resources. **Trusts are required to spend 85 per cent of income streams from endowments in the same financial year, which prevents any meaningful endowment from being created**, which in turn could be utilized for scholarships. [12]

The Eduvisors, business research and consulting firm focused on Education sector in India, stated that "The culture of raising private donations from corporations and individuals is not prevalent in India. Whereas, most of the major institutes in India have recently started making progress in this regard, student fee and govt. funds (for the public colleges) are still the main income generating sources." The major Challenges are

- **Absence of a philanthropic culture**
- **Social Welfare by State**: Education, as a social welfare activity has been considered as a monopoly of the state in the past, with institutions being provided govt. grants and funds. It is only recently that private participation in the education sector has increased.
- **Taxation**: Indian businessmen/ corporations often donate to foreign higher education institutes, as donations to trusts are exempted from taxes. In India, trusts running education institutions are exempt from tax only if they are registered under the charities commissioner or

as a section 25 company under the IT Act. Also, donors (individuals and corporations) **do not get cent percent tax exemption in case of a contribution**. **Govt. intervention in terms of management of these donations is also high**, as **they restrict areas where these donations can be invested** (NPOs can't invest in private sector companies).

- **Lack of proactive institutional initiatives**: Institutes, till recently, have also lacked the pro activeness to look at alumnus as a means of raising huge resources. This is evident from the fact that efforts to establish a perpetual endowment has been started by a majority of the institutes in the last decade. The number of elite institutes which produce quality alumnus is less. As a result, individuals with an ability to act philanthropic is limited.
- **Highly tiered ecosystem**

"India, however, is on the right track. With educational costs increasing 2 to 3 % every year, institutes are realizing that **transferring these costs to the students is not a sustainable idea**. Institutions (beneficiaries) and donors (individuals and organizations) are scaling up their efforts to explore this previously dormant area." [104]

3.9.3. Tax System Hamper Endowment

The following figures clear the overall scenario related to endowment and tax system in India. The Indian Tax system don't encourage the endowment culture and become major obstacle for developing WCU.

Endowment Fund: Legal Constructs

Not for profit Endowment Funds can be a:

	Trust	Society	Section 25 Companies
Legislation	State Public Trusts Act or general principles of trust law	Societies Registration Act, 1860 or as amended by states	Companies Act, 1956
Authority	Charity Commissioner *(where state public trust law applicable)*	Registrar of Societies	Registrar of Companies
Minimum number of members/ trustee	One Trustee	Seven persons	Two persons
Management	Trustee	Governing Body	Board of Directors
Mode of Succession	Appointment or as per the terms of trust deed	Election by members of general body or as per the rules and regulations	Election by members
Regulatory Ease	Procedure for registration simple Specific approval/ registration required for receipt of foreign donation	Procedure for setting up is fairly simple Specific approval/ registration required for receipt of foreign donation	Lengthy and cumbersome procedure for setting up Specific approval/ registration required for receipt of foreign donation
Liability	Trustees could be held liable for breach of trust where liability would not be limited	Independent status	Independent status and limited liability

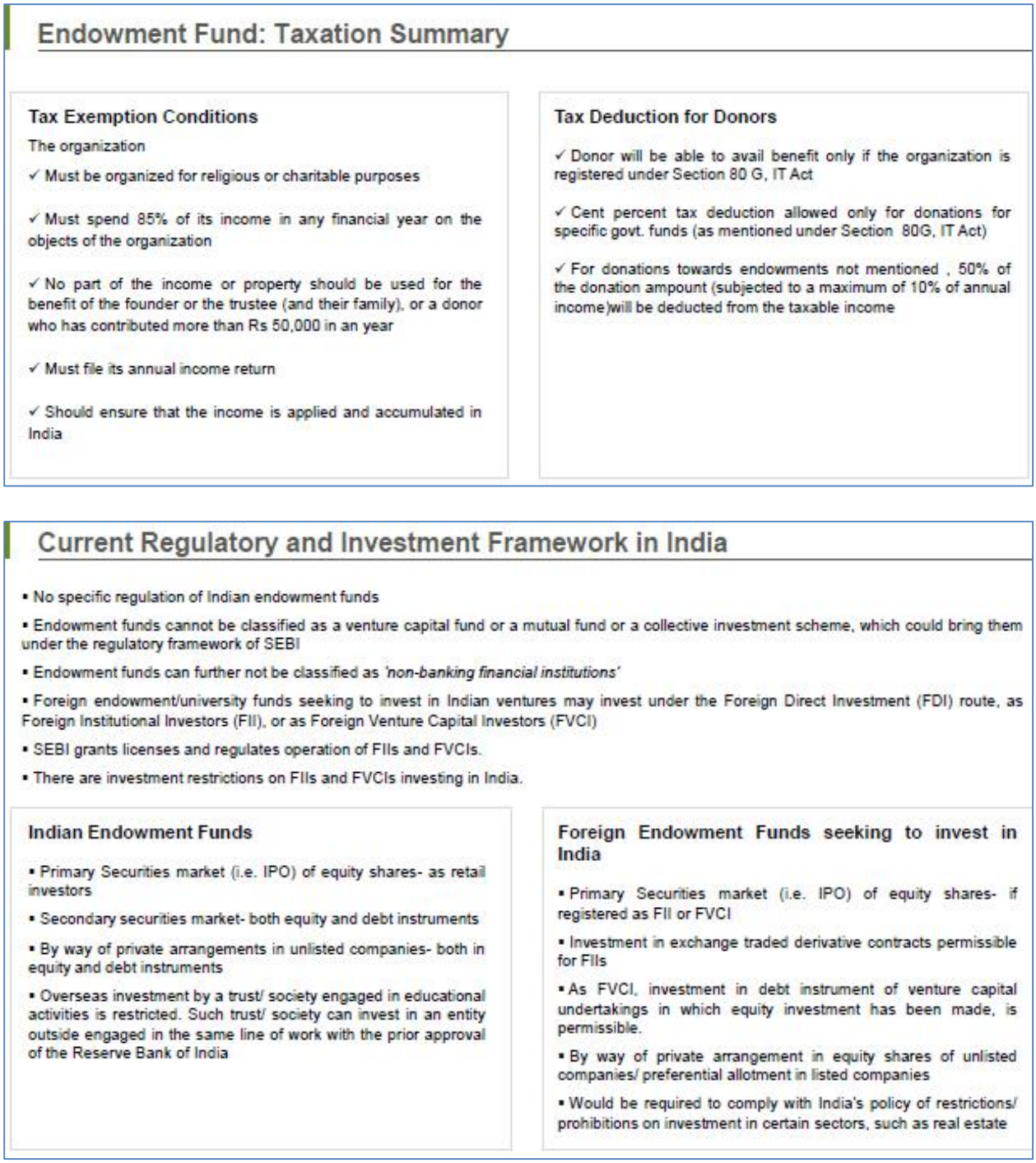


Fig. 3.14: India: Endowment Fund and Taxation [104]

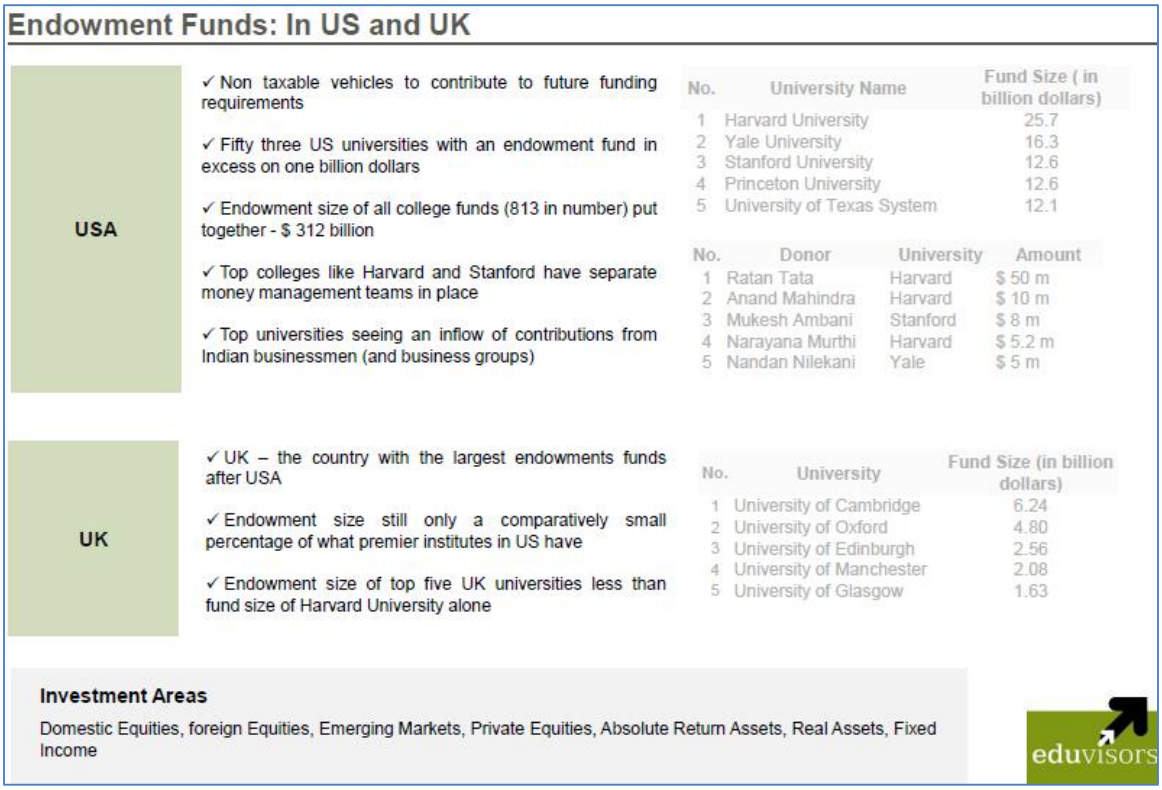


Fig. 3.15: Eduvisors: Endowment Funds US and UK [104]

The 2011 KPMG report stated that "Education, being one of the elements of 'charitable purpose' as defined under the present domestic tax laws, the not-for-profit entities in education sector enjoy tax exemption in India. The donors enjoy **50 percent deduction** of the donations subject to fulfillment of conditions. In case of education service companies, the profits earned are subject to normal corporate tax rate as applicable (currently, 30 percent plus surcharge and education cess). Some of the key challenges to be met in continuing to enjoy tax exemption status by not-for-profit entities are as under:

- Meaning of 'charitable purpose' and incidental activities covered within its ambit
- Nature of expenditure covered within the expression 'application of income'
- Maintaining independence between 'for-profit' and 'not-for-profit' entities and determination of arm's length price for transactions amongst them
- Restrictions in utilizing surplus funds at the not-for-profit entity level

In foreign collaboration models, the payments received by the foreign university from Indian partner institution for providing services, access to course materials and curriculum, brand name, etc. are generally characterized as royalty or fees for technical services in the hands of the foreign university or institution. This imposes an obligation on the Indian partner institution making the payment to withhold the taxes from such payment. Presently, royalty and fees for technical services are liable for tax withholding at 10 percent (plus applicable surcharge and education cess) or lower rate, if specified, under the relevant Double Tax Avoidance Agreement. The government has proposed new direct tax law (i.e. Proposed Direct Taxes Code Bill, 2010('DTC')), which once enacted, will replace more than five decade old existing domestic tax law (i.e. Income-tax Act, 1961 ('IT Act')). While most of provisions of DTC are similar to IT Act, some of the provisions proposed will have far reaching implications in the context of tax exemption enjoyed by not-for-

profit entities. For instance, non-profit organizations ('NPO') carrying on business not incidental to charitable activity will be disqualified, related party transaction not at arm's length disqualifies NPO from claiming NPO status, etc. under the proposed DTC." [7]

3.9.4. Required Approach

Former Union Human Resource Development Minister Kapil Sibal Released Confederation of Indian Industry (CII) Report on "Administrative Reforms in Higher Education" at "AICTE-CII Global University-Industry Congress 2013" on 7th Nov 2013.. This white paper stated that "Donations by individuals, alumni and institutions should be encouraged through **tax incentives**. All donations to higher education institutions should be **100% tax deductible**. Donations for research, innovation, vocational education and scholarship should be eligible even for higher levels of **tax deduction, say 200 per cent**…… Contributions made by a corporate – foundations etc., to a research center or a center for excellence being part of a university or higher education institution or a new or recently established university approved by government or for a programme under university industry partnership should be eligible for deduction from taxable income to the extent of 200 per cent of such contribution or as recommended by Narayana Murthy Committee." [5]

Solution Space 3.9

- In the tax system "Like USA" the government gets less tax and institute can generate huge endowment with the help of tax benefits. In Indian system, government gets huge tax directly and institutes wouldn't be in a position to generate sufficient endowment funds. This system creates financial problem for public as well as private institutes.
    - The public institutes in USA gets **double benefits**. They get government funding plus endowment funds. Thus in India, the government funding to the public institutes should be more than US government funding.
    - The private players **neither get** substantial government funding **nor get** endowment funds (because of tax policy). The government must compensate the financial losses of private players because of tax policy. Thus there is a need of reforms in Tax Policy for education institutes.
- India Infrastructure Report 2012, IDFC Foundation stated that "Funding is crucial if our institutions of higher learning are to be of high quality and for the long haul. For private universities, it is essential to build large endowments. Some of the measures proposed by Goswami are:
    - Removal of disincentives in tax laws and trust laws
    - Allowing universities to invest in financial instruments of their choice;
    - Removing the restriction on trusts to spend 85 per cent of their income in the same year, so that they can build up a corpus;
    - Make exceptions in income tax laws to encourage the creation of large endowments;
    - Diversification of sources of finance and exploration of innovative financial mechanisms;
    - Contribution from every company towards an education fund as a Corporate Social Responsibility (CSR) initiative;
    - Development of a comprehensive PPP Policy, with governance control left to a private board." [185]
- The WCU can't be established, without solving the issues related to financial problems

3.10. FDI and Foreign Contribution Regulation Act (FCRA) Anomaly

The 2011 KPMG report stated that "Foreign investments in India are governed by Foreign Direct Investment ('FDI') policy and related rules and regulations. The FDI policy in India is formulated by Department of Industrial Policy and Promotion, Ministry of Commerce and Industry. In formulating FDI policy for various sectors, the guidelines issued by other ministries are also taken into account. The objective of FDI policy issued by the government is to invite and encourage foreign investment in India. Since 1991, the guidelines and the regulatory process have been substantially liberalized to facilitate foreign investments in India. Now under the automatic route i.e. the non-residents can invest into sectors under automatic route without any prior approval from the regulatory authority. Presently, foreign investment up to 100 percent is allowed under automatic route in the education sector. **Despite such relaxation, foreign investment into education sector has been predominantly restrictive due to the requirement of 'not-for-profit' entities in the regulated higher education space.** While, foreign investment can be made in Indian companies and partnership firms, it is specifically **prohibited in trust and society**. Even though **foreign investment can be made in section 25-company**, it is **not an attractive proposition due to charitable nature and inability to distribute returns on investments by section 25 company.**" [105]

Under the higher education regulations, the core infrastructure assets are required to be owned by not-for-profit entities. Since foreign investment is not permitted in trusts and societies, the funding in these entities to create requisite infrastructure base needs to be by way of donations. These not-for-profit entities can avail foreign donations (i.e. foreign contribution) under the approval route as laid down in Foreign Contribution (Regulation) Act, 2010 ('FCRA'). FCRA provisions allow either 'one-time registration' which entitles receipt of donations for continuous period of five years or specific 'prior permission' can be obtained for each tranche of foreign donations, subject to satisfaction of other conditions. FCRA regulates the acceptance of foreign donations and prohibit the acceptance and utilization of the same if the activities carried out are detrimental to national interest. One needs to ensure proper compliance of FCRA to avoid any penal consequences, especially, considering the rationale for enactment of FCRA. At this juncture, it is useful to highlight the current ambiguity in making equity investment in section 25 company. While equity investment is allowed in section 25 companies under the FDI, the controversy is whether the FCRA provisions also apply to such investments? In other words, does equity investment fall under the wide definition of 'foreign contribution' under the FCRA? Other similar ambiguities need to be deliberated and considered where foreign donations are involved. [105]

The IDBI report stated that "This implies that 80% (formal IES) of the market potential is not directly exploitable by corporates with **profit-driven business models**. Due to the high **involvement of politicians** with respect to ownership and the shortage of quality institutes leading to **lucrative cash transactions**, the **much-required structural change in education does not appear** to be in sight. Other issues that plague the sector are high land prices and **little clarity on FDI pertaining to this space.**" [13]

The PWC report pointed out another problem "Amendment in rules under the Foreign Contribution (Regulation) Act (FCRA): A recent change in these rules now requires that foreign investments in section 25 companies will now attract the provisions of the FCRA. The FAQs on FCRA posted on

the website of the Ministry of Home Affairs (MHA) state that **the infusion of foreign share capital in a company registered under section 25 of the Companies Act, 1956 is treated as a foreign contribution**. This is legally, theoretically and practically **an incorrect stipulation**. Foreign contribution as defined under FCRA includes a donation, delivery or transfer of an article not being a gift, currency or a security. In other words, while making a foreign contribution, the intent of the foreign source is to merely transfer, deliver or donate the contribution so intended and not to actually receive any equivalent consideration against such an act of transfer or donation. However, investment in the equity share capital in a section 25 company does involve a return consideration, namely the issue of shares of the company to the foreign investor. Subscription to the equity of a section 25 company by a foreign investor is foreign direct investment (FDI) regulated by the FDI policy that allows 100% FDI in the education sector under the automatic route. Given this background, if the MHA believes that a security clearance is necessary prior to the infusion of FDI in a section 25 company engaged in education services (or any other sector(s) for that matter), then that should be done through a stipulation under the FDI policy (as is the case in many sectors), not through the FCRA. This approach is legally ambiguous as well as practically unwarranted as it would significantly delay and impede FDI in education." [15]

Solution Space 3.10

The government can remove these discrepancies easily. But in Indian system it takes years to solve such problems. The regulatory bodies are unable to resolve these matters. There is a need of apex body by an act of parliament like election commission to handle the genuine problems of education sectors.

3.11. Autonomy: Fee Fixation and Capitation Fees Problem

Former Union Human Resource Development Minister Kapil Sibal Released Confederation of Indian Industry (CII) Report on "Administrative Reforms in Higher Education" at "AICTE-CII Global University-Industry Congress 2013" on 7th Nov 2013. This white paper stated that "**The shortage of fees in quality institutions is likely to do more damage than charging of capitation fee.** The institutions should be permitted to charge fees according to the market requirements and the services they offer and there should be no further restrictions of fee structure by any authority." [5]

3.11.1. Required Freedom for Deciding Fees and Admission Procedure

In developed countries the power of Fee Fixation lies with the university. It allows them to generate their own funds and keep the quality of the education. The market forces decide their fate.

The Times of India reported that "According to a recent survey conducted by the Associated Chambers of Commerce and Industry of India (ASSOCHAM), the biggest hurdle faced by parents who are applying to **primary schools** is donation, which ranges from **`3 lakh to `8 lakh**. The average budget of the parent has also increased from `1 lakh in 2010 to `3 lakh in 2013 (excluding

the donation) on items and activities integral to the school curriculum, such as fees, transport, books, uniforms, stationery, building fund, educational trips, tuitions and extracurricular activities, not to mention the fat amount spent on prospectuses.." says DS Rawat, secretary general, ASSOCHAM. The survey reveals that parents complain about the demand for 'money without receipt' by almost all private schools in Delhi and NCR." [106]

The annual fee of **engineering colleges** is normally in the range of **Rs. 50,000 to 1 lakh**. If fee fixed by 'Fees Fixation Committee' is not sufficient then the managements reduce the resources per student, which degrades the quality of education. These committees fixed the fees as per criterion fixed by the government and many education extension activities cannot be considered for the fee fixation. While fixing the fees it is expected that the entire construction work is the financial responsibility of the management (charity work), for which they can charge only 2 to 3% rent. That is, the cost of construction should not be recovered through student's fees. Such type of criteria forces to adopt 'Intelligent Financial Management' practices and degrade the quality of education.

Fees are tightly controlled by the UGC and other statutory bodies, **forcing universities to rely on UGC grants for meeting operating expenses, and leaving barely any funds for institutional growth and innovation.** [12]

In some states the Government is paying full tuition fees of SC/ST reserve category students and 50% fees of OBC students. The tuition fee is the main source of revenue generation of all most every self-financing professional college in these states. In an average (considering vacant seat problem), 70% of total revenue is contributed by SC, ST and OBC students through government support. **That is, all private professional colleges are mostly dependent on government financial support**. It's a huge burden on government. The revenue generation through tuition fee is just sufficient to pay salary bills and day to day expenditure. **The institute can't think of education extension activities**, which hamper the quality of education. The vacant seat problem adds fuel to it.

3.11.2. Other Side of the Coin

Mr. Pawan Agarwal, Adviser (Education), Planning Commission, Government of India, stated that

- Tuition fee and admission policies require the most attention. While the private unaided institutions **could be given greater flexibility in deciding on fees to be charged within a broad framework**, compliance to it should be ensured by **enforcing transparency** in accounting to curb exploitation of students and parents.
- In the UK, higher education is primarily in the public sector. Faced with problems of deteriorating standards due to inadequate funding and failing accountability, a number of innovations in financing of higher education, such as the **performance-based funding** for teaching and research and portable students' aid etc. were introduced during the last decade. This helped the UK higher education to regain its place as one of the best systems of higher education in the world. In a politically sensitive and a tough decision, the UK government4 has now allowed the universities to compete for students and charge variable fees, bringing an end to the regulated fee regime in the UK.

- Many countries are now moving towards providing greater autonomy to their higher education institutions in matters of deciding on fee and admissions.
- With the emergence of private higher education in 1980s and continued supply demand gap, many private promoters started charging **capitation fees often ignoring merit**. These promoters made quick money and inspired a whole generation of education-entrepreneurs to invest in private professional education.
- Over the years, charging of **capitation fees for admission in the professional programmes became common place**. This evoked adverse **public reaction** and forced the state governments to initiate action. **Several state governments' enacted laws to regulate admission** and prohibit capitation fee in private unaided professional institutions.
- This started an era of **judicial intervention in matters of tuition fee and admission policy** in higher education in India. Since then, regulation of tuition fees and admission policy has been the most contentious issue in higher education in the country.....Tracing the long history of evolution of tuition fee and admission policy in India above, it is clear that these policies were driven more by judicial interventions than proactive public policy. [17]

The Cable states that Prof M Anandakrishnan was a member of the Tandon task force appointed to suggest reforms in higher education, particularly regarding the "deemed universities." Dr Anandakrishnan explained that "**India's education system is second only to politics as the nation's most corrupt system."** The cable reports he (Anandkirshnan) talked about enormous "under the table" entrance fees (known as 'capitation fees" in local parlance), including charges of between $100,000 and $200,000 USD just for a seat at a post-graduate medical college, paid up front and in cash. The cable quotes Anandkirshnan as saying, "Our locally employed staffs corroborates this story and have personal contacts who have paid large sums as "capitation fees" for seats in medical schools. This fee is separate from the annual tuition." Dr. Anandakrishnan also reported an instance when an IAS officer served as a Vice Chancellor despite lacking any qualifications to do so. He also cited one example of a doctoral program which had 110 faculty members (of which only 18 had PhDs) to support 1,200 PhD students. [107]

The Cable says, that Sibal's crack-down on "deemed universities," was an attempt to end various corrupt practices in Indian higher education. According to Dr. Anandakrishnan, the task force took its findings to Minister Kapil Sibal, who reported them to PM Singh; PM Singh then asked Sibal to "clean it up.", Simkin pointed out. [107]

Solution Space 3.11

This issue is related to culture and behavior pattern of the society. That is, related to development of disciplined society and development of trust between society, regulatory body and private players.

3.12. Affordability of Education

In part, Surowiecki goes on to say, cost problems in higher education are an instance of "Baumol's cost disease," first diagnosed in the 1960s:… Some sectors of the economy, like manufacturing,

have rising productivity … which leads to higher wages and rising living standards. But other sectors, like education, have a harder time increasing productivity … the average **student-teacher ratio in college is sixteen to one, just about what it was thirty years ago**. In other words, **teachers today aren't any more productive than they were in 1980** … **colleges can't pay 1980 salaries, and the only way they can pay 2011 salaries is by raising prices**. [108]

The cost of higher education is increasing exponentially. The costs of higher education are reaching a point, where everyone (government, parents, and students) are asking a question "Is the product worth the price".

Solution Space 3.12

- The Technology can increase the productivity in two ways i.e. by increasing quantity and enhancing quality.
    - Quantity: With the help of technology (ICT) the faculty can address more number of students, which are even geographically separated.
    - Quality: With help of techniques "The teaching and learning powered by Technology" the teacher can enhance the quality of teaching and make the system more productive. The details are covered in my book "Technology-Storms Redefining Universities" by Shroff Publication (SPD).
- Indian universities need to raise funds through a combination of tuition fees, grants from the government, patents licensed to private companies and donations etc. to keep the tuition fees affordable.

3.13. Autonomy: Salary Structure and Service Condition

3.13.1. Need of Autonomy for Establishing WCU

The UGC is the apex body for deciding the salary structure and service conditions of the faculty. The Universities don't have any say. The fees fixation committee may not accept very high salaries as an expenditure for finalizing the fees structure. Thus the private players are unable to pay high salaries to attract global talent. This situation hampers the quality of the education and research.

3.13.2. Other Side of the Coin

Mr. Pawan Agarwal, Adviser (Education), Planning Commission, Government of India, stated that "Apart from admission related malpractices referred to in the previous section, these institutions generally treat the faculty somewhat **like bonded labor in matters of salary and service conditions**. While private investment in higher education has become inevitable in the current environment, the nature of private participation is so poorly or ambiguously spelled out, that pseudo educational ventures have come to dominate our educational system. Whereas legitimate return on private investment is justifiable, the greed of private providers that could result in exploitation of gullible masses need to be checked." [17]

Solution Space 3.13

In the present circumstances, it is not advisable to give the autonomy related to the salary structure and service condition to universities. The criteria can be changed only for few selected universities with special permissions.

3.14. AICTE: Small Magnitude of Funding

As per AICTE annual report **2006-07**

- Faculty development programs affected a total of about **1,350** individuals, nationwide.
- The Council received 25 proposals for Nationally Coordinated Projects to promote research, and awarded `50,000 each to **10 of these proposals**.
- The Council also approved grants of `160 million for **195 proposal** for "modernization and removal of obsolescence" and `18 million for **211 research promotion proposals**.

Considering the size of the education system overseen by AICTE, it is difficult not to be surprised by the small magnitude of these numbers in a country of **1.20 billion population** and **half-a-million college teachers**. [19]

The situation is almost same in **2011-12**. Let's see the statistics given in the AICTE annual report 2011-12.

SN	AICTE Schemes for 4592 Institutes (3346 Engineering Institutes)	Total number of Sanctioned Proposals 2011-12
1.	Modernization and Removal of Obsolescence (MODROBS)	536
2.	Research Promotion Scheme (RPS)	394
3.	Seminar Grants	206
4.	Travel Grants	78
5.	Staff Development Programmes	238
6.	Industry Institute Partnership Cell	14
7.	Entrepreneurship Development Cell	62

Table 2.3: Activities under various schemes

S.No.	SCHEMES	NUMBERS
a.	Quality Improvement Programme (QIP)	
	(i) Selected in Ph.D	168
	(ii) Selected in M.E./M.Tech/M.Pharm.	159
b.	Career Award for Young Teachers	12
c.	Emeritus Fellowship	14
d.	AICTE-INAE	NIL
e.	Seminar Grant	206
f.	Travel Grant	78
g.	Staff Development Programme	238

Discipline	No. of Programme/Instt.	Intake capacity
Engineering/Technology	3346	1473727
HMCT	84	6731
Pharmacy	1065	115437
Architecture	85	6269
Applied Arts & Crafts	12	848
Total	**4592**	**1603012**

Table 5.3: Institutional Category wise Distribution of Grant Under MODROBS during 2011-12

Sl. No.	Type of Institution	No. of proposals sanctioned	Amount (Rs. in Lakhs)
1	Self Financing Inst. from J&K	02	18.00
2	Deemed University / University Department	27	326.12
3	Government / Government Aided College	223	2119.35
4	Government / Government Aided Polytechnic	74	662.49
5	Self-Financing Institutions	210	1839.31
	Total	**536**	**4965.27**

Table 5.7: Institutional category wise distribution of grant under RPS during 2011-12.

S. No.	Type of Institute	Numbers of proposals sanctioned	Amount (Rs In Lakhs)
1	Deemed University/ University/ University Department	56	566.1
2	Government Aided Engineering College/ Government Engineering College	106	1619.1
3	Self-Financing Engineering College	232	1995.64
	Total	**394**	**4180.84**

Table 6.1: Region wise Distribution of Proposals under SEMINAR GRANT

S.No.	Region	No. of Proposals
1	Central	15
2	East	17
3	North	20
4	North West	44
5	South	62
6	South Central	18
7	South West	16
8	West	14
	Total	**206**

Table 6.5: Discipline wise Distribution of Proposals under TRAVEL GRANT during 2011-12

Sl. No.	Discipline	Total No. of Proposal
1	Civil Engineering	4
2	Chemical Engineering/Biotechnology	9
3	Computer Engineering/Science	6
4	Electronics	13
5	Management	7
6	Mechanical Engineering	8
7	Pharmacy	16
8	Others	15
	Total	**78**

Table 6.7: Discipline wise Distribution of Proposals under STAFF DEVELOPMENT PROGRAMME during 2011-12

Sl. No.	Discipline	Institutions
1	Architecture/Civil	16
2	Biotechnology/Chemical Engg./Chemistry/Bio Medical	11
3	Computer Sci.& Engg.	62
4	Electrical & Electronics Engg./Elec.& Communication Engg.	50
5	Management	48
6	Mechanical Engg./Metallurgy/ Aeronautical Engineering	25
7	Textile/Tex.Engg./Physics	2
8	Pharmacy	17
9	Others	7
	TOTAL	**238**

Table 7.1: Region wise Distribution of Grant under INDUSTRY INSTITUTE PARTNERSHIP CELL during 2011-12

S. No.	Group	No. of Projects	Amount (Rs. in Lakhs)
1	CENTRAL	01	7.00
2	EAST	01	7.00
3	NORTH	01	8.00
4	SOUTH	02	11.75
5	SOUTH CENTRAL	03	17.90
6	SOUTH WEST	02	15.00
7	WEST	01	8.00
8	NER	03	23.68
Total		**14**	**98.33**

Table 7.4: Institution wise Distribution of Grant under ENTREPRENEURSHIP DEVELOPMENT CELL during 2011-12

S. No.	Type of Institution	No. of Projects	Amount (Rs in Lakhs)
1	Deemed University/University Department	1	4.00
2	Government / Government Aided College	7	56.00
3	Self-Financing Institutions	54	288.69
Total		**62**	**348.69**

Table. 3.3: AICTE Annual Report 2011-12: Statistics [109]

Solution Space 3.14

Better government funding support is expected for improving quality of education and enhancing employability of 4592 institutes under the purview of AICTE.

3.15. Research Funding Privilege to Public Institutes

Dr. Sanghi, Former director of LNMIIT Jaipur, Professor, Computer science, IIT, Kanpur, stated that "Few government institutions that do apply for project grants have an incentive to cheat. If the project needs 10 personal computers, the budget is put as 20 personal computers. **This kind of fudging is difficult for a private institution to pull, since their budget is screened carefully**. **Project monitoring is also strictly done, since the general perception is that private institutions are more likely to cheat**. **There is also a bias against private institutions when it comes to approving project proposals. Several agencies don't fund proposals sent in by private institutions. Perhaps the "disinterestedness" stems from the fact that individuals involved in the decision-making process are afraid that they may be accused of "wrong doing" if a private institution is not able to show reasonable amounts of research output**. Research fund policies have almost made sure that almost the entire non-government sector in higher education does only a limited amount of research." [110]

Fig.3.16: FICCI: Funding Restrictions [6]

In India, total 21.8 million students (i.e. 58.9% students) are enrolled in private institutes. Thus funding policy must take proper care of the private as well as public institutes to avoid skewed growth of education sector.

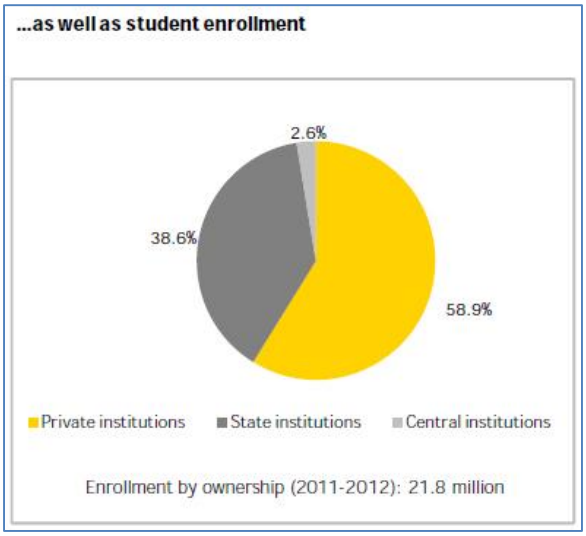


Fig. 3.17: 58.9% students are enrolled in private institutes [6]

The following table shows top 20 US Universities of QS World Ranking 2013. The private American universities dominates this list. The 75% of top 20 American universities are private and not a single public university in top 20 world ranking, which is shown by grey color.

SN	University	Public / Private	QS World ranking 2013
1.	Massachusetts Institute of Technology (MIT)	Private	1
2.	Harvard University	Private	2
3.	Stanford University	Private	7
4.	Yale University	Private	8
5.	University of Chicago	Private	9
6.	California Institute of Technology (Caltech)	Private	10
7.	Princeton University	Private	10
8.	University of Pennsylvania	Private	13
9.	Columbia University	Private	14
10.	Cornell University	Private	15
11.	Johns Hopkins University	Private	16
12.	**University of Michigan**	**Public**	22
13.	Duke University	Private	23
14.	**University of California, Berkeley**	**Public**	25
15.	Northwestern University	Private	29
16.	**University of Wisconsin-Madison**	**Public**	37
17.	**University of California, Los Angeles (UCLA)**	**Public**	40
18.	New York University	Private	44
19.	Brown University	Private	47
20.	**University of North Carolina, Chapel Hill**	**Public**	54

Table 3.4: Top 20 US universities in the QS World University Rankings 2013 [111]

The above table shows that the developed nations are giving equal opportunity to both, public and private players.

Dr. Venkat Rangan, VC of Amrita Vishwa Vidyapeetham said that "Think about India 25 years back. The top 10 companies were in the public sector. Think about 2012 and **7 out of 10 are in the private sector**. **Will the story repeat in the education domain**? " [326]

Sam Pitroda, adviser to Prime Minister said that "When in 1991, we started to liberalize our economy deregulation and all, we didn't realized that the **private entrepreneurs will come forward and build an economy** which is going to be the **key to global economy in the next 10-15 years.**" [329]

Solution Space 3.15

This is a major drawback of Indian higher education system. Even it is reflected in recent reforms like RUSA. The progress of country depends upon balanced growth of public as well as private institutes. Unfortunately the system neglects genuine difficulties of private players, which leads to, willingly or unwillingly, malpractices.

3.16. Research Funding for Private Institutes: Overhead Cost Problem

Funding agencies argue that institutes have built-in infrastructure funded by the government. They add that the overhead cost is only a small amount which covers the incremental expense of administering the project. Today, 90 percentage of higher education is conducted through private institutions. And most research projects supported by government agencies are an **additional loss to these private players**. Government agencies show that most research proposals come in from government institutions— that is perhaps true, because these projects are a **"loss" for private institutions; most are unlikely to apply for several projects**. [110]

Solution Space 3.16

The government funding policy for public and private institutes must be different. The policy makers should consider the practical difficulties of private players.

3.17. Can't Invest in Equity Market and No Carry Forward Surpluses

Former Union Human Resource Development Minister Kapil Sibal Released Confederation of Indian Industry (CII) Report on "Administrative Reforms in Higher Education" at "AICTE-CII Global University-Industry Congress 2013" on 7th Nov 2013.. This white paper stated that "**Higher education institutions registered under Section 25 (section 8 of New Companies Act), should be allowed to raise equity in India and abroad**….. Such companies should be allowed to **carry forward surpluses** from year to year for the development of institutions under their management. These suggestions should apply to investment within India and abroad… Since Section 25 (section 8 of New Companies Act), companies cannot declare any dividend there seems

to be no rationale for restricting carry-over of surpluses from year to year….. Educational institutions, like others, need to build up their infrastructure and continuously upgrade them. They can do so only by accumulation of surpluses and funds. The requirement that not more than 15 per cent surplus can be carried over to the next financial year comes in the way of such accumulation and infrastructure development and should be done away with." [5]

Solution Space 3.17

To stand in the global competition, all the funding options should be open to Indian Universities, including equity or share market as well as carry forward surplus. The Harvard University is having $31 Billion endowment fund, which they are investing in real estate, share market and so on. It is unfair to ask our universities to take part in global competition without full financial backing and supporting regulatory framework.

Chapter 4: Difficulties for Establishing Research University

Hon. President of India, Pranab Mukherjee (Nov 2013) said that "India has 119 researchers in R & D per million people as compared to 715 of China and 468 of the United States." [112]

Hon. Prime Minister of India, Manmohan Singh (Nov 2013) said that "India's research output as global share of scientific publications was a mere 3.5 percent in 2010 whereas China's share was 21 percent in 2007. The total number of patent applications filed by Indians in 2010 comprised only 0.3 percent of the total applications filed globally" [113]

"India is a developing country with the ***scientific and technological infrastructure of a developed nation****." —Jack Welch, former CEO, General Electric*

India suffers from ***inefficiency*** *in transforming its* ***S&T investments*** *into scientific knowledge (publications) as well as into commercially relevant knowledge (patents). [114]*

*The DST & Thomson Reuters Report 2012 stated that "India has been the '****sleeping giant****' of Asia. Research in the university sector, stagnant for at least two decades is now accelerating, but it will be a long haul to restore India as an Asian knowledge hub. Indian higher education is faced with powerful dilemmas and difficult choices: public/private, access/equity, uncertain regulation, different teaching standards and contested research quality. India – with 1.2 billion people, 8-10 per cent annual growth and barely a 10 per cent higher education age participation rate – needs a massive expansion in tertiary education and a sharper, stronger research base.* ***The present economy cannot afford these, and the future economy cannot do without either****." [115] 116]*

India was not even a sovereign nation when Rabindranath Tagore and Sri C V Raman won the Nobel Prize. In addition, the financial resources that India has now are far higher than what the nation had in the early 20th century. Undoubtedly, availability of financial resources does matter in producing high quality research. However, the zeal for doing research and the environment that creates a passion for undertaking such research matter even more. [41]

The article published in "The Hindu" Newspaper described the research scenario of Indian Universities nicely. It stated that **"The Indian academic research story needs to be rewritten.** There are inherent systemic problems that plague the research environment. Less than 1% of the total students enrolled in higher education are pursuing Ph.D. and this is not in pace with the overall growth of students in higher education. The overall quality of doctoral studies in many institutes is questionable. With large faculty vacancies and a poorly qualified faculty, the quality of research in higher education institutes, including the IITs, which have a 20% vacancy, is diluted. [325]

The following figure shows the evolution of innovation and R&D in India.

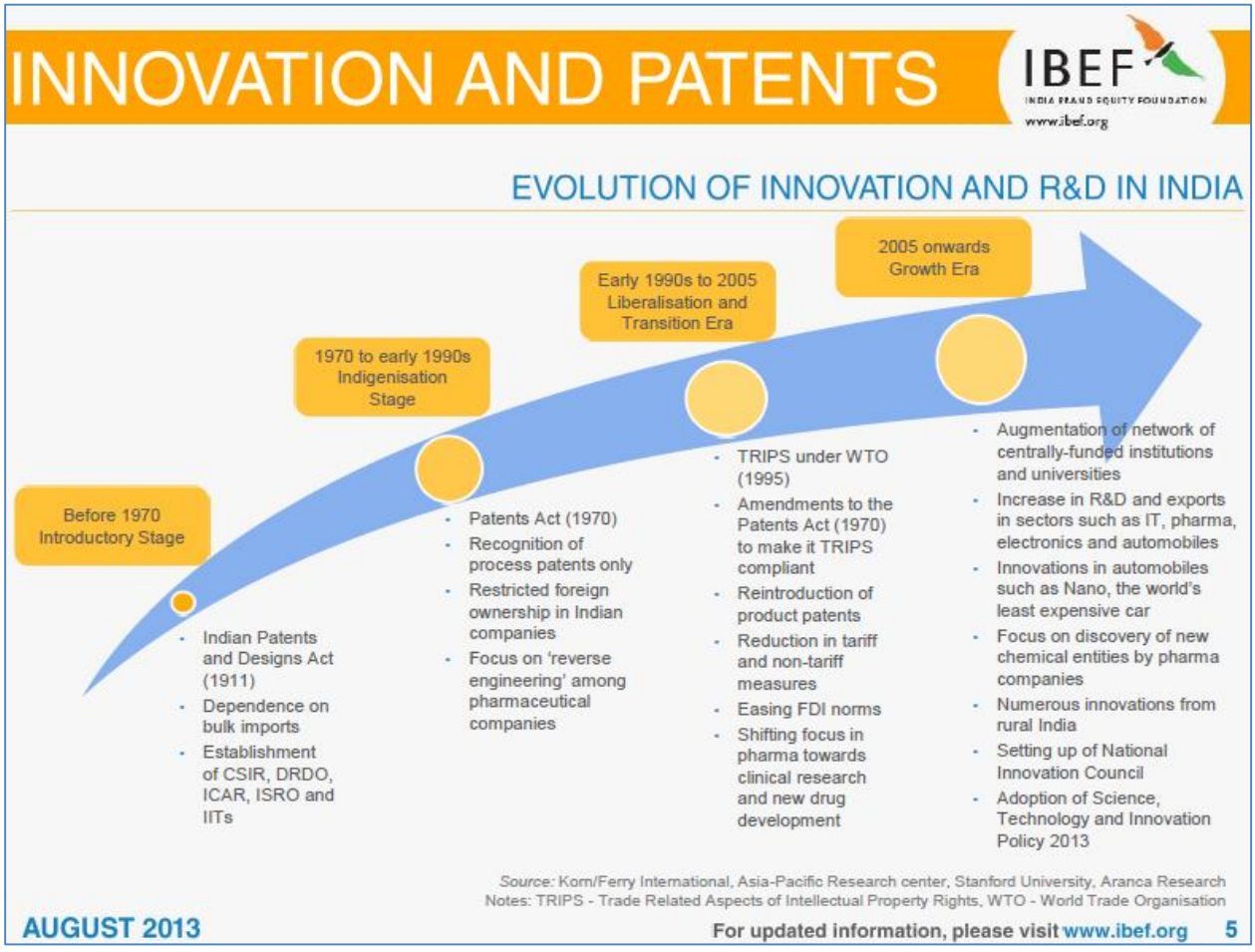


Fig. 4.1: Evolution of Innovation and R&D in India [311]

4.1. Poor Research Output: S&T Indicators, Citation, Number of PhD and Publications

The Rashtriya Uchchatar Shiksha Abhiyan (RUSA) Report stated that "An alarming trend is the **decline in India's share of world researchers**, which stood at 2.2% (2007) down from 2.3% (2002). A study on India's research output by Thomson Reuters in 2010 has estimated India's global share of scientific publication to be about 3.5 per cent. On the other hand, **China's share has increased from 14% to 21.1% during the same period (2002-2007).** The numbers of **PhDs produced by India are less than half of those in US**. China's steady increase in PhDs is worth noting; in 2002 India and China were not too far apart in the number of PhDs. However, by 2007 China has surged rapidly ahead in terms of its research output and is almost rivaling US." [72]

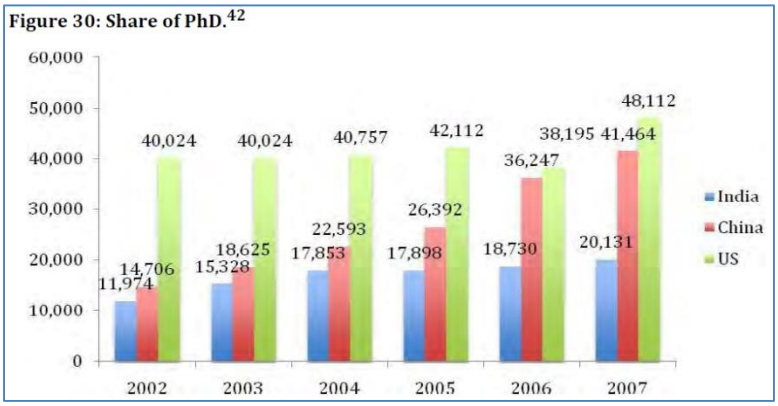


Fig. 4.2: Share of Ph.D.: India, China and US [72]

The citation takes a positive spin if the researchers network both nationally and in international seminars – this is **comparatively very low in India** and whether you accept it or not, is dominated by researchers in US/UK/EU institutions. [22]

The DST report "India as a Global Leader of Science" by "Science Advisory Council of the Prime Minister" has given the statistics related to Science & Technology indicators of selected countries. [118]

Table1: Some S&T indicators for Select Countries[11]

Country	Total no. of publications (2006), (change over 1997)	High-impact publications % (change)	GDP, $ T(2003)	Investment R&D, %GPD	Investment R&D, $B	$ M/ publication	PhDs E&T per year
USA	451 028 (+18%)	63% (-4%)	10.9	2.68%	292.0	0.65	8000
UK	~122 000	12.8% (+25%)	1.79	1.89%	33.8	0.28	
China	78 671 (+358%)	0.99% (+125%)	1.42	1.31%	18.6	0.24	9000
South Korea	(+290%)	0.78% (+178%)	0.61	2.64%	16.1	0.60	
India	26 963 (+60%)	0.54% (+69%)	0.60	0.77%	4.6	0.17	700

Fig. 4.3: Science & Technology Indicators of selected countries [118]

Relative rank in volume share		Subject	Number of Publications 2001-05	Number of Publications 2006-10	% Change of moving average	% global share
2010	2005					
1	1	Chemistry	25719	38920	51	6.5
2	2	Physics	13490	20525	53	4.6
3	3	Clinical medicine	10046	19273	92	1.9
4	4	Engineering	9605	18596	89	4.2
5	6	Materials Science	7987	14190	77	6.4
6	5	Plant& animal Sci	8748	11591	33	3.9
7	7	Biology& Biochem	5403	9722	82	3.8
8	8	Agricultural Sci	4514	7270	60	6.2
9	11	Pharmacology	2518	5755	125	6.1
10	9	Geoscience	3566	5508	55	3.2
11	10	Environment	2737	4858	80	3.5
12	16	Microbiology	1327	3736	180	4.9
13	12	Mathematics	2071	3224	55	~2
14	13	Computer science	1828	2703	48	2.4
15	15	Molecular Biology	1367	2675	91	2.1
16	14	Space science	1381	2040	50	3.4
17	18	Social sciences	1036	1847	81	~0.6
18	17	Neuroscience	1228	1720	41	1.4
19	19	Immunology	653	1181	80	1.8
20	20	Economics	384	720	89	~0.7
21	21	Psychology	282	475	33	~0.5

Relative rank		Discipline	Number of papers in top 1% impact journals 2001-05	Number of papers in top 1% impact journals 2006-10
2010	2005			
1	4	Engineering	324	1204
2	1	Chemistry	685	797
3	2	Physics	572	587
4	3	Materials science	340	454
5	5	Clinical medicine	155	369
6	6	Agricultural science	89	226
7	8	Plant & animal	58	148
8	12	Mathematics	33	133
9	9	Biology& Biochem.	51	130
10	7	Computer science	75	122
11	11	Pharmacology	39	117
12	14	Social sciences	26	100
13	13	Environment	31	94
14	10	Geosciences	48	63
15	15	Space science	25	36
16	20	Economics	7	32
17	16	Microbiology	14	31
18	19	Psychiatry	9	25
19	17	Molecular biology	14	25
20	18	Neurosciences	11	18
21	21	Immunology	3	8

Fig. 4.4: Bibliometric study of India's Scientific Publication by DST & Thomson Reuters 2012 [116]

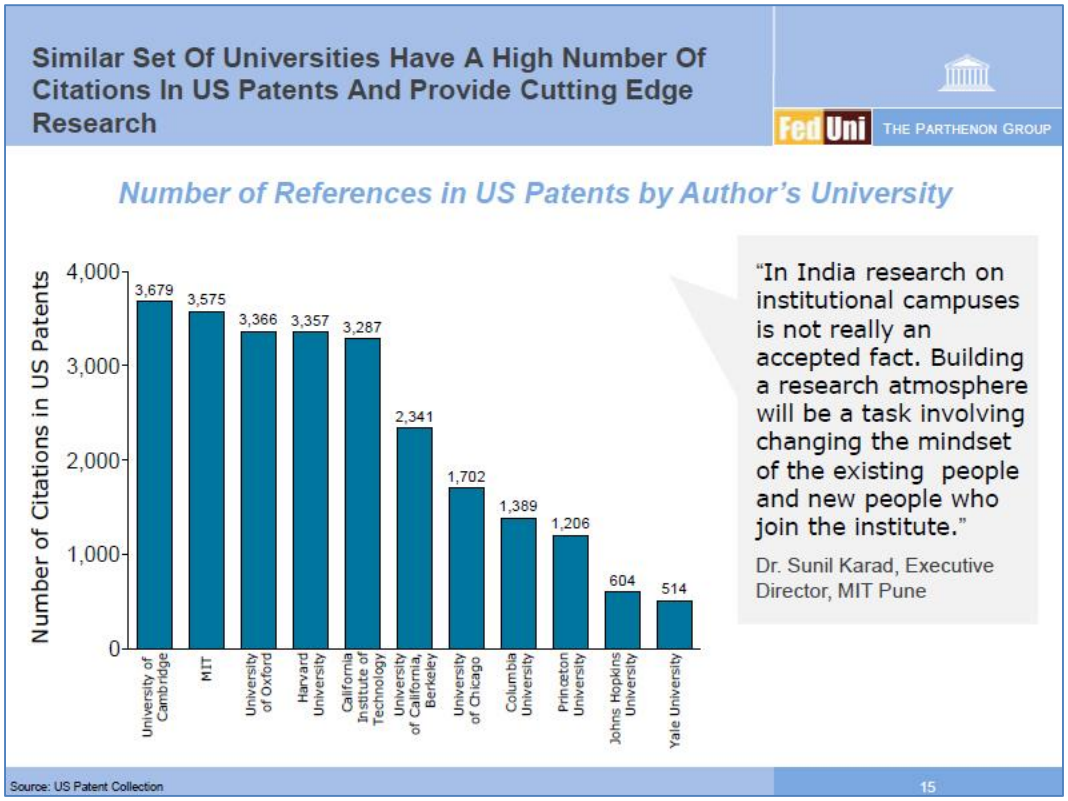


Fig.4.5: Citation Statistics [93]

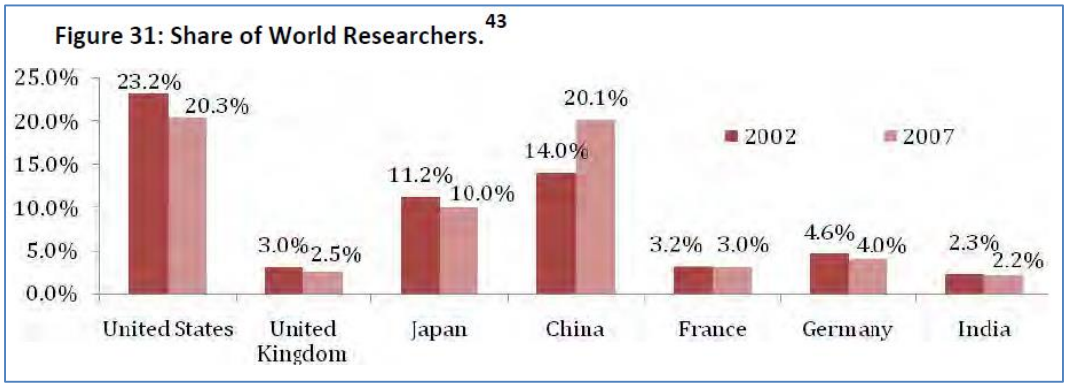


Fig. 4.6: Share of World Researchers [72]

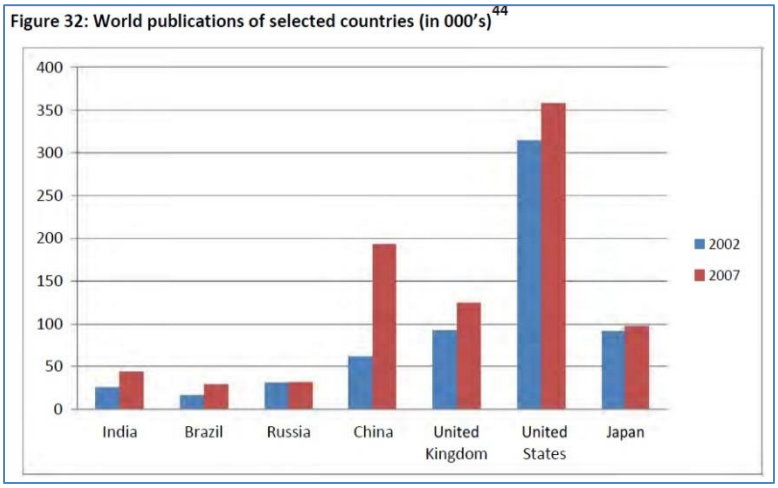


Fig. 4.7: World publications of selected countries [72]

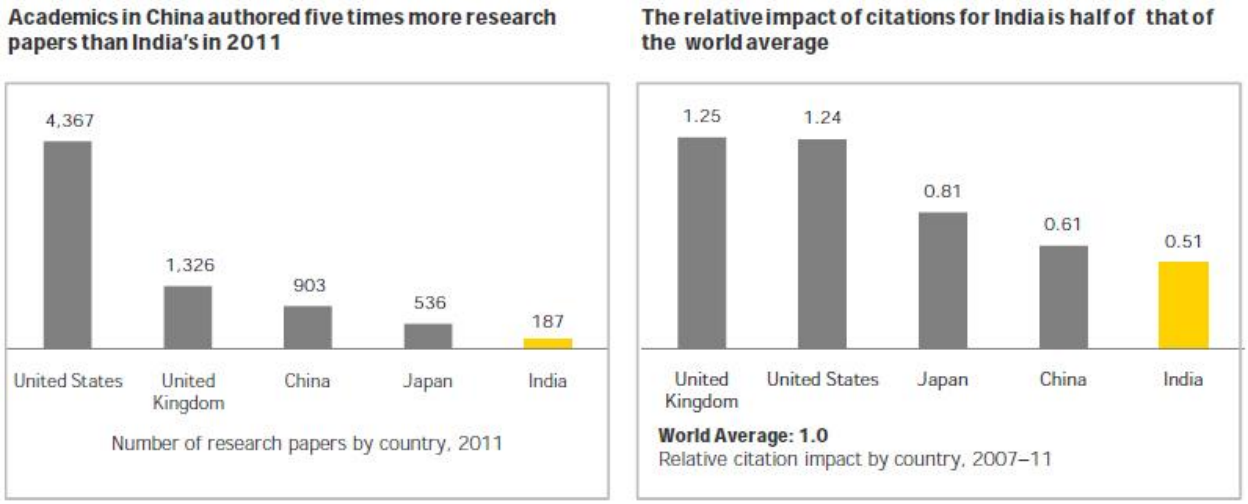


Fig. 4.8: FICCI Report 2012: Research papers and citation [6]

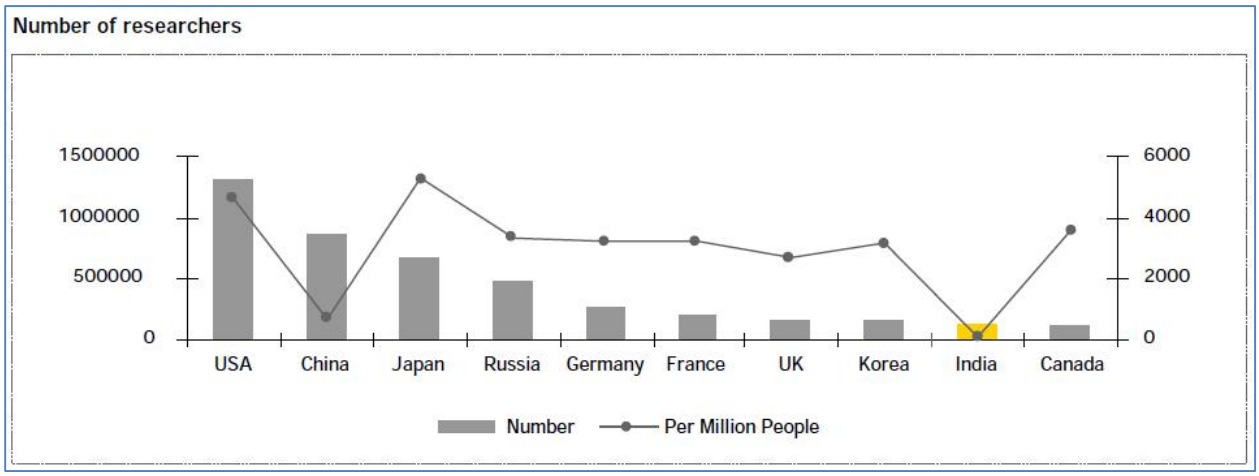


Fig. 4.9: FICCI Summit 2009: Number of Researchers [62]

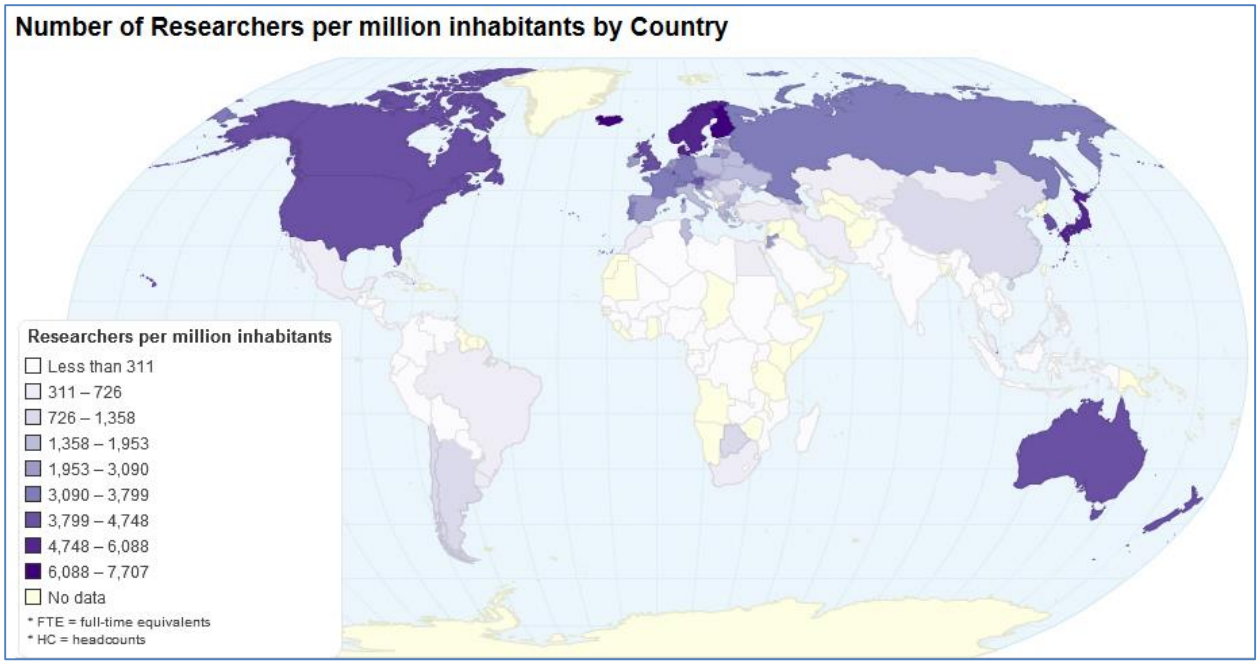


Fig. 4.10: Number of researchers per million inhabitants by country [119]

Solution Space 4.1

We are lagging behind in number of PhD, Research Publications, Citation and S&T indicators and number of researchers per million population. In short, we couldn't develop research culture in Indian universities. We will have to follow path of Singapore and China.

4.2. Unable to Attract Indian Brains or Global Talent

Dr. Shyam Sunder, School of Management, Yale University stated that "However, this picture of higher education faculty is deceptively comforting, and there are good reasons not to be too sanguine about it. On the whole, the quality of talent entering the faculty and PhD programs is not high. **In most disciplines, talented students from the top half of the undergraduate or master's class tend not to choose to pursue doctoral education or scholarly careers**. From the research published by the supervising faculty of most PhD granting departments, and from a small sample of theses, the work approved for doctoral degrees does not necessarily **compare to the international standards** of accomplishment and quality. Few doctoral theses from India earn scholarly reputations for their authors, or publication in prestigious research journals. Although India's population is 80 percent of China's, and 375 percent of the United States', even ignoring the quality differentials, the PhD output of Indian universities is only about **55 percent of China's, and 40 percent of the United States**'. Finally, given the high current enrollments and the anticipated rates of growth, the current and projected demand for new teachers is at least twice as high as the estimate given above under the steady-state assumption." [19]

Prof. Yash Pal said that "Well, if you see, if you are talking of universities, the university **teaching improves if there is meaningful research going on**. In great universities, **lot of teaching is not done only through lectures**, it's because people are working and students are **working with the researchers which improves the quality and the rest** is that you have to have focus on that and do this. **Universities should be a place with tremendous amount of traffic between disciplines, taking one course here**, another course there, with a new kind of degree that currently doesn't exist." [48]

As discussed in previous chapter, our universities are unable to attract global talent and thus unable to produce impressive research output.

Solution Space 4.2

For establishing good research universities, the fundamental requirement is global talent. We are unable to stop the brain drain and couldn't attract global talent. There should be effective national policy to achieve this goal.

The WCU is basically Research University and can't be established without global talent. Throughout the world people talk about WCU after having globally renowned faculty, international students, sound financial position, excellent research environment, and global connectivity etc. Surprisingly in India, many persons are thinking about WCU without bothering about these factors.

4.3. Like China Unable to Transform S&T Investments into Scientific Knowledge (Publications) and Commercially Relevant Knowledge (Patents)

To improve the research environment there is a need of intense efforts like China.

The Rashtriya Uchchatar Shiksha Abhiyan (RUSA) Report stated that "**The experiences of China in the field of higher education deserve a closer scrutiny and perhaps, emulation**. China launched 'Project 211' in 1995, as part of its national priority for the 21st century, involving important universities and colleges in 1995 with the intent of raising the research standards of high-level universities and cultivating strategies for socio-economic development. It subsequently launched the 'Project 985' in 1998 to further promote the development and reputation of the Chinese higher education system. **The project involved large allocations of funding to select universities in order to build new research centres, improve facilities, attract world-renowned faculty and visiting scholars etc. As a result of 'Project 985' nine universities in China were converted into Research Universities**. The progress of these universities in R&D was so immense that most of them now are recognized world over for their research output." [72]

The report of National Research Council USA namely "S&T Strategies of Six Countries: Implications for the United States" stated that "**India lags behind both China and Brazil on many traditional S&T indicators**, including

- The number of R&D researchers per million inhabitants
- The number of patents granted per million inhabitants
- R&D spending as a percentage of GDP
- High-tech exports as a percentage of manufacturing exports. [114]

India suffers from inefficiency in **transforming its S&T investments into scientific knowledge (publications)** as well as into **commercially relevant knowledge (patents)**. In addition to the structural issue of having a **large portion of S&T work located in the government sector**, the loss of top talent to developed countries also contributes to inefficiency. Data suggest that some of the best Indian students go abroad for higher education and never return, thus in effect reducing the quantity and quality of the pool of qualified S&T researchers and educators in India. Multinational corporations conducting business in India further aggravate this trend by luring away bright Indians from research careers." [114]

2013 GDP, billion US$, PPP	$5,020
2013 GERD, billion US$, PPP	$45.20
R&D/GDP	0.90%
Population, million	1,205
GERD/Person	$38
Published Research Papers	
1999-2003, Physics	11,700
2004-2008, Physics	17,300
1999-2003, Chemistry	21,200
2004-2008, Chemistry	33,500
Basic Research share	26%
Applied Research share	36%
Development Research share	32%
Other Research share	6%

Source: Battelle/*R&D Magazine*, UNESCO, Thompson Reuters

2013 GDP, billion US$, PPP	$13,344
2013 GERD, billion US$, PPP	$220.20
R&D/GDP	1.65%
Population, million	1,343
GERD/Person	$164
Published Research Papers	
1999-2003, Physics	31,100
2004-2008, Physics	66,200
1999-2003, Chemistry	44,600
2004-2008, Chemistry	99,200
Basic Research Share	5%
Applied Research Share	13%
Development Research Share	82%

Source: Battelle/*R&D Magazine*, UNESCO, Thompson Reuters

Fig. 4.11: Research input and output of India and China [324]

The articles published at THE World University Rankings stated that "**India needs institutions or universities producing research with a global impact that pushes forward the boundaries of understanding**. They need to be at the forefront of global knowledge creation and innovation. This is essential for the continued success of India's economy.

- This means publishing research in the most widely recognized and widely-read global research journals.
- It means India's best collaborating with the very best academics from wherever in the world they may be based, to share brainpower on shared challenges.
- It means working harder to create the right environment to retain India's best brains, too often lured away to careers in the west.
- It means opening up borders, and offering top salaries, to attract the top academic talent from abroad.

- In terms of teaching, as well as producing job-ready skilled graduates by the millions, India's universities must also ensure that they are nurturing the next generation of free-thinking, global leaders prepared for an uncertain future in a world-class teaching and learning environment.
- This means developing global citizens.
- It means attracting more international students into India to create a rich, multi-cultural study environment.
- It means embracing new global partnerships, and harnessing technology, to offer Indian students access the best teaching from all over the world." [117]

Solution Space 4.3

- We need to enhance input parameters like research funding, research infrastructure, Indian and global talent (faculty and students) etc.
- We will have to modify the processes to enhance research outputs like incentive based mechanisms, USA like salary structure and motivation etc.
- We need to do a lot for establishing research culture in Indian Universities. There are many obstacles in the way of establishing this culture. We must analyze the problem from all angles and need to provide professional and practical solutions. We will have to stop the habit of providing adhoc partial solutions.

4.4. Universities and Research Laboratories Should Not be Separate

To understand the overall system, one should know the Science & Technology Structure of India, the R&D investment and manpower, the processes and difficulties.

Sam Pitroda, Advisor to Prime Minister of India, Advisor to Prime Minister of India said that "Then you have to fine tune more research, intellectual property at university, leaving aside 5-10 percent of our teachers don't do research and most of our research scientists don't teach so we have to **bring them together**." [329]

India also has the largest diaspora, with 40% of its home-born researchers working overseas and 75% of its scientists going to the US. **A major reason behind the brain drain is the divide between universities and specialized research institutions**, with most universities not engaged in cutting-edge research and unable to attract the best minds. [295]

4.4.1. India: Huge S&T Infrastructure

So wide is the S&T infrastructure in India today that it encompasses S&T organizations under the **Central Government**, **State Government** as well as **public and private sectors** working in areas as diverse as agriculture and healthcare on the one hand and nuclear and space research on the other. Significant contributors are the large number of institutes/undertakings functioning under the Central Government S&T departments. There are about

- **200 national laboratories**

- An **equal number of R&D institutes** in the **Central Sector** and
- About **1300 R&D units in the industrial sector** [120]

Figure 20: Broad R&D objectives of different entities

MNCs	Academia	Corporate R&D	NGOs	National Labs	Start - ups
• R&D directed towards global business • Products customized for different regions based on economic, social, political and environmental needs	• Focus on fundamental research and capability development for staff and students • Emphasis on publications • Limited industrial research	• Product oriented research • More market focus • Aims at attaining high return on investment in products with respect to sales and profits	• Work focused on societal needs • Not normally profit oriented • Preference given to work related to rural development, optimized utilization of resources etc.	• Preference given to development of indigenous technologies beneficial for the nation. • Research projects selected by staff • Generate trained scientists for the country	• Focus on one particular field • Address smaller sized markets • Limited funds for in-depth research

Fig.4.12: Broad R&D objectives of different entities [310]

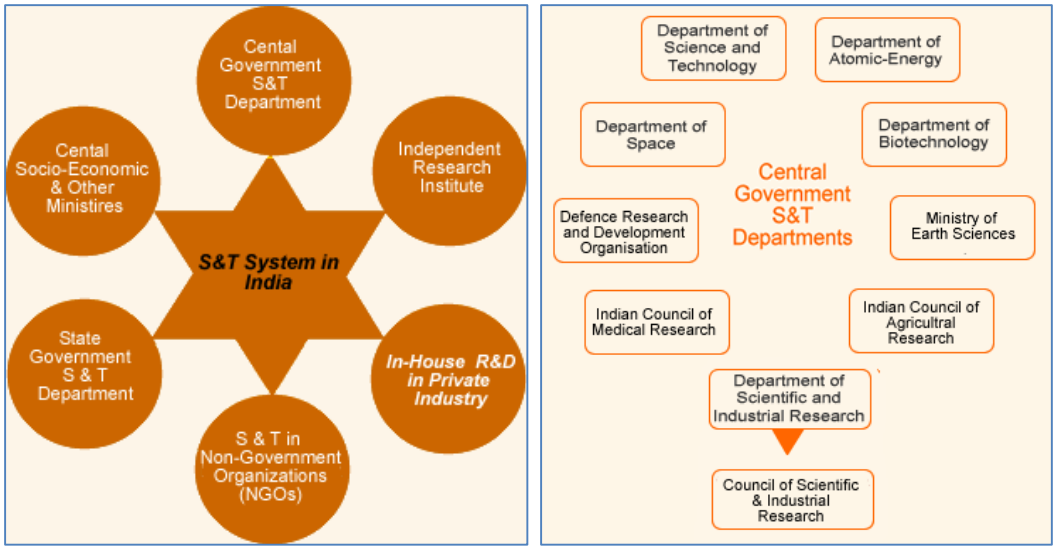


Fig. 4.13: S&T Infrastructure of India [120]

The S&T departments functioning under the auspices of Central Government are: Department of Science and Technology (DST), Department of Scientific & Industrial Research (DSIR), Department of Atomic Energy (DAE), Department of Space (DoS), Department of Biotechnology (DBT) and Department of Ocean Development (DOD). [120]

- DST is primarily entrusted with the responsibility of formulation of S&T policies and their implementation, identification and promotion of thrust areas of research in different sectors of S&T; technology information, forecasting and assessment; international collaboration,

promotion of science & society programmes and coordination of S&T activities in the country. [120]

- The Council of Scientific and Industrial Research (CSIR), with its 40 institutes dedicated to research and development in well-defined areas and around 100 field stations, is the major organization under DSIR. Among the other programmes of DSIR are: support to R&D by industry, programmes aimed at technological self-reliance, schemes to enhance efficacy of transfer of technology and a National Information System for Science and Technology (NISSAT). [120]
- DAE, which is committed to peaceful uses of atomic energy, is mainly engaged in establishing production of safe, economical nuclear power, using country's resources of uranium and thorium. It also extends non-electricity applications of nuclear energy in agriculture, healthcare and industry to improve the quality of life. It builds research reactors and develops technologies related to accelerators and lasers, and supports basic research in areas related to nuclear energy and other frontier areas of science, through its well-equipped multi-disciplinary R&D Centers. [120]
- DoS operates through a major set-up, the Indian Space Research Organization, which is responsible for planning and executing a viable space programme to develop satellites and launch systems and provide space-based services in the areas of communication, meteorology, resources survey, management and sustainable development.
- DBT is primarily responsible for identifying and supporting specific R&D programmes in biotechnology and biotechnology-related product manufacture. It also supports training of young scientists in the field of biotechnology at various universities and institutes. [120]
- DOD concerns itself with the task of establishing policies for marine R&D, survey of living and non-living resources of EEZ and continental shelf of the country, exploration of deep seabed mining, harnessing wave energy and consolidation of Antarctic research. [120]
- Among the S&T organization associated with other Central Government Ministries, Defense Research & Development Organization (DRDO) under the Ministry of Defense, Indian Council of Agricultural Research (ICAR) under the Ministry of Agriculture and Indian Council of Medical Research (ICMR) under the Ministry of Health & Family Welfare have large R&D infrastructure. [120]

Sufficient infrastructure exists in the Indian S&T organizations to efficiently interact with the end-users. In fact, a large number of projects are carried out on collaboration/sponsorship basis. In addition to R&D activities, these organizations also support extramural research, and provide extension services such as consultancy and training for the benefit of industry and other end-users. [120]

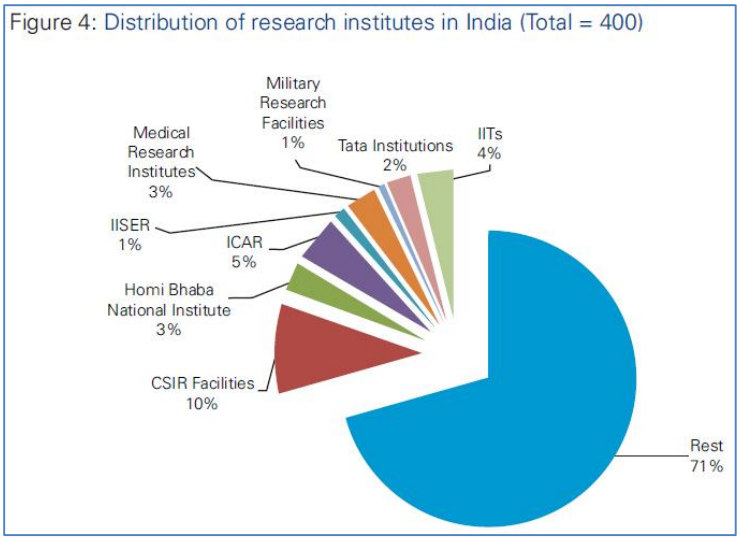


Fig. 4.14: Distribution of 400 Research Institutes in India [310]

Abbreviations for Figure 8

UGC	University Grants Commission
AICTE	All India Council for Technical Education
IIT	Indian Institute of Technology
IISc	Indian Institute of Science
ICFRD	Indian Council of Forestry Research and Development
ICMR	Indian Council for Medical Research
DRDO	Defence Research and Development Organization
DBT	Department of Biotechnology
DST	Department of Science and Technology
DSIR	Department of Scientific and Industrial Research
CSIR	Council of Scientific and Industrial Research
DIT	Department of Information Technology
ICAR	Indian Council of Agricultural Research
DAE	Department of Atomic Energy
ISRO	Indian Space Research Organization

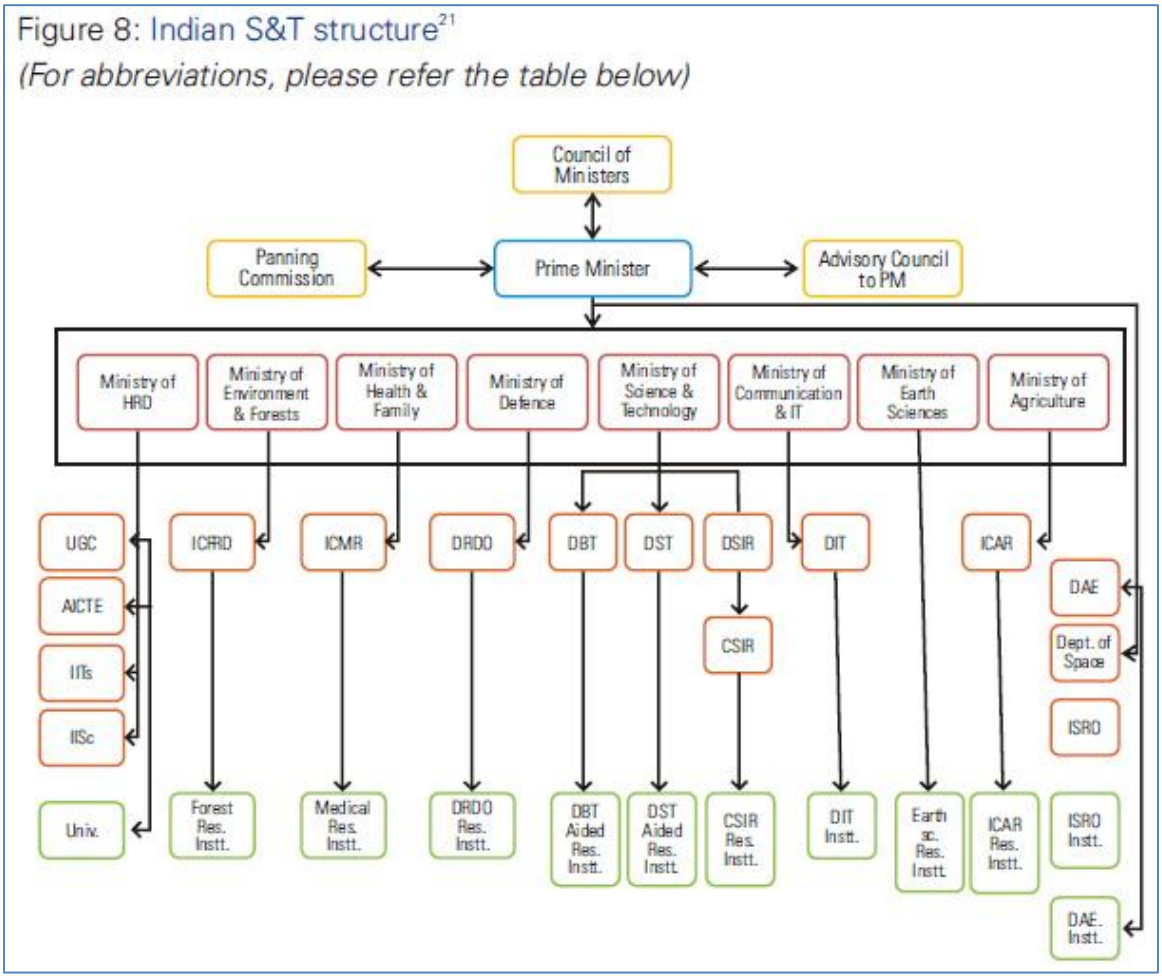


Fig. 4.15: India Science and Technology R&D Structure [121] [310]

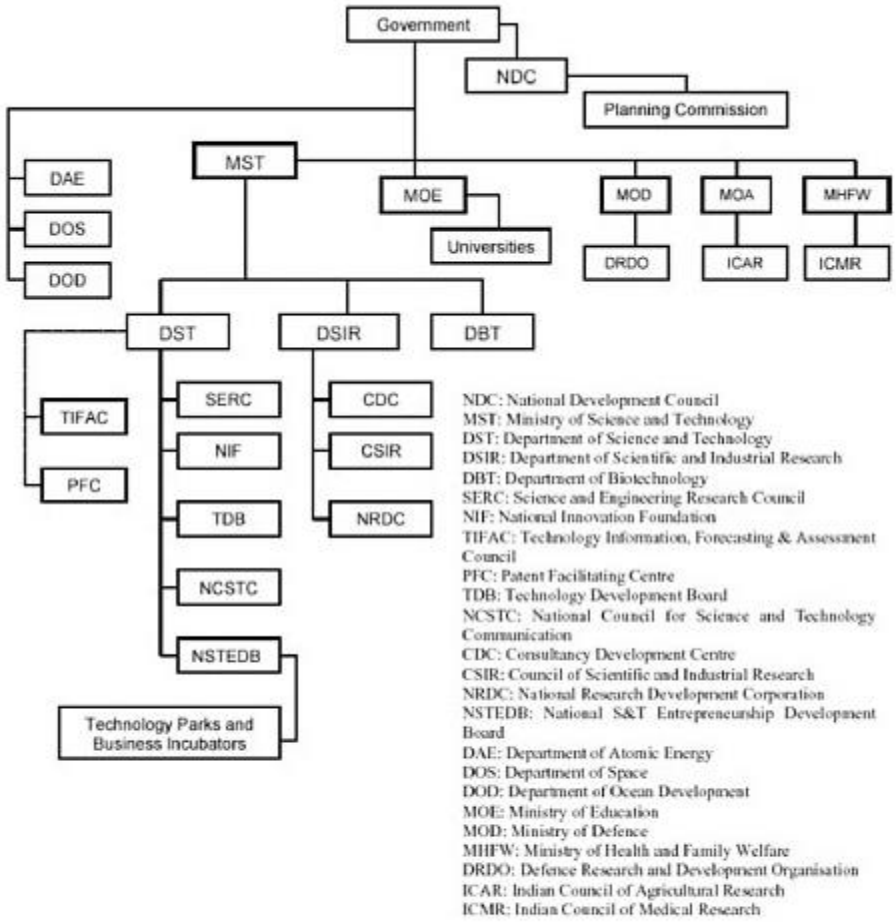


FIGURE 5-1 Government organizations functioning under central government S&T departments in India. SOURCE: Country Report for India 2007, PRO INO Europe.

Fig. 4.16: S&T Departments in India [114]

In addition to this, one should know the India's R&D Ecosystem, which is shown by following figure.

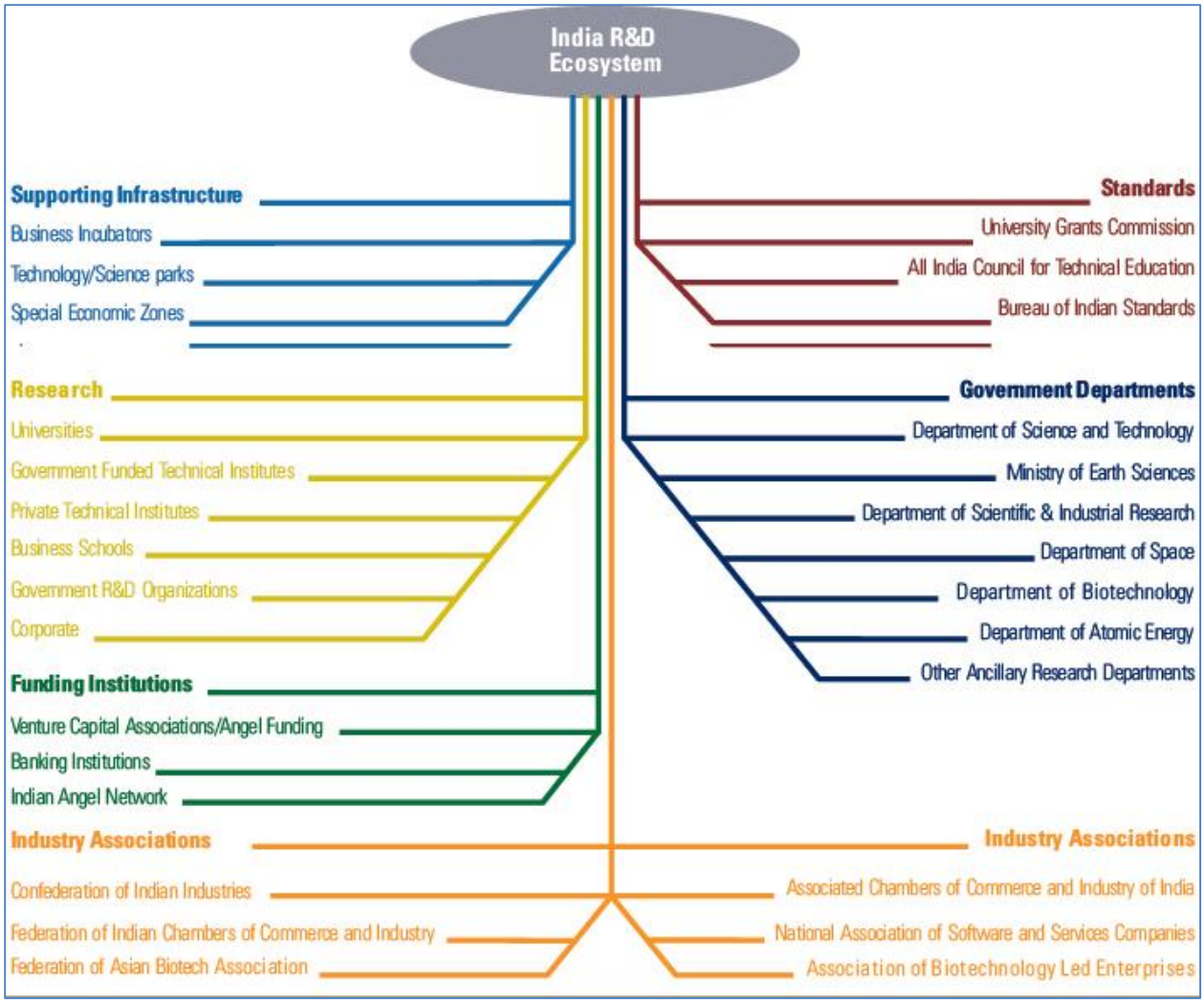


Fig. 4.17: India R&D Ecosystem [122]

4.4.2. R&D Investment

India was ranked seventh globally in terms of research and development (R&D) investments in 2012 and is expected to retain the position, with R&D investments expected to increase to **US$ 45.2 billion in 2013** from **US$ 38 billion 2011**. [309]

The overall R&D expenditure in India has doubled since 2007 and was estimated to be around **USD 40 billion in 2012**. During this period, **India's Gross Domestic Product (GDP) grew from USD 0.57 trillion to USD 1.8 trillion**. The overall government and industrial spending in scientific and technological R&D has remained **below 1% of total GDP** for more than a decade. The government spending accounts for over three-fourths of the Gross Expenditure for Research & Development (GERD), followed by 20-25% spent by private sector and 5% by universities. [310]

Since the government **budget for innovation was corralled to meet the payroll** of these "research" organizations, **little has remained for the universities**. [19]

Statistics from UNESCO and University Grants Commission show that India's public expenditure on all levels of education, both as a percentage of government spending as well as a percentage of gross domestic product, is **not out-of-line with the expenditures in other developed countries**. A large chunk of India's budget that might have gone to universities is already assigned to **low-productivity government laboratories** run, **not by criteria of science and innovation**, but **by rules of civil service**. What is left for education is directed to the existing government-run or government-aided colleges, universities, and special purpose institutes designated for specific disciplines. Given the heavy demands of economic development on India's budget, it is unlikely that these percentages can be raised significantly in the near future. How, then, can the expansion of higher education in India be funded? [19]

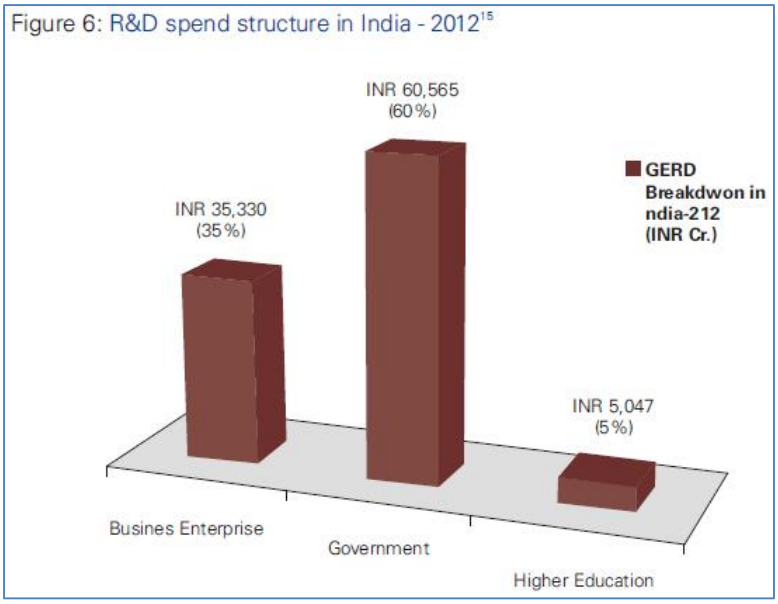


Fig. 4.18: R&D spend structure in India 2012 [310]

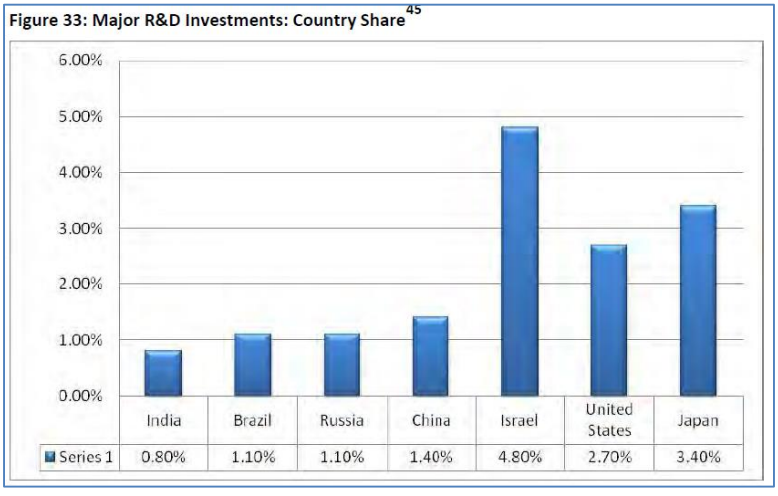


Fig. 4.19: Major R&D investment: Country share [72]

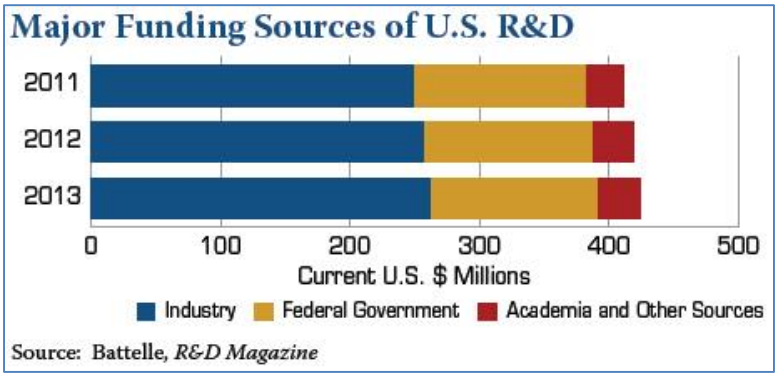


Fig. 4.20: Major Funding source of US R&D [324]

4.4.3. Research Manpower

The number of **persons employed in the R&D establishments** is estimated to be around **300,000.** In addition to R&D establishments, the other major body pursuing S&T activities in India is the country's vast university system. The total stock of the S&T manpower in the country at the end of 1990, is estimated to be around **4.0 million**. The Central Government is the chief patron of scientific and industrial research. [120]

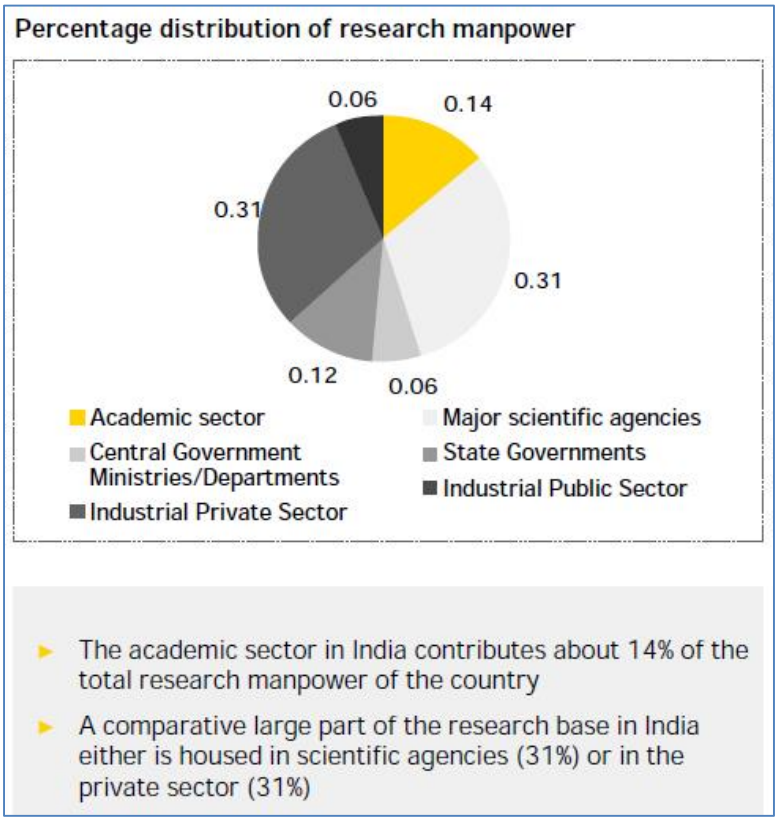


Fig. 4.21: India Academic Sector: Only 14% research manpower [62]

4.4.4. India: Higher Education Infrastructure

The DST website has displayed the need of quality infrastructure in India "In recent years, great concern has been expressed about **lack of infrastructure facilities for imparting good quality higher education and conducting advanced research**. While the departments in universities and other higher educational institutions had made some impact on the development of teaching and research through their own efforts, a stage had reached where they needed selective strengthening of their infrastructure for post-graduate education and research in emerging areas. [126]

The study, "Higher Education Scenario in India", was conducted by the Associated Chamber of Commerce and Industry of India, or ASSOCHAM, and is yet to be published. **Inadequate higher education infrastructure** and poor quality courses are pushing 600,000 Indian students to top universities overseas – and are costing the country around Rs 950 billion (US$17 billion) in foreign exchange annually – a study has found. [127]

4.4.5. R&D, Industry and University

Dr. Pankaj Jalote, Director, IIIT Delhi stated that "**In decades past, research & development in India was not really tied to the economy; an isolated industry didn't feel any need for it.** Now, the integration of the Indian economy with the global economy has created a dependence on R&D for some segments. And in the future, its value will only increase as countries that have the ability to innovate will be better placed to compete in the global marketplace. Due to this **changed scenario, there is a need to strengthen our R&D** ecosystem. **R&D is globally done in three types of organizations – universities, government-owned labs and company labs.** The last is outside the purview of public policy (except perhaps fiscal incentives), but the first two are influenced a great deal by government policies and investment. Global experience tells us that out of the two, except for some focused R&D related to defense, space etc., the efficiency and effectiveness of the university is higher. **Most research output comes from there, and most of the Nobel Prize winners work in academia.**" [125]

4.4.6. Views of Experts on Separation of Universities from Research Laboratories

Dr. Ram Marayan Vice Chancellor of the Manipal and Bangalore-based Manipal University (Established in 1942) — the country's most respected private university — offers another explanation for the declining reputation of Indian universities in international league tables. "Indian universities are **essentially teaching institutions** whereas foreign ranking agencies accord heavy weightage to research activity and citations in academic journals. This is because **over half a century ago, the Central government shifted major R&D (research and development) activities to specialist research institutes such as CISR (Central Institute for Scientific Research), IISc and TIFR (Tata Institute of Fundamental Research), thereby discouraging R&D in universities.**" [123] [20]

Sam Pitroda, adviser to Prime Minister Manmohan Singh said that "**Teachers do little research and scientists don't teach**. We need to couple our universities with our industries." [124]

Philip G Altbach stated that "For historical reasons, China and India have **specialized research institutions that are separate from the universities.**" [39]

Dr. Pawan Agarwal, Adviser (Education), Planning Commission, Government of India stated that "A subject of discussion in scientific circles for almost last fifty years in India has been the **'two box disease'** that has afflicted the universities and the government funded R&D laboratories in India. The **two systems are poorly connected in India** and **work in isolation**. In comparison, **in most industrialized countries, these work together in tandem**" [17]

Dr. Pawan Agarwal stated that "**Historically, research in India is done in research institutes and laboratories outside the university system**. It is essential to connect teaching with research—bringing India's large research laboratory system into the fold of the university system is crucial for creating a vibrant research ecosystem in the country." [46]

Dr. Shyam Sunder, School of Management, Yale University stated that "After gaining its independence, **India set up free-standing research laboratories independent of universities**, following the practice in many other countries including France, Soviet Union, and the U.K. In India, **this structural choice has neither promoted research and innovation nor helped maintain, much less raise, the quality of higher education**. In the early years, laboratories attracted highly talented scientists and engineers to conduct research. They were well financed by government, and had little contact with education, industry, or the market (business being a dirty word in the socialist vocabulary dominant in the political class). With only a few exceptions, isolated from the talent and dynamism of youth and the inconvenient discipline of the market, **most laboratories gradually fell into bureaucratic routine, promoting largely by seniority, hiring to spend the budget, and producing little notable research**. Today, India hardly appears on the world research map in any discipline. The civil services that run these organizations control much of the government budget for promoting innovation, but have very little to show for it." The government research establishments or laboratories in India are follows:

- Department of Science and Technology (13 laboratories),
- Department of Atomic Energy (12 laboratories),
- Science and Engineering Research Council, Intensification of Research in High Priority Areas (six major facilities),
- Fund for Improvement of S&T Infrastructure in Higher Education Institutions, Council of Scientific and Industrial Research (32 laboratories), and
- Department of Biotechnology, etc.

Apparently, the only information publicly available about these endeavors is the number and the amounts of research grants. [19]

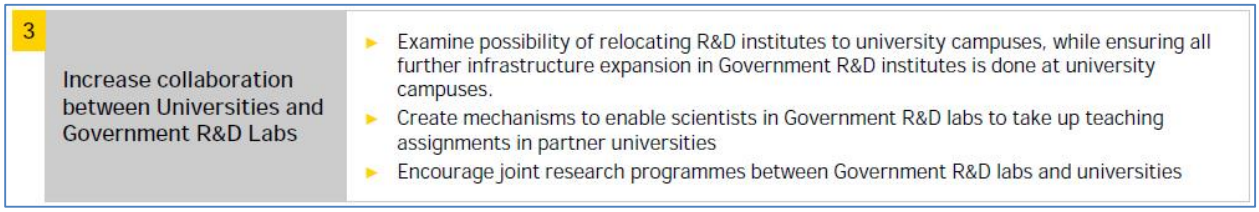


Fig. 4.22: FICCI: Increase collaboration between Universities and Govt. R&D labs [62]

Third, by **isolating research from the education of the young, universities have been reduced to providing classrooms for instruction and issuing diplomas**. Starved for talented faculty and funding to support innovation, **universities did not have the chance to develop a true research culture**. Even talented students could have little exposure to research, forgoing any accidental discovery of their affinity for innovation. The few PhD programs that exist in the universities cannot attract talent. Most members of faculty cannot do or supervise research. The poor quality of candidates entering the PhD programs, and their meager compensation, further lowers the social regard in which academics are held. **This vicious cycle of negative reinforcements continues to this da**y. [19]

Elsevier study findings

- Scientific papers published from India has grown at a rate of 14.3 per cent annually in the past five years, catapulting it into the elite list of countries like the US, the UK and Japan
- Most of the publicized research in India is emanating from research institutes as opposed to universities, which typically account for a country's growth in research [128]

The report by Science Advisory Council of the Prime Minister, DST stated that **"Less bureaucratic controls in government funded R&D organizations**: This is a big impediment to free thinking, experimentation and innovation……Prime Minister Manmohan Singh stated in the recent science congress session that it is high time that we liberate science from bureaucracy. How true! **Practice of science in India has been severely hampered by oppressive bureaucratic practices and inflexible administrative and financial controls**. One of the necessary conditions for progress in science is the elimination or minimization of bureaucracy. This is required in the central government and even more so in the state governments….. When asked about how to build a great institution, James Conant of Harvard University said the following: "**Get the best minds and leave them alone**". There is a lesson for all of us in this statement." [118]

4.4.7. Recent Developments

Recently few institutes are initiated collaborations with National Laboratories. For example, IIT-GN is actively nurturing a diverse academic environment — one that is both globally connected and socially sensitive. The Institute is continually developing strategic partnerships with numerous universities, industries and R&D organizations within the country and abroad. A Memorandum of Understanding (MOU) with the **Physical Research Laboratory Ahmedabad** (PRL) enables the seamless sharing of academic resources between the two Institutes. [129]

Solution Space 4.4

- After independence, with prevailing norms, India had established teaching universities and research laboratories. In India, the R&D activities are taking place but in a distributed manner at various organizations like Universities, Premier Institutes, Private Institutes, Research laboratories, Defense laboratories, Science & Technology Park and MNC R&D labs etc. India got the advantage of this arrangement. But now India needs "World Class Self Sustainable Highly Interdisciplinary Research Universities", which can be built with the help of potential of existing national research laboratories and R&D ecosystem. To achieve this goal National Reforms are needed.
- The RUSA is a good start but it is covering only 316 (out of 700) universities and 13024 (out of 36000) colleges. That is, 45.14% universities and 36% colleges. India needs more comprehensive and extended Reforms.
- India has utilized it's huge S&T resources nicely for the scientific and industrial development of the nation but unfortunately it couldn't be converted in to research outputs like number of PhD, Citation, research papers etc.
- I couldn't find any government strategy to strengthen the university research environment with the help of our National Laboratories and huge S&T infrastructure, which have strong research potential. Such national policy is needed urgently.

4.5. Indian Industries: Not Research Oriented

Our industries are not involved in research like industries in developed countries. Our IT Industry is a service industry and only 5% companies are involved in product development.

Professor Yash Pal, Chancellor of Jawaharlal Nehru University and former Chairman UGC said that "I think this business **un-employability comes from the industry** and this is mainly because **industries are not research oriented**. Lot of our industries are based on what somebody else is doing abroad and you begin to do it again and you copy. If you copy something then you need people who are trained rather than educated….. All the people who have done our atomic energy programme or space energy programme would have been **considered unemployable when they were recruited.** They learnt things when they got into the institution." [48]

Another problem on the demand side is a **lack of emphasis on research and development (R&D) within companies**. According to latest R&D statistics published by the Union department of science and technology, more than 60 percent of Indian industry's expenditure on R&D is concentrated **in two sectors**— pharmaceuticals and transportation. Given that the total R&D expenditure is also small. [249]

The World Intellectual Property Organization (WIPO), Japan report stated that "It is only in recent years that Indian industry has really started collaborative programs with universities. … Major global IT companies have outsourced some part of their operations to India and have established R&D centers there as well. … **But overall, few Indian industries are supporting research projects within universities**. Most of the collaboration is in the form of consultancies, which

typically do not involve large-scale projects. On the other hand, according to the survey questionnaire conducted by P. Ganguli in the Indian national study, **Indian universities are not fully aware of the importance of intellectual property rights** (IPRs) and lack the resources to manage them. Both sides need to reach out if University-Industry collaboration is to flourish." [250]

Let's see the R&D expenditure of Indian and USA industries.

India's Industrial R&D

	2010 R&D mil. U.S. $	R&D, % Revenue
Tata Motors	397.8	1.50%
Prithvi Information	246.3	60.50%
Polaris Software	228.0	67.60%
Bharat Heavy	176.3	2.50%
Mahindra & Mahindra	157.2	2.50%
Lupin	112.7	9.30%
Infosys	112.0	1.90%
Reliance Industries	110.0	0.20%
Core Projects	96.2	53.40%
Bharat Electronics	67.2	5.90%

Source: Battelle/*R&D Magazine*, EU Industrial R&D Scoreboard

Aerospace/Defense/ Security	2010	2011	Q1-Q3 2012
Top U.S. R&D Expenditures	Millions, U.S. $		
Boeing	4,121	3,918	2,545
UTC - Aviation (e)	811	1,096	723
GE - Aviation (e)	684	918	638
Raytheon	625	625	543
Lockheed Martin	639	585	456
Honeywell - Aerospace	479	565	424
Northrop Grumman	580	543	386
Textron	403	525	374
General Dynamics	325	372	251
Rockwell Collins	348	346	240

Source: Battelle/*R&D Magazine* and Current Company Information; (e) = estimated

Information & Comm. Technologies	2010	2011	Q1-Q3 2012
Top U.S. R&D Expenditures	Millions, U.S. $		
Microsoft	8,951	9,362	7,571
Intel	6,576	8,350	7,519
International Business Machines	5,720	5,990	4,531
Cisco Systems	5,711	5,628	4,161
Google	3,762	5,162	5,035
Oracle	4,108	4,449	3,572
Hewlett-Packard Co.	3,076	3,242	2,556
Qualcomm	2,504	3,221	1,928
Apple	1,959	2,612	2,623
EMC	1,888	2,150	1,897

Source: Battelle/*R&D Magazine* and Current Company Information; (e) = estimated

Life Science	2010	2011	Q1-Q3 2012
Top U.S. R&D Expenditures	Millions, U.S. $		
Pfizer	9,392	9,112	5,734
Merck & Co.	11,111	8,467	5,945
Johnson & Johnson	6,844	7,548	5,334
Lilly (Eli) & Co.	4,884	5,021	3,815
Abbott Laboratories	3,724	4,129	3,181
Bristol-Myers Squibb Co.	3,566	3,839	2,822
Amgen	2,894	3,167	2,411
Celgene	1,129	1,600	1,251
Medtronic (e)	1,464	1,482	1,167
Monsanto	1,241	1,435	1,166

Source: Battelle/*R&D Magazine* and Current Company Information; (e) = estimated

Energy	2010	2011	Q1-Q3 2012
Top U.S. R&D Expenditures	Millions, U.S. $		
GE - Energy Infrastructure (e)	1,457	2,126	1,478
Exxon Mobil	1,012	1,044	788
Chevron	526	627	448
ConocoPhillips/Phillips66 (e)	230	267	202
Itron	139	163	134
First Solar	95	141	101
USEC	110	127	168
Babcock & Wilcox	69	106	91
Advanced Energy Industries	57	65	44
SunPower	49	58	46

Source: Battelle/*R&D Magazine* and Current Company Information; (e) = estimated

Chemicals & Advanced Materials	2010	2011	Q1-Q3 2012
Top U.S. R&D Expenditures	Millions, U.S. $		
DuPont	1,651	1,956	1,539
Dow Chemical	1,660	1,646	1,245
3M Co.	1,434	1,570	1,216
PPG Industries	394	430	337
Goodyear Tire & Rubber	342	369	274
Honeywell - Adv. Materials (e)	212	279	218
ALCOA	174	184	141
Huntsman International LLC	151	166	112
Eastman Chemical Co.	145	158	136
Air Products & Chemicals	117	118	98

Source: Battelle/*R&D Magazine* and Current Company Information; (e) = estimated

Fig. 4.23: R&D expenditure of Indian and US industries [324]

Solution Space 4.5

- After independence, in last 6 decades, India has shown spectacular industrial growth. The industrial R&D always grows slowly. It will pick up in next two decades.
- India had more than 800 MNC R&D labs. They have huge setups, which has compensated the effect.

4.6. Focus should be on Creating and Not on Bringing Technologies

Professor Yash Pal said that "In between what happened was, even in the industry and among some bureaucrats, bringing in technology was considered the same as creating technologies, people forgot the difference. **Creating technology is very different from bringing in technology** as by bringing in technology you can copy what others have done but by creating technology you can do something which nobody has so far done. And we have a lot of things to do in that particular direction, so my main emphasis always has been in support that we have to create research universities and research means do things which nobody else has done so far and if you don't do enough of those you can't really educate people who will innovate." [48]

Dr. Shyam Sunder, School of Management, Yale University stated that "Like most other countries, **India imports much of its technology**. **Global competition will not allow this strategy to be sustained for long**. Many countries around the world are preparing their educational systems, grooming a large number of their talented young with high quality education, and promoting research to attract the "brain" industries. Research is original work—discoveries, inventions, writing or design that is new and better than anything done before. The "brain" industries may move to these countries if they do not find labor of sufficient quality and in sufficient quantity to fill their needs. **Unless India tackles the problem of attracting enough talent into higher education careers, the same global competition that has served the Indian economy so well could prove to be its undoing**." [19]

The FICCI report stated that "Technology improvement and R&D needs exist virtually in every sector. **Buying 'proven' technology from abroad sets India behind by a number of years and makes us dependent on provider of technology**. India needs to take a holistic approach for development of technologies across sectors for self-reliance and a sustainable future." [310]

Dr. Mote, Professor IIM, Ahmedabad stated that "The Indian industry is importing high value-added products and services and exporting low value-added products and services. In other words, we are **importing sophisticated submarines and fighter aircrafts** and **exporting 'four dollar garments' and low priced**, small cars such as Indica and Santro. If our trade pattern continues on these lines, then we are abdicating our responsibility to "provide high and rising standards of living to all citizens." **Are the institutions of higher learning aware of this impending danger? Are they willing to face the challenge of working with the governments and industry to change the pattern of trade?** Would these institutions point out that the nation must import less sophisticated products and export more sophisticated products?" [41]

Solution Space 4.6

- After independence, the main target was self-sufficiency. We had started from scratch and exhibit spectacular growth at almost every front. To achieve this we had adopted best possible ways and means. The next phase is developing technology, which has already initiated and taking shape.
- There is an urgent need to develop research and innovation capabilities of higher education system. To develop new and innovative technologies there is a need of sophisticated infrastructure as well huge financial support. It can be achieved through government and private partnerships. If there is ROI, appropriate legal and regulatory framework then only the private players will come forward. The government must introduce Reforms to resolve this deadlock.

4.7. Lack of Research Motivations: Mostly for Career Advancement

Dr. Pawan Agarwal, Adviser (Education), Planning Commission, Government of India stated that "Despite a very large academic profession, India has failed to establish an academic culture that promotes meritocracy, honesty, and academic freedom. Indian academics acquire full-time appointments early in their careers and have a predetermined career path**, leaving them with little motivation and no incentives to perform**. As a result—and notwithstanding the fact that academics in India receive decent salaries on a comparative global scale (and on average much higher salaries than those in China) academic research performance is poor; and teaching standards have consistently fallen over the years." [46]

Prof Sharma, Vice Chancellor, Delhi Technological University said "One of the major deficiencies on part of the Universities and Institutions in India is in respect of contributions to intellectual property and quality of research publications. For this reason despite India's emergence as a major destination for outsourcing of ICT services, the universities and institutions are not able to stand in the international rankings in the Top 200 barring a few IITs and a handful of Central Universities. **Strong interface with industry for relevant research and innovations have not been on the agenda of most Universities in India**. Needless to say that quality of research and research integrity of the researchers have emerged as a major concern as our current interest for **research is largely dominated by publications to comply the requirement for career advancements** rather than attaining eminence in specific research areas. Research as a passion and a mission is yet to emerge as a hallmark of Indian Universities." [130]

Pankaj Jalote, Director, IIIT Delhi & M Balakrishnan Deputy Director, IIT Delhi has rightly pointed out the problems in Indian system. The low level of funding support apart - changing this, although sorely needed, will require major policy shifts and infusion of funds - there are too many constraints on research grants here and **not enough incentives**. As a result, whereas in a country like the US, professors spend a lot of effort getting grants, in India, neither the universities nor faculty members are so driven. And this **lack of a strong desire to go after research grants** makes research funding a government's most powerful tool for directing research, **a rather toothless tiger.** [131]

Let's study the scenario in USA for motivation and incentives schemes:

- Perhaps the single biggest factor that motivates faculty in the US to compete vigorously for research grants is the provision of a **'summer salary'** in these grants. The **yearly compensation of faculty in the US is for nine months**, **allowing faculty to earn up to three months' salary from research projects**. In other words, a faculty member can earn up to **one-third more in a year through research grants**. This is a brilliant policy which **creates a huge incentive** for faculty **to get grants**, and then to deliver the research output promised in order to secure grants in future as well. And it keeps the incentive limited, preventing it from being entirely money oriented, since a faculty member can only earn some fraction of his salary even if he has a multimillion-dollar grant**. In India, research grants do not allow any such incentive for the researchers.** Just allowing for the faculty member to get some percentage of his salary from a project can **dramatically change** the sponsored project scenario. The drive to get grants will bring about better proposals and the faculty will strive harder for more and higher quality research. [131]
- Second, most grants have a **travel component** in their budget which is generally used to attend conferences and meetings. **In India, we still impose a restriction** that the travel budget is only for domestic travel; international travel is allowed only with permission from the granting agency. This is despite the fact that the best conferences are held abroad and, in many fields, a critical mass does not even exist to support high quality national conferences. **This means that if a researcher does some high quality work which is accepted in an important international conference, he cannot use the grant's travel budget to attend.** On the one hand, we expect institutions to be competitive globally and complain when researchers do not measure up to global standards - but on the other, we deny them the travel support that would enable them to be members of the global research fraternity. This is perhaps a legacy of the times when foreign travel was considered a luxury. [131]
- Thirdly, current policies have minimized incentives for institutions to go after grants. Grants allow for an overhead for the institute where the researchers will do research. This **overhead is for infrastructure and other support the institute has to provide**. In the **US, the overhead is often around 50%** (and sometimes even higher), which is a more realistic estimate and also creates an incentive for the university. **In India, the overhead allowed is 15% to 20%.** This is actually **less than the real overhead cost**. In fact, the host university usually ends up spending considerably more than the overhead it gets. This small and unrealistic overhead provides **very little incentive for an institution** to encourage its faculty to go after grants. But as more and more institutions emerge using the private-public partnership model - often with corporates involved - there is an opportunity to change this and promote greater competition. [131]

In the research paper "Incentives to Research Activities in European Public Universities" stated that "Our results show that an efficient allocation of public resources across universities by public administrations requires:

1. **A combination of economic incentives to professors and transfers to universities**, based on the abilities of the professors and the weight given to research by universities, should be used,
2. Resources directed to universities should be distributed asymmetrically, and
3. **Incentives to professors** should be designed relative to what they can earn outside the university. [132]

To what concerns university managers, we show that efficiency requires that:
1. Universities should strengthen control on the effort that professors are expected to devote to research activities,
2. **Teaching loads should be assigned taking into account the ability of the professors to conduct research**, therefore resulting in a partial specialization of professors in either research or educational activities, and
3. **Increases in fixed salaries do not result in increases in research output**. [132]

Summarizing, the distribution of teaching loads and public resources aimed at improving research output should not be based on uniform and rigid distribution criteria **but on a measure of research productivity by professors.**" [132]

One may argue that some of our recommendations seem really obvious. However, in spite of this we must note that at present some university managers and some public administrations across Europe (with some exceptions) are working in the opposite direction. Although there are significant differences not only amongst universities but also amongst schools and departments we would like to note that in most public universities:
1. The teaching load is assigned **uniformly**, when reductions of teaching loads are implemented, as a compensation for success in research activities, **they are rather low**,
2. Although most universities regulate income-generating activities of professors outside the university, there is a lack of interest by university managers to **monitor professors' activities** (may be because university managers themselves are professors). [132]

Stellenbosch University in South Africa is cementing its reputation as a leading research institution by rewarding its most productive researchers with handsome incentives, to boost publication rates. Several universities – and the government – are employing incentive strategies to drive up research production. Fifty awards were given out recently to 39 Stellenbosch academics who had made the biggest contribution to accredited publications in 2011. Of the 39 who received R50,000 (US$5,000), 11 received an extra R50,000 for high scores in publication units set by the Department of Higher Education and Training, or DHET. Vice-rector for Research and Innovation Professor Eugene Cloete said research publications were exceptionally important: "They are a critical contribution to extending the university's international reputation as an excellent research institution, and **provide a significant contribution to Stellenbosch's annual subsidy income**," he said. [133]

Several universities have adopted the DHET policy and procedures for measuring research output and rating and rewarding researchers for publishing papers, although there is considerable variation in how incentive funding is spent within institutions. Between 2000 and 2010, South Africa more than **doubled its paper publication numbers**, from 3,617 to 7,468, according to research by Professor Anastassios Pouris, director of the Institute for Technological Innovation at the University of Pretoria, published in the South African Journal of Science. **Research incentive systems are believed to be one of the drivers of the increase.** [133]

North West University, which was formed in 2004 through the merger of two universities, complements the DHET scheme with its own institutional research excellence awards. Professor Lucas Venter, director of research support, said the **scheme aimed to increase the number of**

international publications, without compromising quality, and to motivate staff to publish regularly and improve the quality of publications. Venter said the system rewarded more productive researchers with larger incentives per unit for publishing in local and international journals. **The incentive had seen a marked increase in the number of international papers published – in 2008 the university had 52% of total output units, and in 2012 it rose to 66%.** [133]

Dr. Christopher J. Kaufman stated that "The focus on research in the USA is so intense that many American teachers can most of the time be found in research laboratories and teaching when they find time. No action is taken on such teachers as their interest which lies in research, could not be deviated from purposeful activities in the laboratories." [134]

Solution Space 4.7

- The RUSA has introduced performance based funding, which is badly needed for Indian higher education system.
- In India the research is carried out mostly for career advancement. Like USA, we must introduce research boosting mechanism through incentives and motivations. We should promote high quality research through career advancement schemes by considering faculty publications in high impact factor journals and international patents.
- The present UGC faculty service conditions wouldn't boost research activities. Its degree oriented service conditions. The service conditions must be linked to international level research, innovation, patents, business incubation activities, industrial income, research income etc. There is a need of urgent reforms in this direction to establish WCU in India.

4.8. Research Funding: Universities Gets 10% & Higher Education Gets Just 4%

Dr. Pankaj Jalote, director, IIIT Delhi & Dr. M Balakrishnan deputy director, IIT Delhi stated that "In the developed world, universities also get the largest share of research funding from the government, in our country, such support lags way behind. **Only about 10% of government research funding goes to universities.**" [131] [135]

In 2005-06, research at higher education institutes accounted for a mere 4% of the total national R&D expenditure. [62]

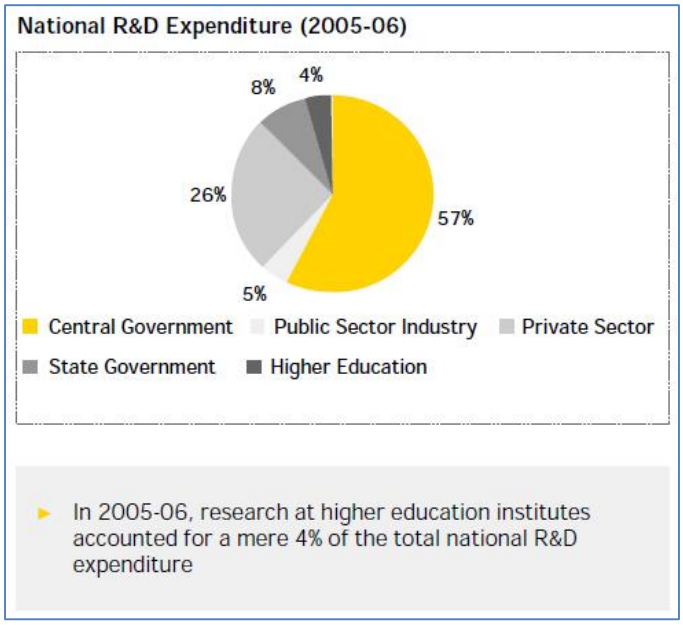


Fig. 4.24: FICCI: Research Expenditure of Higher Education in 2005-06 is 4% [62]

Share of Total Global R&D Spending

	2011	2012	2013
Americas (21)	34.8%	34.3%	33.8%
U.S.	29.6%	29.0%	28.3%
Asia (20)	34.9%	36.0%	37.1%
Japan	11.2%	11.1%	10.8%
China	12.7%	13.7%	14.7%
India	2.8%	2.8%	3.0%
Europe (34)	24.6%	24.0%	23.4%
Rest of World (36)	5.7%	5.7%	5.7%

Numbers in parenthesis indicate number of countries in that group

Source: Battelle, *R&D Magazine*

Global R&D Spending Forecast

	2011 GERD PPP Billions U.S. $	2011 R&D as % of GDP	2012 GERD PPP Billions U.S. $	2012 R&D as % of GDP	2013 GERD PPP Billions U.S. $	2013 R&D as % of GDP
Americas (21)	485.4	2.05%	494.9	2.04%	507.6	2.04%
U.S.	412.4	2.70%	418.6	2.68%	423.7	2.66%
Asia (20)	487.1	1.75%	518.6	1.77%	554.6	1.79%
Japan	156.0	3.47%	159.9	3.48%	161.8	3.48%
China	177.3	1.55%	197.3	1.60%	220.2	1.65%
India	38.4	0.85%	40.3	0.85%	45.2	0.90%
Europe (34)	342.9	1.87%	346.7	1.88%	349.5	1.88%
Rest of World (36)	78.8	0.86%	82.3	0.87%	86.4	0.87%
Global Total	1,394.3	1.76%	1,469.0	1.77%	1,496.1	1.77%

GERD, Gross Expenditures on R&D; PPP, Purchasing Power Parity
Numbers in parenthesis indicate number of countries in that group

Source: Battelle, *R&D Magazine*

Fig. 4.25: Global R&D spending [324]

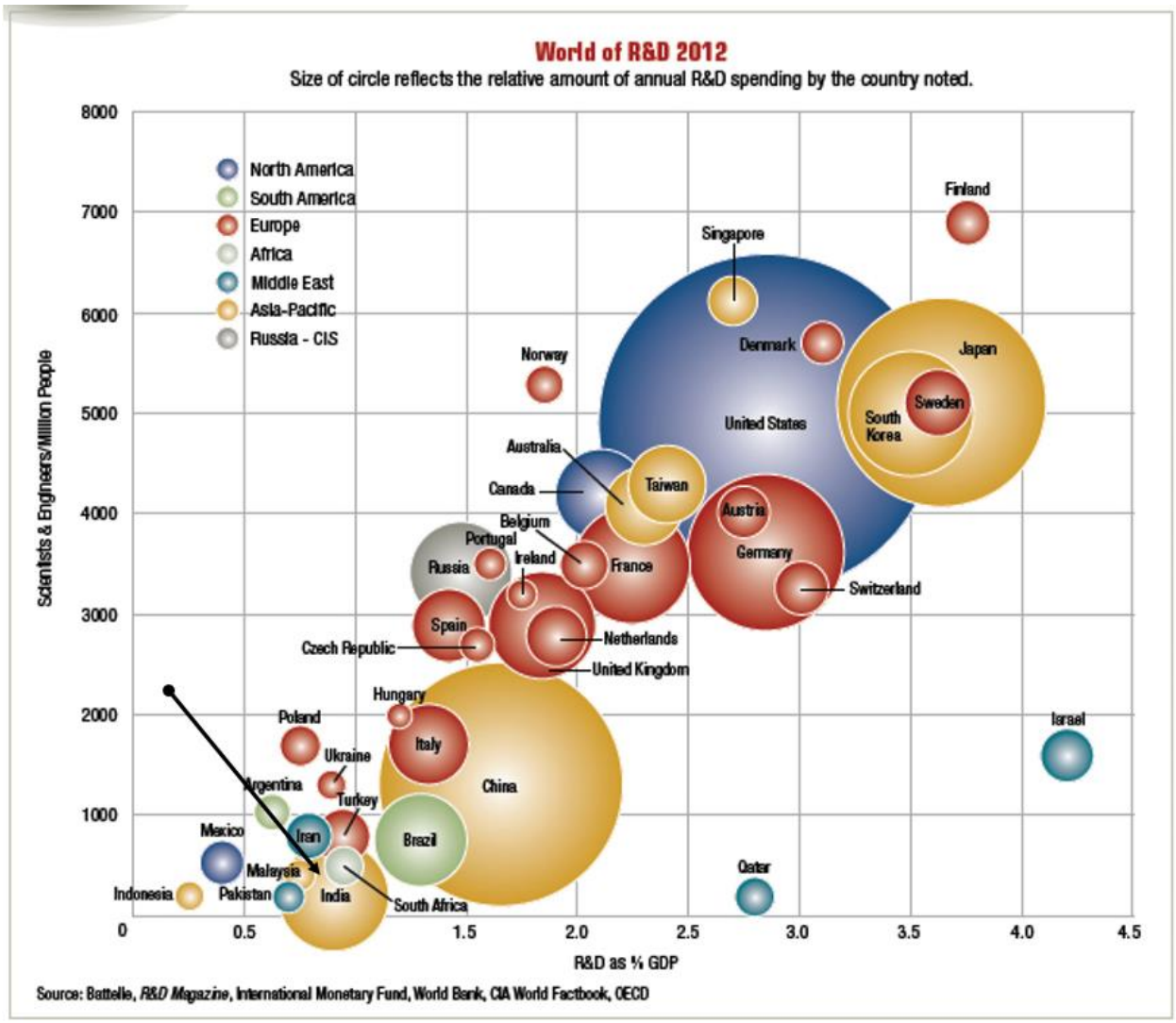


Fig. 4.26: World R&D funding 2012 [324]

Funding is a special challenge now, because governments in many countries are disinvesting in higher education. Academic institutions are everywhere asked to pay for an increasing part of their budgets through tuition and student fees, funds raised by consulting and selling research-based products, and other revenue generating activities. The fact is, however, that public support is necessary for research universities everywhere. Only in the United States, and to a lesser extent in Japan, do private research universities of the highest rank exist. And in the United States, such universities benefit from government subsidies in the form of research grants and loans and grants to students. The top private institutions have significant endowments as well. [4]

Solution Space 4.8

- The research university can't be established through simply government funding and tuition fees. We must tap other funding resources, for which the government should provide appropriate legal framework. It's a deadlock and only government can resolve it.
- Most of the research government funding is consumed by National Research Laboratories. Only 10% goes to Universities. The reforms like RUSA can change the picture slightly but even this funding is insufficient for real progress.
- We will have to bring new PPP based financial model, backed by appropriate legal framework.

4.9. Need of Research Institute Involved in Teaching: Funding Deadlock

4.9.1. Performance of Existing WCU

The Scientific Century states that: "The UK produces more publications and citations per pound spent on research than any other G8 nation. With 1% of the world's population, the UK produces 6.4% of the world's publications, receives 11% of citations, and 14% of citations with the highest impact". The UK's ability to attract global talent and provide excellent research facilities has contributed to the UK's success in winning Nobel prizes. Since 1900, academics working at 15 UK universities have won 61 Nobel prizes. [40]

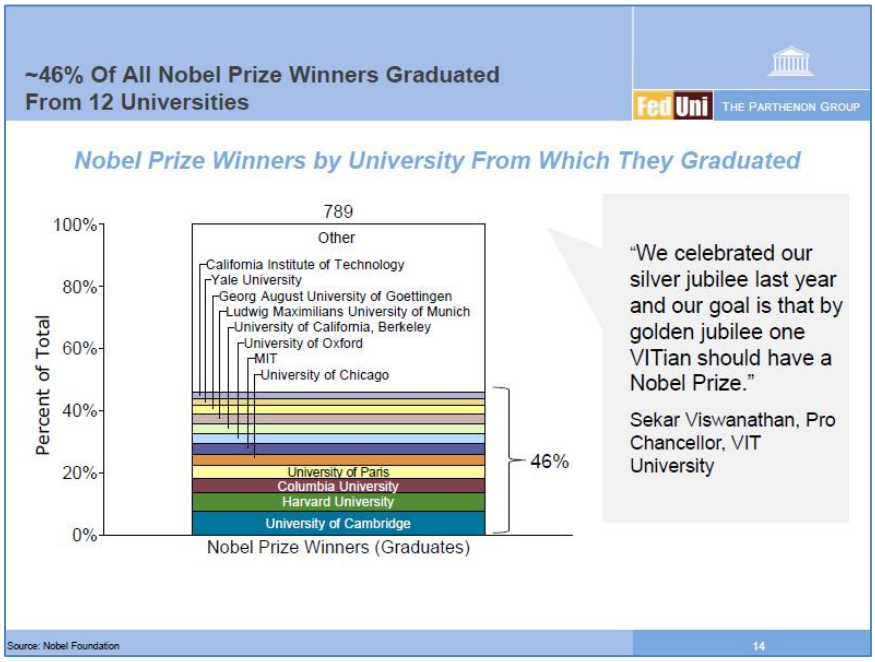


Fig. 4.27: WCU and Nobel Prize Winners by University from which they graduated [93]

4.9.2. Need Research University Involved in Teaching

In India, most of the universities are teaching universities involved in research. There is a Need of research institute involve in teaching. Prof B N Jain, Vice Chancellor BITS Pilani said, "The fact that none of our universities show up in the list of top 100 or 200 universities compiled by THE or QS, or that a handful show up in the top 400 or so, indicates that our universities are **organized around teaching and learning**, and **not on research and teaching**. Given the focus of THE and QS rankings on research outcomes, the situation is unlikely to change in the short run, unless we begin to seriously focus on research and innovation, while continuing to excel in teaching." [130]

4.9.3. Research: Major Factor for WCU

Prof. R. Natarajan said that "All the three major global ranking systems, attach substantial weighting to research performance and almost all top-ranking universities are research led universities. Unfortunately, the research performance of even the IITs, considered being our 'best' institutions, **falls short of world-class standards**." [130]

"The issues affecting India's rankings performance are clear. The highly selective intake of the IITs is reflected in an excellent reputation among employers, but in many other areas they lag behind their regional peers. Student/faculty ratios are often very high, and though their research productivity and impact has shown some signs of improvement, it still lags considerably behind the leading universities in the region," says QS article on the ranking. [136]

Solution Space 4.9

- In true sense, India doesn't have multidisciplinary research university, which involved in teaching.
    - The IISc, IITs, IIMs are excellent research institutes but not a multidisciplinary university.
    - The Universities are overloaded with affiliated colleges and unable to focus on research activities fully.
    - We have excellent research laboratories but they don't have university status.
- In spite of all the difficulties, the Punjab University got 225-250 position in the Times Higher Education Ranking. It's a great achievement.
- Like RUSA, there is a need of overall national research policy for entire nation including public and private organizations as well as research laboratories. This policy must improve various factors which affect the research like
    - Quality of faculty and Global talent
    - Government & Industry research funding, Other funding options and Industry Institute partnership
    - Research infrastructure and facilities of the institute
    - International linkage and collaboration
    - Freedom and Autonomy, Incentives and motivation for research
    - Multidisciplinary focus
    - Involvement of National laboratories to enhance the research capability of universities

4.10. Research, Innovation and Creativity: "Why Indians, but not India, lead in Research?"

Since education helps develop the minds of the young, the key input to quality education is the availability of high quality intellects to teach—instruct, expose, explore, innovate, and inspire—the students. To achieve this end, colleges must attract thoughtful, creative, and fearless minds from each year's cohort to careers in education. With an abundance of talent in teaching and scholarship, a culture of innovation may be built that will serve as a basis for a vibrant economy, society, and polity. **Innovation and creativity** have served as the engine of economic growth and vitality throughout world history. **In India, the willingness to experiment with, and adapt, new varieties of wheat and rice (developed elsewhere) launched the green revolution in the 1960s; the willingness to learn and adapt computer technologies, also developed elsewhere, has energized India's service sector.** [19]

It is an inconvenient truth that **India lags in innovation**, is falling further behind, and is in a state of largely unrecognized crisis. Like carbon monoxide, this slow creep is unannounced and unnoticed, yet **potentially lethal for India's economic progress**. [19]

Indian universities and research organizations have been **highly resistant to change and innovation**, partially because the **system is organized as independent bunkers, each guarded against encroachment by the civil and academic bureaucracies residing therein**. Two major dimensions of this isolation—instruction and research—and its devastating consequences are worth visiting here. [19]

The article by Chandini Jain, IIT Kanpur, "Why Indians, but not India lead in Research?" stated that "I recently came across an interesting piece of news. **The U.S House of Representatives passed a resolution in 2005 honoring the contributions of Indian Americans, especially the IIT graduates to American society.** The resolution states, "Whereas IIT graduates are highly committed and dedicated to research, innovation, and promotion of trade and international cooperation between India and the United States". It seems ironical, that while the innovations and technological changes attributable to Indians are widely recognized and honored, there is a dearth of internationally recognized research output from within India itself." [137]

Chandini Jain said that "Another difference is in the attitude towards research. While **research in the U.S is centered on originality and innovation**, **in India it tends to move on the lines of work already done in reputed labs abroad**. A factor for this would be the **university-industry collaboration**, which is one of the primary sources of funding and hence tends to shape the research trends. Industries in the **U.S are constantly looking for new breakthroughs and developments**, and also liberally support research promising new cutting edge technologies. The Indian Government and industries on the other hand are looking to attain self-reliance first, and hence tend to support research that could reduce import of technology from abroad. The focus in most of the research labs is hence on attempting **production of technology already available abroad** in the country itself. I can quote the recent Chandrayaan Project by the Indian Government as an example, which I was a part of. It requires development of lunar rovers and spacecrafts suitable for lunar landing. Such projects have already been undertaken by NASA 40 years ago,

and our group was instructed to use their work as a guide, and model most of my work after it." [137]

Solution Space 4.10

- Innovation and Creativity cultivate in multidisciplinary research environment, which is lacking at Indian Universities and premier higher education institutes.
- Like US Government, we will have to launch "Teaching-Learning powered by Technology' Reforms, which can boost creativity, innovation and real life problem solving attitude.
- The regulatory mechanism is controlled by 14 different councils. They have established dedicated specialized institutes related to their own disciplines. The Indian higher education system is over regulated and divided in watertight compartments. There is no scope for interdisciplinary research and teaching-learning processes.
- The autonomy and freedom is must for developing innovative and creative research environment. The Reforms are needed to change this scenario.
- The industry interface of higher education institutes is quite weak in India. Instead of one way traffic, the developed countries preferred two way industry interfaces. Rather they have gone ahead and adopted industry as a partner. Thus most of the universities and higher education organizations are involved in Basic research and reluctant to move towards industrial research, which is a time bound process and requires innovative approroaches.
- The detailed discussion on this topic is available in Chapter 10, 11 and 15 of the book "Strategy to Develop World Class University".

4.11. Focus of Premier Institute: Undergraduate Education

Professor Yash Pal, Chancellor of Jawaharlal Nehru University and former Chairman UGC said that "IITs. IITs are pretty good institutions but their primary focus is **to train undergraduate engineers**, for whom there is lot of opportunity available abroad. They didn't train enough research engineers of high quality; they didn't prepare teachers of teachers." [48]

Solution Space 4.11

For WCU the PG student's strength (Post Graduate and Research Scholars) should be around 50% of total strength.

4.12. Conflicting Research Focus: Industry and Government

Industry and academia can no longer operate in seclusion, especially when it comes to research. "The research is being done by the academic community, but it's being driven by industry need," said Dan McGillivray, the CUE's executive director. [138]

The other argument is that the Indian educational institutions of higher learning are under considerable pressure to address the practical problems that the nation's industry and governments face. Therefore, the educational institutions use their resources **more for applied research and less for basic research**. Perhaps our educational institutions would be more comparable to the educational institutions in Japan or in Switzerland where the emphasis is more on applied research and less on basic research. This argument is also not very convincing. [41]

The focuses of research of industry and academics are different. **The Government R&D laboratories and academic institutions focus largely on basic research.** The corporate sector concentrates on Applied Research, Product and Processes. Lack of industry linkages and conducting research in isolation through public sector R&D centres has severely hampered the quality of research in Indian institutions. [139]

In several industries, increasing pressure on companies to obtain revenue streams quickly, has **led to declines or closures of research laboratories with capabilities for long-term research**, with examples including Bell Labs, Lucent, Hitachi, HP, Exxon, IBM Research, RCA, GE Research, GM and Ford Scientific, and Westinghouse Research. The short-term horizon of research in most of the remaining company labs effectively puts an **end to their basic research**. At the same time, pharmaceutical corporations are maintaining significant in-house R&D capacity, whilst **linking with universities and medical research institutes, globally**. Leading pharmaceutical and biotech companies have undergone major R&D restructuring over the last five years, involving a consolidation of efforts through numerous acquisitions, both intra-pharmaceutical as well as purchases of biotech by big pharmaceutical. Pharmaceutical companies are narrowing the focus of their research and development units through a more strategic concentration on key chronic illnesses. They are also adopting a focused, streamlined global approach, which is increasingly reliant on offshore strategic partnerships, **academic collaboration** and outsourcing to established networks of scientific expertise. [140]

Industry places less importance than academia on making basic scientific discoveries. But when industries partner with universities, industries decide what type of research they should fund. **Industries are not in the position of funding research that will not directly benefit their companies, even if the research would be scientifically significant**. As a result, many **universities are devoting less time to basic research and more time on applied research**. Academic institutions should establish a clear policy for governing these issues. A well-drafted and published policy of this kind would have numerous benefits, including creating and communicating research priorities and attracting new faculty and graduate students. [141]

The government is always interested to protect national interest and priorities. The government policy always forces the scientist to focus their research in major thrust areas of national interest. Mostly it is basic research without any time constraints and cost considerations, which is **not affordable to any industry**. [141]

The **isolated existence of research institutes,** such as the Indian Institute of Science (IISc), also limits cross-pollination of ideas—between government laboratories, Indian higher education institutions and industries. In comparison, International R&D Centres are co-located with universities. [142]

The detailed discussion on this topic is available in Chapter 11 of the book "Strategy to Develop World Class University".

Solution Space 4.12

The government and Indian Universities focus on basic research whereas Industry needs applied research. To strengthen funding from industry, the universities must keep the balanced approach. To develop WCU needs both types of research contributions.

4.13. Translation of Native Language Publications in to English

The Publications in vernacular (native) language, which is yet to be translated in a language that is accepted by international community has just not begun in India. Compare this with China, which amassed all efforts to translate its academic output to English and suddenly rose on the publication map by 2005/2006. [22]

Solution Space 4.13

It's a peculiar point which I would like to highlight. It may not be noticed while competing with top 200 world class universities.

4.14. Research Component at Undergraduate Level

In India the there is no policy to motivate the undergraduate students for research. The undergraduate students prefer jobs in industry and not inclined towards research profession. Thus we will have **to motivate under-graduate students for research through scholarships**.

Today, no more than **1% of students with undergraduate degrees opt for doctoral studies** and the substantial number who do prefer to go abroad. India produces only up to **125 PhDs in computer engineering a year, despite nearly 1.7 million engineering students graduating each year**. [295]

In addition to this the **research component must be incorporate in the undergraduate curriculum design**. It is missing in many universities. The instruction for almost 80 percent of students in undergraduate programs is delivered by colleges which are affiliated with universities. Universities prescribe the courses and set the standards for the colleges, conducting the examinations and awarding the degree. This leaves college teachers very little flexibility in what they teach and how. There is no scope to add research component in to syllabus because it is designed by Board of Studies of the universities and most of the time individual teacher have no say. [44]

Prof. Yash Pal Report of 'The Committee to Advise on Renovation and Rejuvenation of Higher Education' stated that "Universities were historically conceived as spaces where teaching and research go together. They are closely linked. Research and teaching are simply different aspects of academic work. To teach effectively at the university level, one needs to actively engage in research. This was not questioned when only a small section of the elite had access to the universities and when university research was comparatively inexpensive. **It seemed proper (and feasible) for undergraduates to be taught by people who were actively engaged in research and scholarship**." [143]

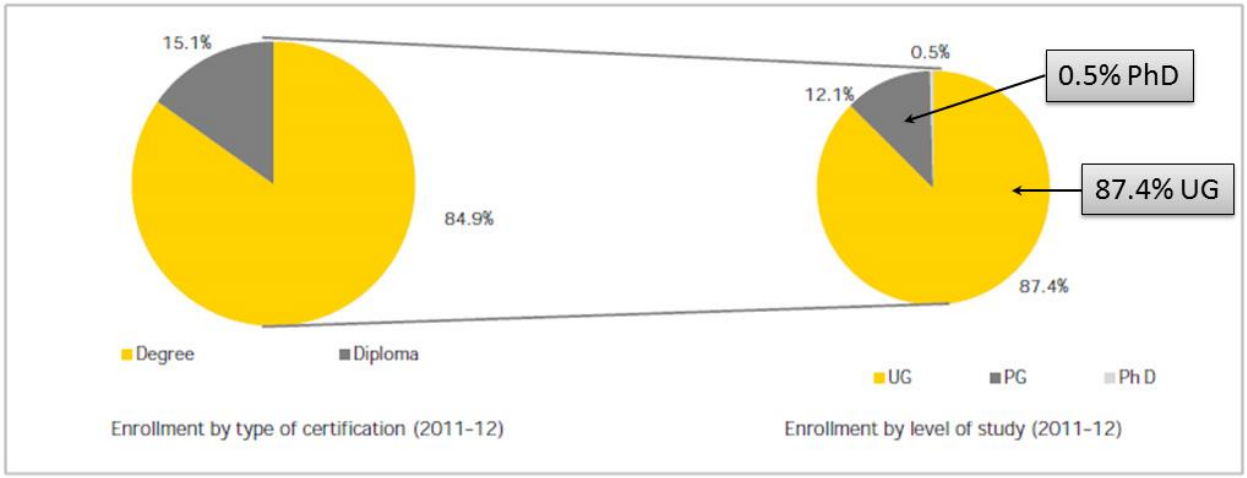


Fig.4.28: FICCI: India Undergraduate and PhD students (2011-12) [6]

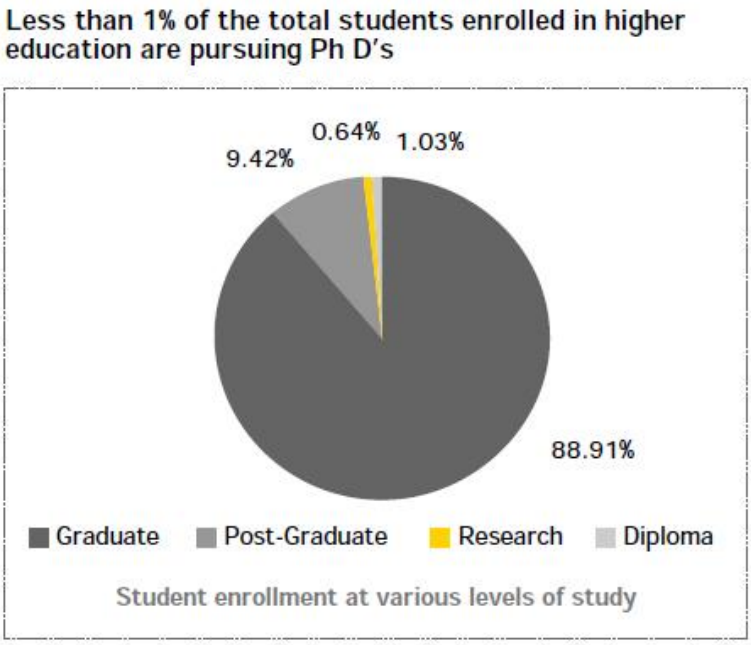


Fig. 4.29: FICCI Summit 2009: 0.64% students of higher education goes for PhD [62]

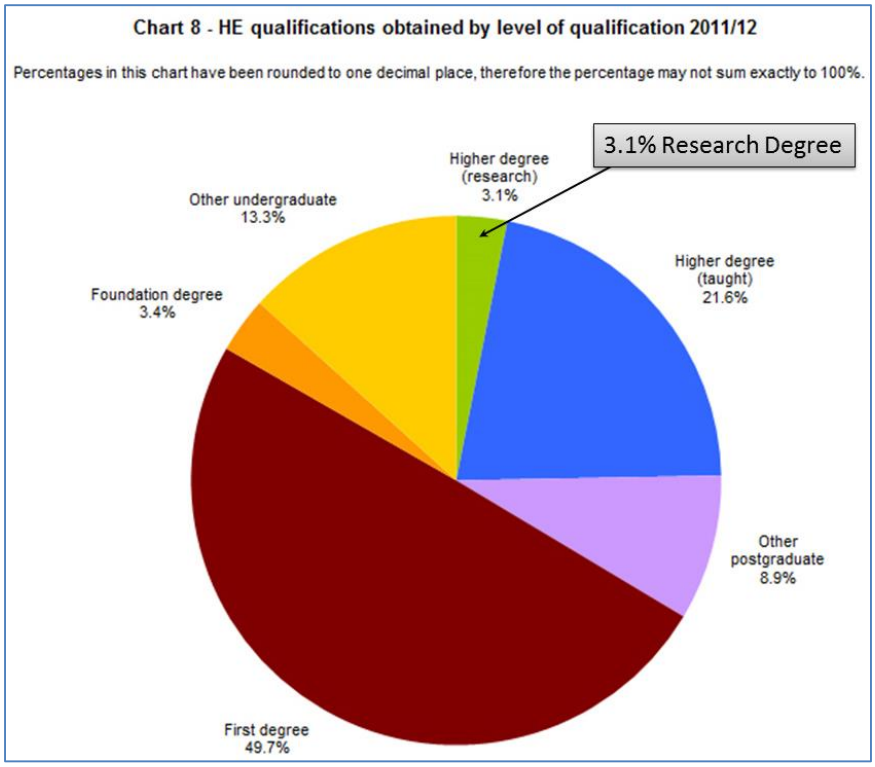


Fig. 4.30: UK Undergraduate and PhD students (2011-12) [144]

FICCI Handbook 2012 stated that "There is a **need to involve the undergraduate in research projects**. The University curriculum is flexible-modular structure……Most importantly Integrating teaching and scholarship by bringing research into the classroom, **involving undergraduates in research projects**, and broadening the definition of scholarship beyond frontier disciplinary research. Engaging students in research projects has helped as an effective way to link faculty research and undergraduate teaching." [145]

A majority of the **faculty publications** should have student co-authors, indicating a strong faculty commitment to train and mentor both postgraduate and undergraduate students in research. The "research internship" can be introduced to UG students for better research exposure. There is a need of integrated PG programs to utilize the talented brains for research.

Dr. Pawan Agarwal, Adviser (Education), Planning Commission, Government of India stated that "**In the US there is a very strong relationship between undergraduate / postgraduate teaching and research**. In the well-known universities of the US, the undergraduate students have a good exposure to eminent research scientists; which is lacking in the Indian system….. There is an increasing **dichotomy in teaching and research between universities and research institutes in India**. It is an accepted fact that research is stimulated, informed and occasionally even germinated as a **result of instructional activities, even from teaching undergraduate courses.**" [17]

Solution Space 4.14

There is an urgent need of development of a scientific temper amongst undergraduates and encouraging them to participate in research activities to produce better research environment through

- Providing Scholarships
- Research Component in Curriculum Design
- Teaching through researchers
- Involvement in Research projects
- Research Internship
- Co-author for research paper
- Integrated PG program

4.15. Post Graduate: Facilities, Curriculum Design Problem

The Indian outbound student market is primarily for postgraduate courses. About 71 per cent of Indian students who go abroad pursue postgraduate courses. This is because facilities like quality faculty, technical infrastructure, physical infrastructure and equipment are **good at undergraduate level in India** but **slightly below average at the postgraduate level**. The requisite educational infrastructure is highly developed at the preferred foreign destinations. Students also like to pursue PhDs abroad for the same reason. [146]

Hon. President of India, Pranab Mukherjee, in his New Year Message (2014) said that "Why is it that our higher education system that is capable of producing world class scholars **loses them to foreign institutions**? Is it due to the **lack of research facilities** and opportunities for creative and innovative thinking? To nurture and retain talent, our institutions must increase their potential for research and promote an eco-system conducive to creativity and innovation." [337]

"Rashtriya Uchchatar Shiksha Abhiyan (RUSA)" report stated that "In most Universities, the Board of Studies is an important structure, which looks at curriculum related issues. The composition of Board of Studies, therefore becomes very important since the course design and framework is its responsibility. **Ideally, the Board of Studies should be different for undergraduate and postgraduate programs and institutions**. However, in some of the affiliating Universities, there is a **single Board of Studies**, which caters to both **undergraduate and post-graduate programs** offered by colleges and Universities. For instance, in case of most Universities in Maharashtra, there exists a single Board of Studies for designing and implementing curriculum changes in colleges and Universities. Members of the Board of Studies are elected as per the provisions of the Maharashtra Public Universities Act and this sometimes results in undergraduate college faculty chairing the Board of Studies, where a post-graduate faculty from a University or even the Chair of a Department from the University is a member and has **limited say in the curriculum** being designed for the University. As a consequence, faculty in the **University Departments has very little say** in curriculum design and also setting up of exam papers." [72]

Solution Space 4.15

There is an urgent need of strengthening the post graduate education system in India. Along with quantity, the quality must be improved.

4.16. Missing Post-Doctoral Culture

In India there, the regulatory bodies are not giving any importance or incentive for Post-Doc. Thus this culture couldn't grow. There are very universities and higher education institutes are providing Post-Doc facility.

IISc theoretical chemist Eluvathingal D. Jemmis observed that "**The lack of a postdoc culture also has dealt a blow to collaborative work in the country**. Often, collaborations between different research-groups arise when a student from one group goes on to become a postdoc in another group such a flow has been one-sided, going out of India…. The reasons for India's postdoc predicament are complex. The country doesn't have enough internationally visible research groups that would make attractive domestic options for postdocs." [147]

Solution Space 4.16

Less number of Post Doc opportunities show the status of our research progress. We don't have research universities. On the top of that, only few institutes or universities could establish good academic collaborations with other reputed research universities of the world. We must strengthen the process of internationalization and should establish at least few Research Universities.

4.17. Premier Institutes: Neglecting Indian Research

Many premier institutes are after foreign qualified Indian faculty. For faculty position they are reluctant to recruit good researchers from India. They want either qualified persons from IIT or from universities of developed countries. This is not fair.

Solution Space 4.17

The higher education system must select best researchers and not simply from specific institutes or nations.

4.18. Skewed Research Growth

India suffers from **inefficiency** in transforming its **S&T investments** into scientific knowledge (publications) as well as into commercially relevant knowledge (patents). [114]

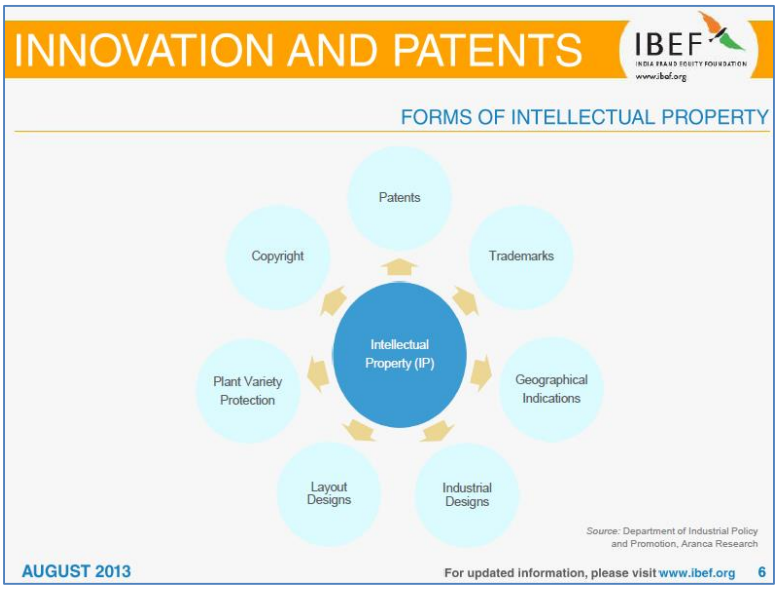


Fig. 4.31: Forms of Intellectual property [311]

The research growth in India is skewed. According to Indian Patent Office's 2011 annual report, nearly **half of all patents** were assigned to Indian inventors in two states; Maharashtra and Delhi. The Maharashtra State contribution is 30%. The 74% of all patents in India are assigned to 5 states. [310]

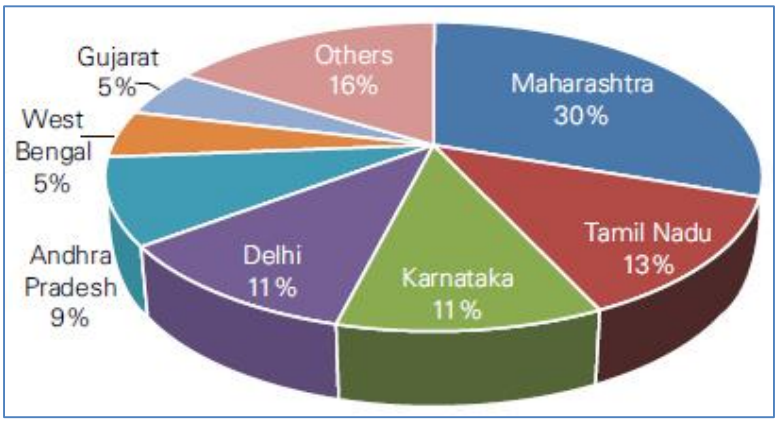


Fig. 4.32: State wise patent filing trends [310]

Solution Space 4.18

The government has initiated RUSA, which is the first step for balance growth of India in higher education sector. More extensive efforts from all directions are required.

4.19. Virtual Brain Drain by NMCs

As mentioned earlier, **multinational companies (MNC) hire some of the best talent available in India** and put it to use solely for their own benefit. This is akin to **'virtual brain drain'** in that the talent nurtured in India is now physically sitting in India and putting its brain power to use for a foreign company. The Government of India **should relax its policies so MNCs can bid on India projects supported by government funding.** Appropriate IP arrangements and other financial constraints can be instituted to make sure that the profits generated from such projects remain in India.

India is home to about **870 MNC centres** utilizing the workforce here. In an absolute sense the R&D expenditures by Foreign Direct Investment (FDI) companies has shown a 50 robust increase from INR 286 crores in 2002-03 to INR 2,883 crores in 2009-10. The Multi-National Companies (MNCs) have setup R&D labs in India to pick the "clever Indian's brain". They have appointed with more than 200,000 Indian researchers. This shows that the Indian are having tremendous research potential. The university system should develop appropriate mechanism to tap it. [310] [312]

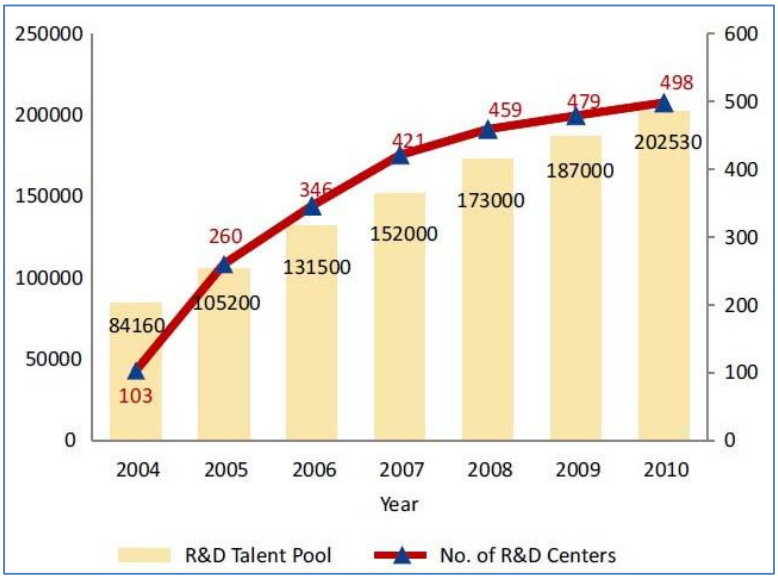


Fig 4.33: Talent in Growth of R&D Centers and R&D talent pool in India [313]

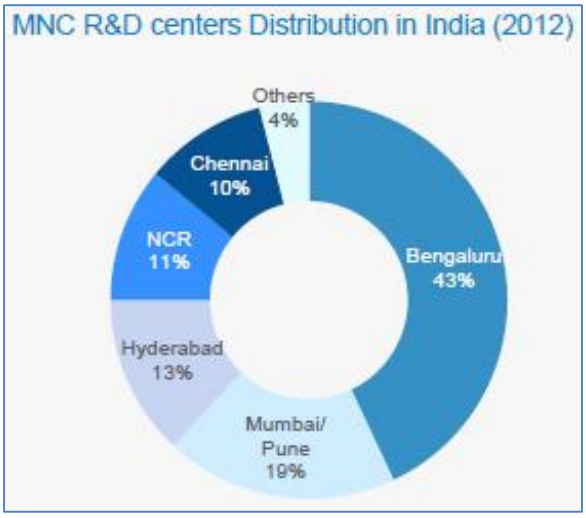


Fig. 4.34: Multi-National Companies R&D centers distribution in India 2012 [310]

Solution Space 4.19

There is an urgent need to involve MNCs in developing solutions to India's critical needs. The National policy is required to tap and utilize the "Locked Research Talent" in multinational companies (MNC) for development of higher education sector of India.

4.20. Research: Trapped within Regulatory Mechanisms

In India, most of the Universities had adopted strange PhD registration practices. After the entrance test the aspirant PhD candidates need to submit the "PhD Synopsys" for registration. If candidate gets the PhD registration then he or she can't submit the PhD thesis for at least 2 years from the date of registration. In this Synopsys the candidate need to specify the **Final Title** of the PhD thesis. If afterward the candidate is interested to change the Title of the Thesis then process is complex and time consuming. On top of that, after changing title, the university reinitiate the process and normally extend the minimum submission time.

In most of WCU, at the time of PhD registration, the candidate need to specify the area or field of the research in the initial PhD synopsis and not the specific title of the PhD thesis. After few years of detailed study it is expected that the candidate will be in a position to specify the exact title. Even in few Indian premier institutes this system is adopted. In many universities the rules for multidisciplinary research are not clear or favorable. The authorities must specify the guidelines in this regard.

In many Indian Universities the PhD registration process is time consuming. There are many barriers like selection of PhD guide, selection of specific topic along with title, selection of university, selection center for registration, university entrance examination, and course work etc. In most of the universities, as per ordinance, Research Recognition Committee (RRC) meeting can

be held only twice a year. For simple suggestions, modifications or corrections in change in title, change of PhD synopsis etc. requires minimum two to three RRC meetings, which require more than one year. Thus more than 2 years are required to get the PhD registration itself.

Solution Space 4.20

There is an urgent need to adopt professional approach for PhD research regulation mechanism at all the universities and institutes of higher educations in India.

Chapter 5: Difficulties for Internationalization and Globalization

*Article in University World News stated that "**Across the world, the profile of higher education is changing**. Globalization has opened up global markets for employment and students are eager to grasp them. The need for students to become 'global citizens' is recognized by all education providers....**In India, however, this is not how internationalization of education is perceived**. The country is still debating how to react to the process of internationalization. A new scheme is being formulated in the latest Five-Year Plan for India's development." [56]*

*Dr. Rahul Choudaha, Director of Development and Innovation, World Education Services, New York, stated that "**Indian higher education needs a comprehensive internationalization strategy both at the national level and at institutional level**." [152]*

The comprehensive internationalization is a coordinated process that seeks to align and integrate international policies, programs, and initiatives along several dimensions. These include articulated institutional commitment; administrative structure and staffing; curriculum, co-curriculum, and learning outcomes; faculty policies and practices; student mobility; and international collaboration and partnerships. [63]

UK higher education is well regarded internationally. We attract high quality students, researchers and university staff from around the world. Currently there are **340,000 foreign students** in the UK from **239 different countries**; the UK is second only to the USA as a destination for such students. **One sixth of our academic staff are from outside the UK**, and **90 per cent of our universities have international research links**. The net annual contribution to the UK's national income made by international (non EU) students in higher education is estimated at **£5.5bn**. [42]

Internationalization enables higher education institutions to:

- Increase national and international visibility
- Leverage institutional strengths through strategic partnerships
- Enlarge the academic community within which to benchmark their activities
- Mobilize internal intellectual resources
- Add important, contemporary learning outcomes to student experience
- Develop stronger research groups

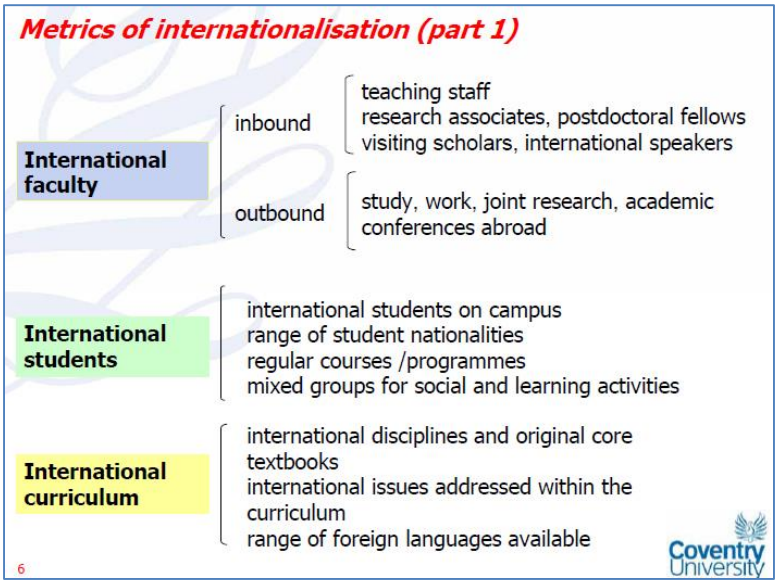
Internationalization enables governments to:

- Develop national university systems within a broader, global framework
- Produce a skilled workforce with global awareness and multi-cultural competencies
- Use public higher education funds to promote national participation in the global knowledge economy
- Benefit from trade in education services [148]

One can measure the process of internationalization. Many techniques are available and they are more or less parallel. You can refer the document published by Ministry of Education New Zealand related to "Survey questionnaire" namely "Internationalization in New Zealand Tertiary Education Organizations" (page 117 to 150) [150]

You can refer a wonderful document "Approaches to Internationalization and Their Implications for Strategic Management and Institutional Practice" [148]

To understand the process of internationalization more clearly you can refer the research paper by Terry C. Rodenberg, Western Illinois University, "Measuring Commitment to Internationalizing the Campus: An Institutional Fingerprint." The series of questions below are designed to help you determine your institution's level of commitment to the internationalization of your campus. [151]



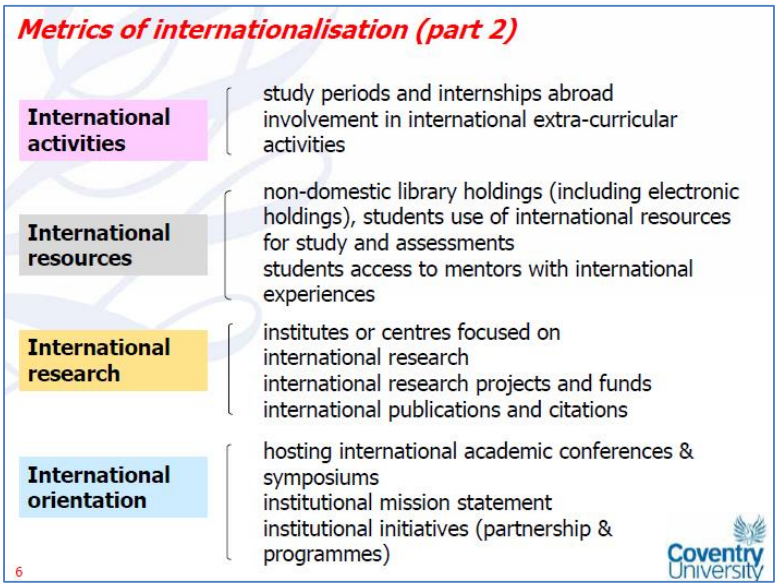


Fig. 5.1: Measuring Internationalizing of University [149]

Resources Dimension	
1.	Adequate, attractive, and up-to-date facilities are available to house the offices working within international education on your campus.
2.	Adequate staff is available to meet the needs of faculty, international students, and study abroad students.
3.	Assistance is available on campus for writing internationally- oriented grants.
4.	Your institution has a number of active international partner institutions
5.	Endowed chairs have been established for professors from internationally-oriented disciplines.
6.	Your institution has its own study abroad and/or research facilities abroad.
7.	Long-term housing for international guests (a semester or longer) is available and provided by the institution.
8.	Financial support exists to support faculty international travel, research, and/or teaching opportunities.

9.	Resources and individuals are available to provide support for obtaining internally-based grants for students and faculty. (such as Fulbright grants)
10.	Short-term housing for international guests is available on your campus. (less than a semester)
11.	Resources are provided to support on-campus organizations such as Phi Beta Delta. (honorary international fraternity)
12.	Staff is provided with opportunities and support for international involvement.
13.	Adequate resources are available for the expansion of international activities on your campus.
14.	Your institution provides resources to provide study abroad scholarships.
15.	The international office's budget is adequate to meet your needs.
Administration Dimension	
16 points	
Institutional Philosophy Dimension	
15 points	
Faculty Dimension	
15 points	
Curriculum Dimension	
15 points	
Marketing Dimension	
15 points	
Alumni Relations Dimension	
15 points	
Student / Faculty Support Dimension	
15 points	

Table 5.1: Internationalization Metric [151]

Dr. Rahul Choudaha, Director of Development and Innovation, World Education Services, New York, stated that "**Indian higher education needs a comprehensive internationalization strategy both at the national level and at institutional level**. Like any new initiative, there will be some risks of misuses. For example, there May be institutions, which misrepresent, over-commercialize and perhaps make higher education unaffordable in the name of internationalization. However, the test of a good policy framework is to have an ability to distinguish wheat from the chaff. In other words, **internationalization of higher education is relevant to the needs of the country and a mature policy environment, which encourages innovation and experimentation but restricts misrepresentation is much needed**. It is high time for Indian higher education at policy and institutional level to reflect on how best to leverage the concept of internationalization and engage it to achieve the goals of excellence, diversity and capacity building." [152]

Internationalization is a complex process. Your brand name depends on this activity and mostly neglected in India. Indian Universities normally neglect international outlook, reputation factor etc. The details are covered in the chapters 7, 8, 9, 10, 12, 13, 15, 16 and 17 of the book "Strategy to Develop World Class University".

5.1. Alumni Association: Neglected Activity in India

The Alumni are the very important stakeholders for developing World Class Universities. University can get enormous benefits from Alumni. The Indian University could not develop alumni associations properly. They must tap this resource effectively.

Shailendra Mehta, visiting professor of business policy at the Indian Institute of Management, Ahmadabad stated that "… **a higher percentage of alumni on the board of a university are associated with a higher ranking**, **increased selectivity and a larger endowment**…. **19 of the top 20 universities in US** News and World Report's much-watched rankings are **controlled by alumni** (defined as 50% or more representation on the board of trustees)…. The only exception, the California Institute of Technology, has a board with 40% alumni representation. Of the top five, three (Harvard, Yale and Columbia) are managed entirely by alumni, and two (Princeton and Stanford) are under 90% alumni control. Alumni run the show even at public institutions such as Purdue (90%) and Michigan (63%)…. On average, alumni make up 63% of the boards of the top 100 US universities, public and private alike… alumni-controlled American universities have autonomy and are fiercely competitive…. Institutions that compete with each other for budget, faculty, infrastructure and students will always do better. This will also affect the governance of universities and how they are run." [153]

The alumni are always interested to develop the parent institute and thus in 2010 the US Universities could raise **$400 billion** through endowment funds.

The Mumbai University got 18th position in the Super Rich Billionaire Alumni Ranking. A study by research firm Wealth-X on ultra-high net worth individuals (UNHWIs) has revealed that 372 former students of Mumbai University have a total net worth of $37 billion. This Graduate 'rich list' reveals universities that will make you a millionaire. [24] [25]

Mumbai University: Dr. Rajan Welukar joined as the Vice Chancellor of University of Mumbai in 2010 and discovered that the 150-year-old university had just received Rs 70,000 in funds from alumni since its inception. One of the first things that he did on joining office was to put its alumni cell in order and ask them to donate to their alma mater. An almost immediate response came from Asit Koticha, Chairman and Founder of the ASK Group (financial services company), an alumnus of Poddar College, who pledged Rs 32 crore. **The Mumbai University has received Rs 70 crore in the last two years from industry/alumni as an endowment fund whereas Harvard and other 20 universities in USA are getting more than $1bn per year and Harvard University's total endowment fund is $31bn.**

The following table shows that 17 universities out of 20 are from USA and only 2 universities are from UK (Oxford, Cambridge). **The Mumbai University got the 18th rank**. In spite of Indian universities having wealthiest alumni, **there is a wide disparity in the endowment funds in Indian and USA universities. The reason behind this lies in development of Indian alumni associations. The universities in USA had developed very strong alumni associations and in India that culture is missing and this reflects in the gap of endowment funds.** [24] [154]

SN	Name of University	Number of Alumni	Worth a Total in Billion $	Total Endowment Fund up to 2012 in Billion $
1.	Harvard University	2,964	622	$30.435
2.	University of Pennsylvania	1,502	242	$6.755
3.	Stanford University	1,174	171	$17.036
4.	Columbia University	889	116	$7.654
5.	New York University	828	110	$2.755
6.	University of Chicago	658	144	$6.571
7.	Massachusetts Institute of Technology	581	172	$10.150
8.	Yale University	568	125	$19.345
9.	Cornell University	528	60	$4.947
10.	Princeton University	508	70	$16.954
11.	University of Virginia	499	31	$4.789
12.	Boston University	291	38	$1.104
13.	Northwestern University	451	36	$7.119
14.	University of California, Berkeley	447	72	$3.032
15.	University of Michigan	410	70	$7.691
16.	**University of Oxford, UK**	**401**	**51**	**$5.776**
17.	University of Southern California	374	66	$3.489
18.	**University of Mumbai, India**	**372**	**37**	**$0.0127**
19.	**University of Cambridge, UK**	**361**	**93**	**$6.84**
20.	Brown University	349	23	$2.460

Table 5.2: Global List of Top 20 Universities that Will Make You a Millionaire [24] [25]

Solution Space 5.1

The India is having hundred year old universities with very strong alumni base. Unfortunately, we could not develop proper alumni associations. Even we couldn't tap the potential of these alumni for the development of the higher education sector like universities of developed countries. Without support of Alumni no one can develop WCU.

- The alumni association is one of the neglected activities in most of the higher education institution in India. The alumni support is needed for the process of internationalization, revenue generation, global employability etc. Most of the universities have not taken any interest in these activities. That is why they wouldn't feel the necessity to develop alumni association.
- Like US universities, the Indian universities should welcome the active participation of Alumni in governance of the university, for such decision reforms are necessary.

The detailed discussion on this topic is available in Chapter 13 of the book "Strategy to Develop World Class University".

5.2. Reluctance to Face International Accreditation

One senior academician, who is not ready to disclose his identity, said that "Surprisingly **only 2 engineering institutes out of total 5400** and **20 Business schools out of total 4000** are

internationally accredited. That is, **4 universities out of 700** are having international accreditation. Do you think that the others are really interested to join the path of WCU?"

The detailed discussion on this topic is available in Chapter 16 of the book "Strategy to Develop World Class University".

Solution Space 5.2

I personally feel that the institutes or universities, which are interested to participate in international ranking process, should go for international accreditation. No doubt that, it is costly as compared to Indian accreditation agencies, but it is necessary for international reputation and identity of the institute or university. It is must for attracting global talent.

5.3. Restrictions on Foreign Players

Presently, foreign institutions are allowed to operate in India through various modes, and Indian universities can grant degrees and diplomas in collaboration with foreign universities. However, foreign universities cannot set up branch campuses without an Indian partner. [12]

The PWC report stated that "The **not-for-profit stipulation** combined with **over-regulation** has the twin effect of **keeping out** both genuine entities as well as reputed foreign academic institutions. [193]

Fig. 5.2: Restriction on foreign players [6]

Solution Space 5.3

The conditions of regulatory bodies are correct. These restrictions are must. But they should consider the practical difficulties too.

- Initially, top 500 universities wouldn't come forward to establish campus in India with Indian institutes because of "Not-For-Profit" clause and over regulated mechanism. Since 2002, Indian policy makers are talking about foreign partnerships but not making appropriate legal provisions. This unsteady approach creates lot of confusion about Indian stand. Thus initially only B-graded universities will approach to India. If they could manage the venture successfully then only A-graded universities may think to invest in India.
- Many world renowned institutes are not universities. Thus they can't take part in ranking process.
- On the other hand, the ranking organizations are also not allowing many specialized higher education institutes to take part in ranking process. For example IISc Bangalore couldn't be ranked because the Times HE ranking needs undergraduates who have graduated from the institution. This will happen only in 2015 and Times HE uses citation data based on the prior two years. Therefore, IISc will be ranked only from 2017. This means many World Renowned institutes can't come to India under this rule.

The regulatory bodies should consider these aspects before framing the policies otherwise the process of internationalization will be hampered.

5.4. Academic Collaborations and Partnerships

In the last five years, **York University UK** has collaborated with over **700 partner** universities, research institutions and companies in EU-funded research, across **33 European countries**. [155]

In last few years, the academic collaboration has got momentum India too, but it is still 'a one way traffic'. It must be 'two-way active and fruitful partnership', considering mutual benefits.
But Indian universities with their faculty shortages, outdated curricula, administrative delays, dilapidated infrastructure and an inflexible education system will have to **improve quality and infrastructure before they can take advantage of international partnerships**. [156]

Fig. 5.3: Academia: Most effective organization for Technology Collaborations [324]

Solution Space 5.4

- At Indian Universities, the Academic collaborations, especially international, are in infant stage. The process has got momentum but is not yet up to the mark. It should be based on mutual benefits. For collaboration, either we should have expertise in specific field or we should be a good business partner. For fruitful collaboration, we need to understand each other perspective and nurture the partnership faithfully. Otherwise MOU may remain on papers.
- I had discussed many issues and case studies on two way academic collaboration in the Chapter 15 of the book "Strategy to Develop World Class University".

5.5. Internationalization: Lack of Keen Interest from Government

The Internationalization needs government support and well-defined strategies. Just see the initiative from countries like USA and UK etc.

- Initiatives such as the **Fulbright Scholars Program** in the United States and the Erasmus Mundus Programme in Europe have aimed to promote mutual understanding and encourage collaboration among higher education institutions. [148]
- You can refer the British Government Strategy "**International Education: Global Growth and Prosperity**" [50]
- **China has implemented an international education policy since 2000**, and **India is debating its approach to international higher education**. China's multifaceted policy includes aggressive plans to attract international students to China. **More than 2,00,000 international students were studying in China in 2007**, with three quarters of them from Asian countries (Figure 2). China awards more than 10,000 scholarships as well. Many Chinese universities have expanded their campus facilities for international students. Chinese universities see hosting international students partly as a way of earning income as well as adding a valuable international dimension to the institution…..**India's international efforts lag behind those of China**. In 2008, approximately 20,000 international students studied in India, most from south Asia, Africa, and from the Indian diaspora. Few Indian universities have either facilities or staff for international students. Some policymakers see a significant potential for India because much of the higher education system teaches in English. **However, without significant investment in infrastructure, as well as a more coherent policy, Indian initiatives are unlikely to succeed**….While China has had legislation in place that regulates foreign collaboration since 2003, **India is still in the process of implementing rules**……The role of independent branch campuses, ownership of institutions, the role of the private and the for-profit sectors, quality assurance for foreign institutions, the role of franchised overseas degree programmes, and other complex issues have proved controversial. [39]

"India must stop being so defensive. The time for excuses is over. It must embrace the internationalization of higher education, and judge its universities against established global performance indicators"; This was the resounding message that emerged from India's Ministry for Human Resources Development and Planning Commission, at a "National Policy Dialogue"

on university rankings and research evaluation on 23 May 2013, co-organized by the Times Higher Education World University Rankings, Thomson Reuters and the British Council. [117]

Solution Space 5.5

The internationalization is the vital aspect of WCU and Indian Universities are not doing well at this front. Even the government regulatory bodies are not taking keen interest. The government must come up with national policy for this issue. The time for excuses is over.

5.6. Foreign Institutions: Clustering Around Internationally Known Indian Universities

Notwithstanding the exciting possibilities, some find **it very difficult to navigate their way around the Indian sector** and identify partners. The system is immense, **the regulatory environment is perceived as challenging, and the many layers of bureaucracy frequently sap the will of all but the most determined**. The net result is that **foreign institutions frequently end up clustering around those Indian universities already internationally known**. A consideration of successful experiences from around the world, however, yields some useful insights. [46]

Solution Space 5.6

Our legal framework is not very encouraging and attractive for foreign players. In fact it is quite difficult to enter in Indian space. It is not healthy sign for establishing World Class Education System and Universities in India. Immediate reforms are necessary.

5.7. Times HE Academic Reputation Ranking 2013: India not in Top 100

The Times Higher Education **Academic Reputation Ranking** 2013 is published. India is not in top 100 universities of the world. Not having a reputation at all is almost as bad as having a negative reputation for it makes the institution irrelevant to the community of ideas.

Phil Baty, Times Higher Education World University Rankings editor stated that "**Reputation** is subjective, messy and nebulous, **but it matters deeply in today's competitive global higher education sector**. Research has shown that a university's reputation is the top priority (over location or even salary) for academics moving jobs, and it is the number one consideration for internationally mobile students, above tuition fees and course content. It can also be key to attracting collaborative partnerships and funding from alumni, philanthropists and industry. And although reputations once gained can often be stubbornly enduring, things can change quickly in an information-rich, multimedia and socially networked age. The stakes are high. "**If a university thrives, the value of its brand will increase, in turn creating a virtuous feedback loop as**

academics, students and funding are drawn in. But the reverse is also true: failures of compliance or strategy can tarnish and at worst destroy this key asset, trapping the institution in a downward spiral." [157]

The Times Higher Education World Reputation Rankings list the world's top 100 universities based purely on their academic prestige. The 2013 edition, published on 4 March 2013, is based on the results of a survey of more than 16,600 experienced academics from all over the world who were asked to name a small number of the "best" institutions in their field for both teaching and research. [158]

Of the so-called "BRIC" countries with rapidly expanding economies (Brazil, Russia, India and China), India is the only nation **lacking a single representative in the overall world top 100**. Times Higher Education revealed that if the THE World Reputation Rankings were to list more than just the top 100, India's top-ranked institution, **IISc Bangalore, would be 130th. IIT Bombay would sit in 192nd place**, but all other Indian institutions would fall outside a global top 200…."But outside IISc Bangalore and IIT Bombay, India's higher education institutions seem to be a long way off in terms of global prestige." [158]

Philip Altbach, director of the Center for International Higher Education at Boston College in the US, said: "**The IITs and IIMs are the only Indian 'name brand' in higher education**. For almost half a century, they have maintained high standards of quality and have produced bright graduates who have made their marks worldwide. Their faculty members have produced some excellent research. **But these institutions are not really universities - they are small, quite specialized institutions that provide mainly undergraduate education**." [158]

And Professor Altbach warned that even the IITs faced some difficulties. "They are having **trouble attracting top-quality faculty** members in an environment where the private sector provides much higher salaries, and a number of new IITs and IIMs have been opened in obscure parts of the country where it will be difficult to entice top students and professors." [158]

This **reputation is built on many factors including the range, quality and impact of the work done**. It is recognized by awards and grants - so, often in the public eye, it is the funding and the plaques that work as a proxy for reputation. But most importantly, **reputation is built by networks, and within peer groups**. And these peers are informed by both the work that is done within an institute and by the effort it makes to communicate such work. In fact the best institutes often share the journey of discovery with their peer group, forming and refining theories through a series of seminars where peer feedback is co-opted into the final product. [159]

Indian Universities have proved to be irrelevant or not good enough for the rest of the world. We may be churning out the largest number of engineers in the world, or have millions of graduates each year, **but till our universities perform better and create a reputation for themselves, the degrees do not carry much value**. **An Indian degree is still seen with suspicion across the world, for the awarding institution is not a known entity**. While a simple letter from a professor at Harvard or MIT will open doors to research grants and admissions**, it is a rare professor from India who commands such respect globally**. [159]

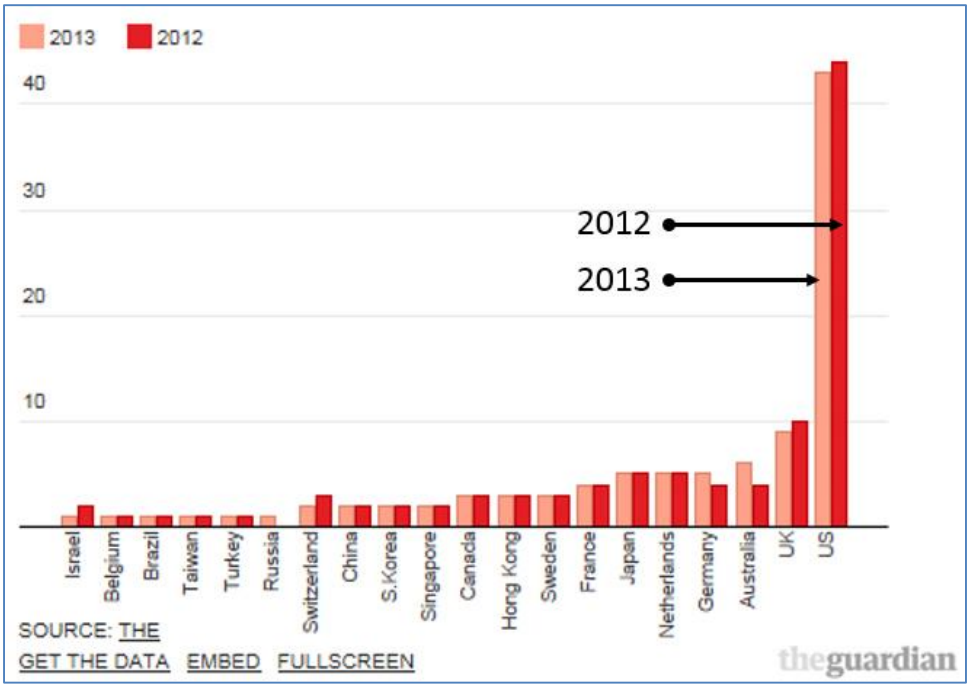


Fig. 5.4: Times Higher Education world reputation rankings by country [160]

Fig. 5.5: World Class University: Infrastructure and Academic Reputation [93]

Solution Space 5.7

Academic reputation depends upon quality of teaching, global talent, international curriculum, global employability, professional governance, research, citation, internationalization, industry interface and income, global network, alumni network, and so on. Unfortunately, Indian universities could not focus on these issues because basically they are teaching universities. If international academic reputation is not good then it is very difficult to chase the top 200 top ranking WCUs.

5.8. Threat of Globalization: Lack of Manpower May Shift the Business

India's rapid economic growth of the past two decades **followed investments made in education during the previous fifty years**. Today, most of the system is focused on undergraduate education to meet the current demand. Few of the top students in India are attracted to careers of scholarship. With its inability to attract even the top one percent of each year's class into PhD programs, the quality of instruction and scholarship in Indian higher education is in decline. **India is enjoying the fruit of the educational trees planted long ago, but is not planting enough new trees.** Unless it invests heavily in research scholarship and doctoral education today (as the U.S., Europe, and China do), **the quality of its higher education will continue to decline, with serious consequences for its economy**. **There is evidence that this decline has been continuing for some time**. The technology boom may lose steam as Indian firms move their operations to other countries where they can find well-educated employees in large numbers. [19]

President Barack Obama has said while stressing on education reforms to prepare Americans for a global economy where "**jobs can go anywhere**." He said that "We live in a 21st century global economy. And in a global economy, jobs can go anywhere. Companies, they are looking for the best-educated people, wherever they live, and they will reward them with good jobs and good pay…..**Now you have got billions of people from Beijing to Bangalore to Moscow, all of whom are competing with you directly**. And they are -- those countries are working every day to out-educate and out-compete us……We need to bring down the cost of college and give more young people the chance to go to college…..In previous generations, America's standing economically was so much higher than everybody else's that we did not have a lot of competition." [161]

The emergence of a global economy due to increased trade, investment and mobility of people and, more recently, work across borders has forced nation states to adapt their systems of higher education to the changed global realities. Rather than continuing with their inward looking policies, several countries are reshaping their systems of higher education for making them globally competitive. Pragmatism, rather than ideology, is driving this change.

- The United States of America (USA) has major plans for investment in higher education.
- The United Kingdom (UK) has injected new dynamism in the higher education sector through competition and incentives.

- China has undertaken a package of comprehensive reforms in higher education for over the past two decades. The government in China has declared education, science and technology to be the strategic driving forces of sustainable economic growth. [17]

Lakshmi Narayanan, Vice Chairman of Cognizant, stated that "The Indian labor market is in the midst of an era of rapid expansion. Recent studies—by the International Labor Organization (ILO), Lieberman Research Worldwide (LRW), and McKinsey Global Institute—have characterized India as one of the world's "young" developing economies that are expected to **lead global labor force growth through 2030**, with a nearly **60 percent share**. India alone will account for a **net addition of 174 million workers** to the global labor force between 2010 and 2030, compared to 132 million between 1990 and 2010." [46]

Solution Space 5.8

In the era of globalization the education sector is in the front seat. It's a very sensitive field. We have been donating our great Indian brains to USA, UK, Canada, and Australia. If we wouldn't improve the education standards then they may snatch our job market too. It's a global competition, we must be prepared.

Chapter 6: Difficulties Related to Regulatory Mechanism

Most of the educationist says that "Indian higher education system is over regulated". It's partially true but if you relax the regulatory mechanism then there is a danger of uncontrolled malpractices, which no one can afford.

On one side there is a hue and cry about political interference in education system. On the other side criticizers accept that "the capital-intensive professional higher education sector has particularly benefited from the entry of politicians, known for their deep pockets, management skills and fund-raising capability. Because of the initiative of these politicians, the India could raise such a huge higher education system, which is largest in the world."

Arun Nigavekar, former Chairman of the UGC said that "India's higher and professional education system is passing through a difficult period. It is non-directional because there is no comprehensive policy on governance and role of education in the growth of a nation." [162]

6.1. Complex Regulatory Mechanism: Over Regulated & Under Governed

6.1.1. History of Indian Higher Education System

Before 1976, education was the exclusive responsibility of the States. **The Constitutional Amendment of 1976, which included education in the Concurrent List** (Entry 66 in the Union List of the Constitution), was a far-reaching step. The substantive, financial and administrative implication required a new sharing of responsibility between the Union Government and the States. While the role and responsibility of the States in education remained largely unchanged, the Union Government accepted a larger responsibility of reinforcing the national and integrated character of education, maintaining quality and standards including those of the teaching profession at all levels, and the study and monitoring of the educational requirements of the country. [163]

Central Advisory Board of Education (CABE): The Central Advisory Board of Education (CABE), the highest advisory body to advise the Central and State Governments in the field of education, was first established in 1920. The CABE is created for coordination and cooperation between the Union and the States. [163]

Role of Central Government in Education: The Constitution gives exclusive Legislative Power to the Central Govt. for co-ordination and determination of standards in Institutions of higher education or research and scientific and technical institutions. Central Government is responsible for major policy relating to higher education in the country. It provides grants through UGC.

Role of State Governments in Education: State Governments are responsible for establishment of State Universities and colleges, and provide plan grants for their development and non-plan grants for their maintenance.

Inter University Centers (IUCs): There are, at the present time, three research IUCs, which are:

- Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune.
- Inter-University Accelerator Centre (IUAC), New Delhi.
- UGC-DAE Consortium for Scientific Research (UGC-DAE CSR), Indore.

There are three other IUCs which provide important specialized services to the University sector:

- Information and Library Network Centre (INFLIBNET), Ahmedabad: For Networking of libraries through electronic media
- Consortium for Educational Communication (CEC), New Delhi: To disseminate Countrywide program through television
- National Assessment and Accreditation Council (NAAC), Bangalore.

6.1.2. Complexities of Regulatory Mechanism

The following figures and Table shows the complexity of Indian higher education regulatory mechanism.

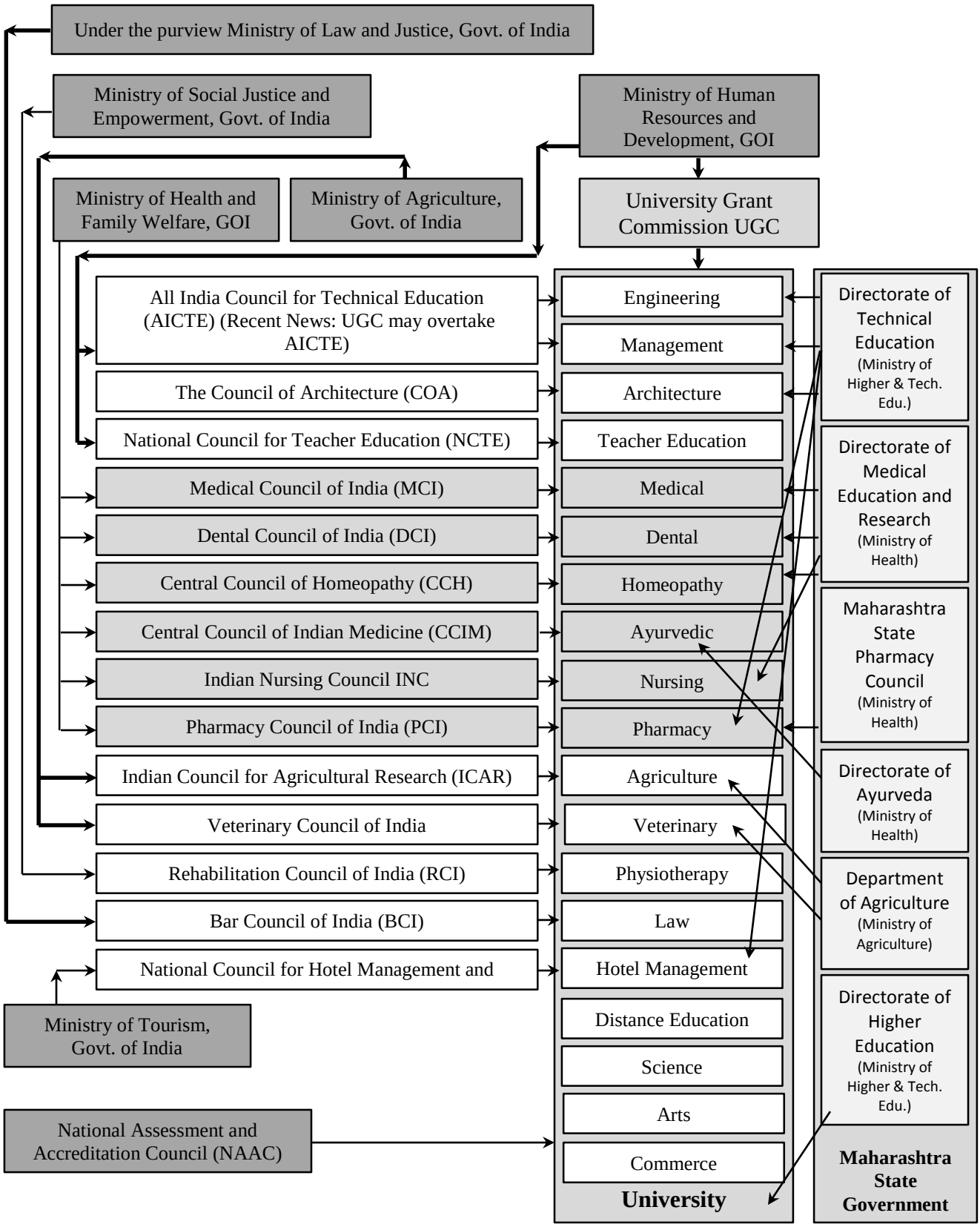


Fig. 6.1: The Regulatory Mechanism of India (For state level structure Maharashtra is selected)

SN	Regulatory and Statutory Bodies for Higher Education in India	Ministry Government of India
1.	University Grant Commission UGC	Statutory organization under the Ministry of Human Resource Development
2.	All India Council for Technical Education (AICTE)	Statutory Body under Ministry of Human Resource Development
3.	The Council of Architecture (COA)	
4.	National Council for Teacher Education (NCTE)	
5.	Pharmacy Council of India (PCI)	Statutory Body under Ministry of Health and Family Welfare
6.	Medical Council of India (MCI)	
7.	Dental Council of India (DCI)	
8.	Central Council of Homeopathy (CCH)	
9.	Central Council of Indian Medicine (CCIM)	
10.	Indian Nursing Council INC	
11.	Rehabilitation Council of India (RCI)	Ministry of Social Justice & Empowerment
12.	Indian Council for Agricultural Research (ICAR)	A Society controlled by the Government under the Ministry of Agriculture
13.	Bar Council of India (BCI)	statutory body under the purview Ministry of Law and Justice
14.	Distance Education Council (DEC)	Under UGC
15.	Institute of Cost and Works Accountants of India (ICWAI)	Autonomous Body by an Act of Parliament under the Ministry of Corporate Affairs
16.	Institute of Chartered Accountants of India (ICAI),	
17.	Institute of Company Secretaries of India (ICSI) and	
SN	**Other Councils**	**Ministry Government of India**
18.	Council of Scientific and Industrial Research	Society under the Ministry of Science & Technology
19.	National Council for Hotel Management and Catering Technology, New Delhi	Registered under Societies Registration Act, 1860 under the Ministry of Tourism
20.	Indian Council of Medical Research, Ansari Nagar, New Delhi	Registered under Societies Registration Act, 1860 under the Ministry of Health & Family Welfare
21.	National Council of Educational Research and Training	Autonomous body under the Ministry of Human Resource Development
22.	Indian Council of Forestry Research and Education	Autonomous body under the Ministry of Environment and Forests
23.	Council for Advancement of People's Action and Rural Technology	Registered under the Societies Registration Act, 1860 under the Ministry of Rural Development
24.	Central Counsel for Research in Ayurveda and Siddha	Autonomous body constituted under Society Registration Act under the Ministry of Health & Family Welfare
25.	Central Council for Research in Homeopathy	Autonomous body under the Ministry of Health & Family Welfare
26.	Central Council for Research in Yoga and Naturopathy	Autonomous body under the Ministry of Health & Family Welfare
27.	Central Council for Research in Unani Medicine	Autonomous body under the Ministry of Health and Family Welfare
28.	National Council of Science Museums (NCSM)	Autonomous Body under the Ministry of Culture

Table 6.1: Regulatory and Statutory Bodies for Higher Education in India

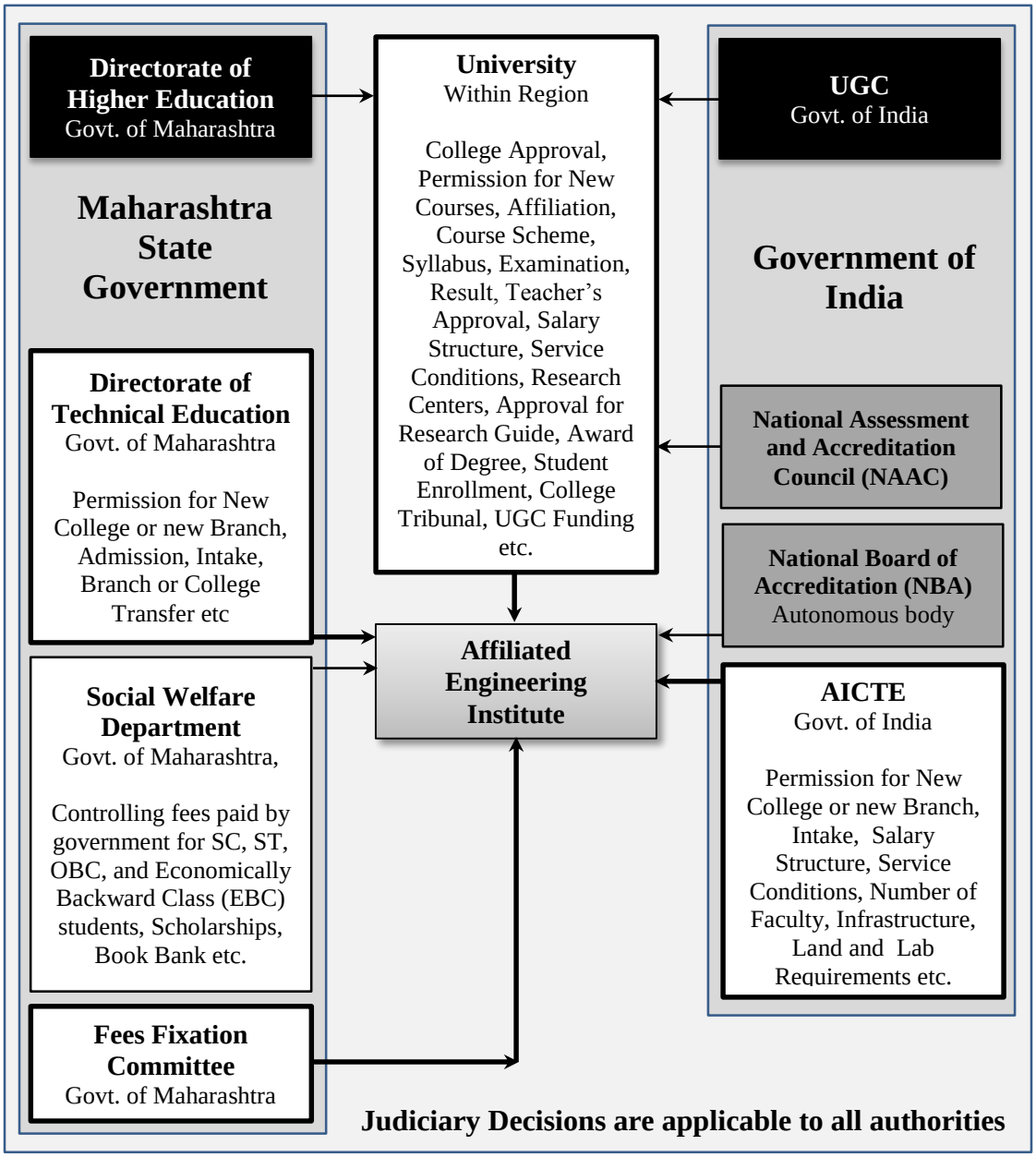


Fig. 6.2: Affiliated Engineering Institute: controlled by many regulatory authorities (example of Maharashtra State, Recent News: UGC is overtaking AICTE)

Education, being a subject of Union list, State list as well as Concurrent list, multiple bodies across central and state levels govern higher education sector. This results into a complex regulatory system with overlapping mandates amongst regulators. [105]

The Indian Regulatory Mechanism for controlling the largest higher education system of the world is very complex. The regulatory environment governing higher education in India is characterized by **uncertainty and conflicts between multiple regulatory authorities**. [16]

Indian universities are controlled by the government, and **their situation is somewhat like that of the Indian industry before the reforms of 1991**. The Education Raj has not only **failed in the task of creating a first rate higher education system**; it has led to the decline of formerly good universities. **It is not that public funding for higher education does not work in other countries also, since the centrally administered systems of UK, Germany, and Japan are quite successful.** [20]

Control, regulation, and financing of professional instruction have been entrusted to fifteen separate councils created by various federal statutes. These include technical, medical, dental, pharmacy, nursing, law, homeopathy, architecture, and rehabilitation education. Although under the 1987 Act 52 of Parliament to create the **AICTE, "technical education" was defined as "programmes of education, research and training in engineering, technology, architecture, town planning, management, pharmacy and applied arts and crafts**," Parliament also created councils on architecture and pharmacy separate from the AICTE. As a result, there exist the Council of Architecture (under Architects Act, 1972) and the Pharmacy Council of India (under Pharmacy Act of 1948) as independent statutory bodies, as well as the All India Board of Architecture and the All India Board of Pharmaceutical Education, which are among ten such boards inside the AICTE. Health and medicine appears to be covered by five independent Councils, each operating under an act of Parliament. The Indian Council for Agricultural Research (ICAR) is responsible for both research and education in more than thirty agricultural universities. [19]

Let's see the views of higher education experts about various difficulties related to autonomy, freedom, regulatory mechanism, which can come into way to establish WCU or World Class Education System.

Philip G. Altbach stated that "There is a veritable alphabet soup of central (i.e., national-level) agencies providing various kinds of support to higher education. This **shared responsibility often leads to a lack of coordination, duplication, and complex bureaucratic requirements**. **India has no higher education "system."** All of the universities are free to compete for resources and seek to develop a research mission, **even if this is impractical**. At the same time, most of the undergraduate colleges are **prevented from innovating** because of their tight administrative controls." [46]

Dr. Pawan Agarwal, Adviser (Education), Planning Commission, Government of India, explained the complexities of this huge and over regulated mechanism in his excellent research paper (194 pages) published in ICRIER. He had stated that "There are multiple agencies and a complex web of rules and regulations that govern the higher education system in the country with the UGC as the apex body. The state governments; the thirteen professional councils at the national level and five professional councils at the state level; the state councils; and affiliating universities are the key stakeholders in the regulatory arrangement in the country. Though as per constitutional mandate, **all education including university education had been made the responsibility of the states**, **the centre was assigned the key function of coordination and determination of standards through Entry 66 of the Union List of the Constitution of India**. In 1976, education was brought to the concurrent list as Entry 25 and **centre was brought on equal footing with the states for all levels of education**. The exclusive power assigned to the centre as per Entry 66 was

however retained… In all, the central government has a key role in defining public policy for higher education in the country. In fact, the central government and its various agencies have come to occupy the centre-stage of higher education in the country…. Over the years, the central government has established several institutions of higher education. The Central government also maintains these institutions in addition to the three universities, namely - Delhi University, Aligarh Muslim University and Banaras Hindu University assigned to the Central Government under the constitution….**The central government discharges its responsibilities primarily through the Ministry of Human Resource Development**. In addition, there are at least **fifteen other ministries / departments** in the Government of India that either establish, finance or regulate higher education institutions. Whereas **medical education comes within the purview of the Ministry of Health**, **agriculture education and research is looked after by the Ministry of Agriculture**. [17]

Fig. 6.3: FICCI: Regulatory challenges of Indian higher education system [62]

The research paper "150 years of University Education in India: Challenges Ahead" stated that **"Complex and dysfunctional regulatory arrangements for higher education in India have raised serious concerns about the credibility of the Indian higher education system**. There is a need to safeguard its integrity and enhance its credibility. Loss of this credibility would have serious repercussions. Our competitive advantage as a nation with huge reserve of highly qualified and trained manpower may be lost. Many countries are shying away in signing mutual recognition agreements with us because of **horror stories** that they hear about deteriorating standards of higher education in India. **This would become more difficult in the years to come**, if we allow any further compromise on the standards of higher education in the country." [164]

Being blamed for all its ills, it is often argued that the **total deregulation of higher education in India would serve the public interest best**. This argument is based on the simple principle of economics that if the market regulates institutions more efficiently and effectively than the state, then **the task of regulation should be left to the market**; facilitating oversupply would be the best way to subject market sensitive institutions to the regulations of the market. The manner in which clearing of demand and supply takes place in higher education suggests that **leaving higher**

education to market forces may not be most viable option. Though academics would normally object to the concept of regulation, especially as it relates to academic quality, it needs to be understood that due to its very nature, academic standards need to be determined and coordinated across universities requiring some kind of external scrutiny. **This makes regulation important**; though equally important is as to the nature of regulation, who is responsible to develop and who would implement these regulations. [164]

Having made a case for regulation in higher education, there is a need to define its nature and scope. The direction for change has been aptly recorded in Para 3.64 of the approach paper for the 10th Five Year Plan. According to this 'Laws, rules and procedures for private, cooperative and NPO (not for profit organizations) supply of education must be modernized and simplified so that honest and sincere individuals and organizations can set up universities, colleges and schools. Oppressive controls on fees, teacher salaries, and infrastructure and staff strength must be eliminated. **The regulatory system must be modernized based on economics of information and global best practices**. Given the weak criminal justice system in our country, the regulatory system must also put greatest emphasis on fraud detection and punishment while letting normal individuals to function normally.' [164]

The Supreme Court a bench of justices BS Chauhan and FM Ibrahim Kalifulla said that "The education system in the country has **failed to achieve its objective** and it has to be **reformed immediately**. It is unfortunate that today education instead of reforming the human behavior, in our humble opinion, appear to have failed to achieve its objective. Instead we find troubled atmosphere in the society at large, which calls for immediate reformation with the efforts of one and all," [166]

Dilip Chenoy, CEO and Managing Director of the National Skill Development Corporation (NSDC) lamented that the gap between education and employment had widened. "**Our education system hasn't been reformed over years and the education woes can be tackled by bringing systemic reforms along with a change in mindset**," he prescribed. [167]

Sam Pitroda said that "In India that flexibility is needed. **We can't carry forward with the 19th century mindset, 20th century process and 21st century needs**. There is a need for theoretical and practical experiences and to achieve this, students should also be allowed to work in their respective sectors of interest even while studying." Speaking on the number of education bills stuck in Parliament, he alleged that **parties, unions and people with vested interest block reforms in the country**. He claimed the government is in no mood to change the education system, but it is students who should demand for change. [168]

Former Union Human Resource Development Minister Kapil Sibal Released Confederation of Indian Industry (CII) Report on "Administrative Reforms in Higher Education" at "AICTE-CII Global University-Industry Congress 2013" on 7th Nov 2013.. This white paper stated that "What stands in the way of this necessary and desirable growth are **the barriers to entry and expansion as clearances by multiple agencies** (like UGC, AICTE and professional councils like NCTE, PCI, BCI, MCI, NCI, RCI etc., apart from various departments of state governments) **with varying norms, standards, speed and efficiency** are required. Even within the Central government there are **often multiple ministries and autonomous agencies** (professional councils) which **set their**

own norms and procedures without requisite coordination causing needless delay and ambiguity. In these circumstances a **single window mechanism** (at the Central and State levels) would be desirable so that it can lay down the necessary norms for establishment and expansion of institutions and also it may lay down norms in an objective and transparent manner and accord clearances expeditiously. [5]

Dr. Shyam Sunder, School of Management, Yale University stated that "The Ministry of Health and Family Welfare controls this Pharmacy Council of India. The other fifteen councils also fall under the jurisdiction of various ministries of the Government of India. **Each ministry guards its control of the branch of professional education assigned to it, making it all but impossible to reform the system comprehensively**. The recommendations of the 2009 Yash Pal Committee Report for such reform face collective opposition from more than a **dozen ministries protecting their respective prerogatives**. **Reforms are unlikely to succeed without political initiative and support from the highest levels of government**." [19]

The Professor Claudia Zeisberger, INSEAD Business School stated that "The US, as the more mature and successful big brother of the Indian education sector, offers rich insights for an outlook. although three key process differences need to be taken into account in India: the need to assess more companies before making an investment, **longer deal** turnaround time, and tendency towards all-equity financing. **In addition, there are huge challenges around regulation, corruption and valuations**." [169]

The PWC report stated that "With the **possibility of a single regulatory authority almost nil**, it is important to **create synergies among the large number of regulators** as well as the regulatory regimes." [15]

Solution Space 6.1

- **Perfectly Regulated for Single Institute but Over Regulated for University**: If you observe the figures 6.1 and 6.2 then you will realize that the regulatory framework is perfectly all right for single institute like engineering institute as shown in figure 6.2. But if the same framework when extended to multidisciplinary university (see figure 6.1), which has all the disciplines, then it becomes unmanageable. The individual institutes are more or less comfortable to this framework but self-financing universities are facing lot of problems. It is not possible to keep separate regulatory mechanisms for standalone institutes and universities.
- Shared responsibility often leads to a lack of coordination, duplication, and complex bureaucratic requirements.
- Leaving higher education to market forces may not be most viable option.
- The regulatory system must be modernized based on global best practices.
- To solve this problem, there is a need of single window regulatory mechanism.

6.2. Poor Quality of Indian Higher Education

Prime Minister Manmohan Singh was absolutely right when he warned in February: "Too many of our higher education institutions are simply not up to the mark. **Too many of them have simply not kept abreast with changes that have taken place in the world around us**." [226]

Professor Philip G. Altbach adds: "India's problem is that its 600-plus universities are almost **without exception poor quality**. It is not surprising that they do not show up in the rankings: they are **chronically underfunded and highly bureaucratized**. Academic performance is not rewarded for the most part. "Without significant improvement in the university sector, it is unlikely that India will ascend the rankings." [225]

Let us get one thing clear right away: a country of India's size, rich intellectual history and growing economic strength deserves world-class universities that can compete with the very best universities in the world. Indeed, India needs such institutions for the future success of its economy. [226]

India Infrastructure Report 2012 stated that "Since the last couple of years, there has been much **hue and cry about quality in Indian higher education**.

- Not only the students and the academicians but also media, politicians and the policy-makers have all expressed concern about the poor quality of education in higher education sector.
- The bills which are being considered by the government, almost all of them, talk about quality directly or indirectly.
- The approach paper to the 12th Five-Year Plan clearly argues that the focus should not only be on increased enrolment in higher education, but also on the improved quality of the expansion in higher education.
- Poor quality, arguably, is often exemplified by the fact that no Indian university figures in the top-100 list of popular global university rankings.
- Even in the national context, according to the National Accreditation and Assessment Council (NAAC), 90 per cent Indian universities and 70 per cent colleges are of mediocre or poor quality.
- Various studies have also indicated low degree of employability of Indian graduates, which is a matter of serious concern both for the planners as well as the industry.

In this situation, improvement in quality is an imperative and quality assurance is the first step in this direction." [12]

The expansion of higher education system in India has been **chaotic and unplanned**. The drive **to make higher education socially inclusive has led to a sudden and dramatic increase in numbers of institutions without a proportionate increase in material and intellectual resources**. As a result, **academic standards have been jeopardized**. There are many basic problems facing higher education in India today. These include **inadequate infrastructure and facilities**, large vacancies in faculty positions and poor faculty, outmoded teaching methods, declining research standards, unmotivated students, overcrowded classrooms and widespread geographic, income, gender, and ethnic imbalances. Education in basic sciences and subjects that are not market friendly has suffered. Research in higher education institutions is at its lowest ebb. There is an **inadequate and diminishing financial support** for higher education from the

government and from society. **Many colleges established in rural areas are non-viable, are under-enrolled and have extremely poor infrastructure and facilities with just a few teachers**. [17]

Prof R Natarajan, former director of IIT Madras and former chairman of AICTE said that "**sudden expansion of capacity inevitably leads to a dilution of quality**, unless strategies and measures are taken to infuse quality improvement in all facets of education. At the outset, for an emerging economy like India, with the Millennium Development Goal of achieving a GER of 30 per cent by 2020, and with a demographic dividend, it is absolutely essential to focus on expansion of higher education capacity. Both strategic planning and effective implementation are required. For instance, preparedness for meaningful change and improvement demands the grooming of adequate numbers of well-qualified, competent and committed teachers; they are in short supply, and for young graduates teaching is not an attractive career option." [130]

Dr. P B Sharma opined that the nation expanded the higher education sector in terms of enrollment, number of institutions and number of universities "**without assuring quality of infrastructure, quality of faculty, quality of learning and research environment**". [130]

Infosys Ltd.'s co-founder and chairman emeritus Narayana Murthy said the quality of education even in the illustrious Indian Institutes of Technology is **actually getting worse**. Part of the problem is the **admission criteria**, which Mr. Murthy said isn't strict enough. As a result, "the **quality of students entering IITs has gone lower and lower**," Mr. Murthy said to a gathering of IIT alumni in New York, according to the Press Trust of India. "They somehow get through the joint entrance examination. But their performance in IITs, at jobs or when they come for higher education in institutes in the US is not as good as it used to be," he said. [227]

Brig (Dr) RS Grewal, Vice Chancellor Chitkara University stated that "**Both Central and State governments spend phenomenal amounts on public universities without tangible outcomes**. The lack of a culture of accountability ensures that the numerous centres of excellence have no worthwhile achievements to their credit. Professional bodies like the Institution of Engineers and others have failed to set benchmarks and nurture industry-academia linkages. Their journals are no match for those of their counterparts in developed countries. Our universities are still biased towards manufacturing and services sectors and have, by and large, ignored the life sciences that would, in all probability, be the areas in which cutting-edge research is likely to be focused in the 21st century. Moreover, liberal arts have been neglected, and no society can hope to progress by ignoring these" [228]

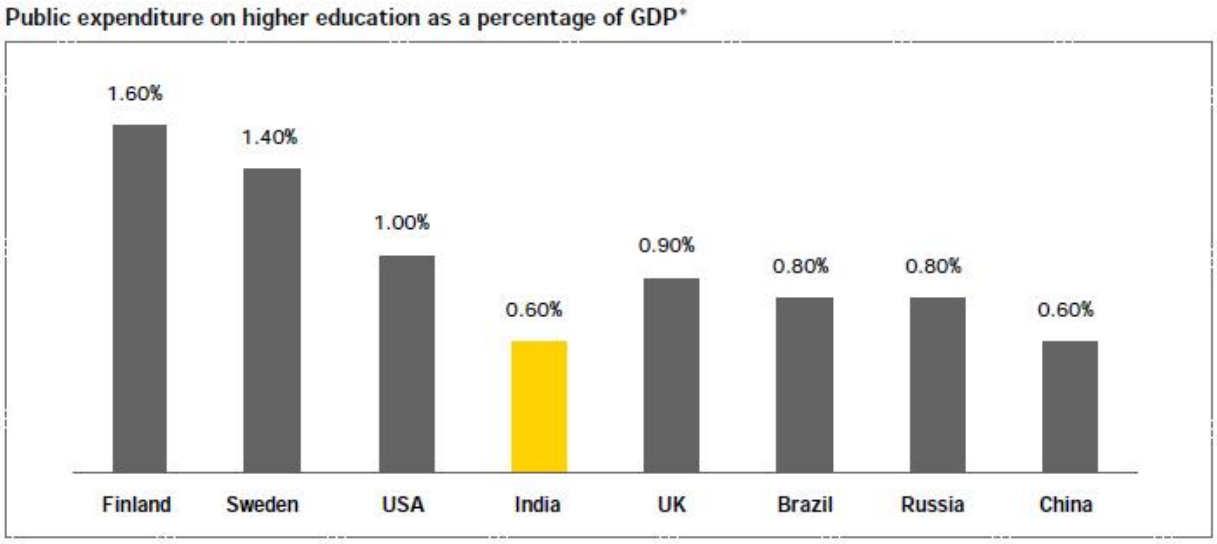


Fig. 6.4: Spending enough but not getting result (2009) [62]

While it is true that Indian academics, by international standards, are relatively well paid, they are **not necessarily effective**. Academics, and especially college teachers, are **constrained by rigid bureaucracy**. Furthermore, their work is **not carefully evaluated** – salary increases and promotions are awarded **on the basis of seniority**. Unfortunately, when salaries were increased in 2006, this boon was not accompanied by any reforms in the teaching profession or requirements for evaluation. A System of **Academic Performance Indicators for promotion** and appointment of professors and lecturers is yet to take root. [91]

Solution Space 6.2

The drive to make higher education socially inclusive has led to a sudden and dramatic increase in numbers of institutions without a proportionate increase in material and intellectual resources. As a result, academic standards have been jeopardized. There are hundreds of factors, which need to be improved for maintaining overall quality of higher education. There is an urgent need for comprehensive national reforms. I would like to highlight few factors:

- We must introduce accountability at every level.
    - The faculty and administrative authorities should get protection and benefits proportionate to their performance.
    - The funding of the institute should be proportionate to their revenue generation capacity and overall institute performance. Already the government has introduced RUSA scheme in this direction.
- The higher education sector is underfunded. We must adopt PPP model of funding with appropriate legal framework to attract and protect the interest of private players (like ROI).
- To chase the 30% GER needs huge expansion of higher education sector, while doing it must consider quality.
- Must pay special attention to colleges at rural areas.
- Strictly follow the Academic Performance indicator for promotion

6.3. Inadequate Freedom

Academic institutions need five kinds of freedoms to function effectively, to contribute best to the society, and to human civilization. Three of them are academic:

- The freedom to decide what to teach,
- Whom to teach, and
- Who will teach

The remaining two are economic and administrative:

- The freedom to decide where to find resources and
- The freedom to decide how to deploy those resources. [41]

Professor Yash Pal, Chancellor of Jawaharlal Nehru University and former Chairman UGC said that "**Universities should have a different freedom system**. In the universities system itself, we very strongly recommended that **single discipline institutes are not universities**, they can't be universities. All over the world, **great institutions started in one subject but then they expanded and included all the subjects**; Massachusetts Institute of Technology, for example, was a technical school and then became a great university, the name is same, and it became a fantastic university; there are many other examples around the world and that's the direction we need to go and we recommended that." …That was precisely the reason, unless you have autonomy of this kind and you are free to find collaborations with other universities, with other laboratories **rather than wait for agreement from the secretary, the deputy secretary or somewhere that they have no right**. Universities can do resources that are required and the commission, which is to be set up, should be of that kind which takes a broad view, say if you are working with them and the project looks fine, says go ahead and do it. [48]

Phil Baty, editor of the "Times HE World University Rankings" also identifies excessive government control and the minimal autonomy of India's varsities as one of the prime causes of their conspicuous absence from the "THE league table" of Top 300 universities. "**The universities that tend to do very well in world rankings enjoy high levels of autonomy, and are free from excessive control and bureaucratic processes.** The best universities have to be entrepreneurial, fast moving and dynamic. This **needs freedom**," says Baty, implying that Indian universities lack this vital attribute. "The key is to transform India's incredible economic power into developing not just world-class universities, but a truly strong mass higher education system." [123]

Dr. Rajan Saxena, Former Director of IIM, Indore and Vice-Chancellor Narsee Monjee Institute of Management Studies, while answering the question "Do you think that political and bureaucratic control is the major impediment to our higher education system?" said that "Very strongly I believe that they are major impediments as our education system is highly regulated and over controlled. **Education can never prosper in highly regulated and controlled environment.** Wherever in the world best quality institutions have come up **even in South Korea or Hong Kong, education has been given adequate freedom to operate.** Frameworks are there and after the policy framework has been decided they don't sit down to tell what is to be taught, how it is to be taught and who should teach. That is what our Indian regulators do and they are making it very difficult. Secondly, **Indian regulatory mechanism is non-responsive**; it does not respond to the needs of the institution, it is not responding to the needs of the industry and to the society. Society

need is not just in terms of expansion, it is equally in terms of good quality institution and it is very important. [170]

The IDFC Report 2012 stated that "The regulatory bodies have cumbersome procedures and complex and detailed rules, whose interpretation and implementation encourage rent-seeking. The Chapter 16 gives **examples of the kind of archaic 'license raj regulations' imposed that hamper** the ability of genuine private education providers to grow over the long term, or innovate in technology, teaching methods and curriculum. Contrasted against the minutiae of rules on inputs, there is little to judge institutions on student-learning outcomes." [12]

Lord Swraj Paul, MIT alumnus and Chancellor of two British universities, **wondered whether Indian universities were too conscious of hierarchy and over-regulation?** Is the division between state responsibilities and central responsibilities appropriate or too restrictive? Is the education in the states too politicized? [92]

Munnich, the Scientific Advisor to the French President, writes: "But this **centralized monolithic structure, inherited from the past, has its limitations**. Sarkozy has decided that the **French scientific system will instead pursue the model that has been so successful in other highly developed nations**, with powerful **research universities at its centre**. One of his first actions after being elected in 2007 was to pass a law giving the universities autonomy from centralized state control**.** They can now **manage their own land and buildings, entirely handle their own budgets and have some flexibility to set researchers' salaries as they see fit, instead of being tied to rigid national salary scales — this gives them more openness and freedom to retain, or to attract, the best researchers**…. But universities have become the main operators, in charge of organizing their own research strategies. That has been accompanied by a marked shift away from the dominance of recurrent research funding, where the agencies funded labs on a rolling basis, to one where individual labs compete nationally for funding on the basis of grant proposals for projects…" [19]

Solution Space 6.3

The Indian higher education system is over regulated and thus lost the freedom. Education can never prosper in highly regulated and controlled environment. The single regulatory mechanism is the need of the hour.

6.4. Quality can't be Simply Improved by Regulatory Bodies

Prof C NR Rao, Head of the Scientific Advisory Council to the Prime Minister of India and Honorary President Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) opined, "**Quality cannot be simply improved by regulatory bodies**. Regulatory bodies at best can carry out some evaluation and grade institutions to some extent. The real challenge is to develop a culture which does not accept mediocrity in all walks of life. The private sector has to contribute to this effort. It cannot be done by the government alone. It is a pity that private sector organizations which have made a lot of money have not made any major effort in setting up

universities equivalent to Stanford or Harvard. We must make sure that the **recruitment of teachers is not done based on considerations other than academic**. The structure of our institutions is also important and there is **need for major structural changes**. Our universities act as affiliating bodies and take pride in giving examinations to thousands of undergraduate students every year. This should not be the role of universities. Universities should worry about higher education and research." [130]

Solution Space 6.4

The Indian higher education system has given over emphasis to regulatory mechanism. The quality of the higher education can't be simply enhanced through regulatory mechanism. We will have to develop robust mechanism for

- Planning with perfect implementation
- Comprehensive Funding model
- Self-corrective Monitoring, Feedback, Benchmarking mechanism
- USA type internationally accepted Accreditation systems
- For healthy competition, our own National Ranking System for higher education institutes based on
    - Input
    - Processes
    - Output
- Transparent and single window based responsive Regulatory Systems
- Transparent working of all higher education institute for all stakeholders

6.5. Not Clear Direction

Arun Nigavekar, Raja Ramanna Fellow in Science and Technology Park at the University of Pune and former Chairman of the UGC wrote "It is **non-directional** because there is no comprehensive policy on governance and role of education in the growth of a nation," [162]

Mr. Pawan Agarwal, Adviser (Education), Planning Commission, Government of India, stated in his research paper published in ICRIER that "With the opening of the Indian economy, the entrepreneurial spirit of the Indians was unleashed. The new breed of entrepreneurs saw a big opportunity in meeting a huge unmet demand for job-oriented education and training. This resulted in a huge expansion of private higher education and training sector in the country. **However, instead of embracing the growth of private higher education, the public policy has been apologetic about it.** One often sees **conflicting signals** coming from government reports and pronouncements. The financing of higher education by the government has been marginal, which remains at less than half a per cent of GDP despite often heard statements made by the government to increase it to 1.5 per cent. The expenditure per student has declined rapidly over the years. Accountability mechanisms in the higher system are in disarray. **Unlike many other countries, one does not see a clear direction for change in the higher education system in India.**" [17]

Solution Space 6.5

We need to develop very clear policies. The complex higher education regulatory mechanism is unable to send synchronized message and clear directions. The system is unable to address number of important issues. There is a wide gap in planning and implementation. The old system is unable to solve the needs of 21st century.

6.6. UGC: Serious Limitations in Coordination with Regulatory Bodies

Despite the mandate given to the UGC to coordinate and determine standards of universities, the structure and predominant functions assigned to the UGC in India were largely on the pattern of the University Grants Committee (UGC) in **England** that was set up under the Government Treasury in UK in 1919. While the UGC in UK has been replaced by two independent agencies - Higher Education Funding Council for England (HEFCE) and Quality Assurance Agency (QAA), **UGC in India still continues despite its serious limitations in facing new challenges**. [17]

With the expansion of the system of higher education, a number of professional councils have come up. All but the Indian Council for Agriculture Research (ICAR) are statutory bodies established through an Act of Parliament. Some of them predate the UGC. **None of them however provide any role for the UGC in their functioning. This creates a problem of coordination between the regulatory bodies in the country**. [17]

There are **significant differences in the mandate, powers and functions of the different regulatory and statutory bodies**. The councils have **rules and regulations of their own**. There **is large overlap of their functions with the functions of the UGC**, other professional councils and even function of universities in some cases. In five cases, namely - Medical Council of India, Pharmacy Council of India, All India Council for Technical Education, Indian Nursing Council and the Bar Council of India, there are also State Councils; and there are overlaps in functions of the national councils and state councils. **This has resulted in fragmentation of higher education system in the Country**. [17]

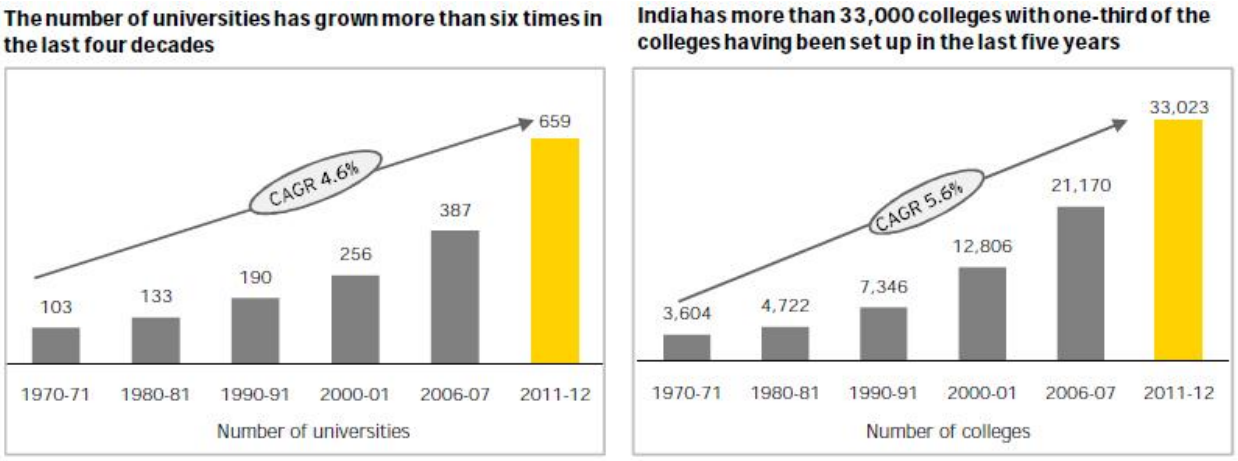


Fig. 6.5: Six times more universities and Ten times more colleges [6]

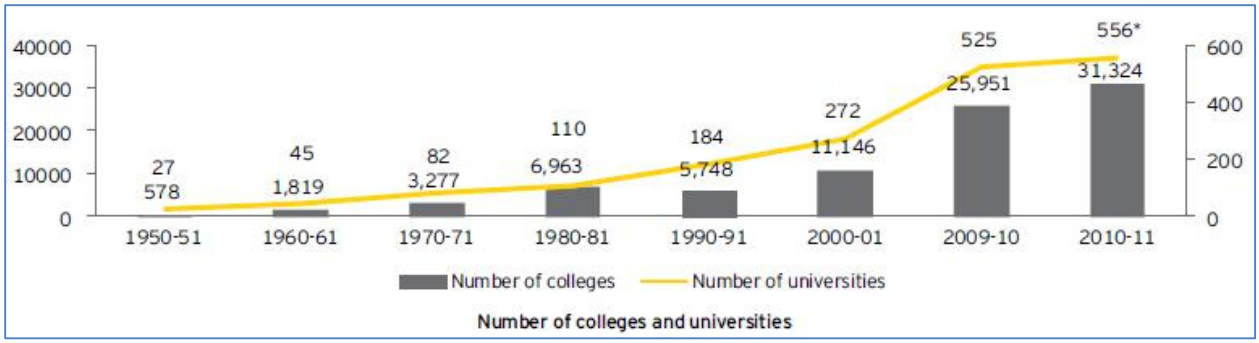


Fig. 6.6: FICCI: Growth of Colleges and Universities since 1950 to 2011 [171]

Solution Space 6.6

The Indian Higher education regulatory system has gradually developed into a complex mechanism. It's not mistake, which somebody has committed. In last 60 years, every time instead of introducing major reform, the system has preferred provisional solutions through regulatory mechanisms because of complexities of legislative procedures.

The old system was designed to handle small number of universities and colleges. In last 43 years, universities and colleges have increased 6 and 10 times respectively. They are of various types like central universities, state universities, deemed universities, self-financed state universities, IITs, NITs, IIITs, IIMs, autonomous institutes, affiliated colleges, centrally controlled universities and institutes etc.

Now this fragmented system is facing problems of coordination, overlapping of functions, mandate and powers. Thus the system needs urgent reforms.

6.7. State Government Directorates Became Power Centers

The **state governments have a major role in funding of higher education** and also have the **main say in all administrative and operational matters**. In respect of the colleges, the concerned affiliating university provides academic supervision. Unlike the centre that discharges its responsibility towards higher education through UGC and other professional councils, the states carry out most of the functions by themselves **through the concerned government department or directorate in the states**. Some states have setup state councils for higher education, but these are largely advisory bodies with little or no operational role. On the whole, **the powers with respect to higher education in the states are concentrated in the higher education departments**. [17]

R Govinda Vice Chancellor, NUEPA believes that the **State governments have to be brought on-board for transforming higher education**. The **real game changers** in Indian higher education are State Universities. They form the bulk of the education system, and hence exercise

a greater control over the education system in India when compared to the Centre. Plans can provide direction to the education system along with large scale financial backing, however, if the States are not involved, large scale changes will not happen. [98]

Solution Space 6.7

In the Indian complex regulatory mechanism for higher education, the planning is in the hands of central government whereas power of implementation is with state governments. It creates synchronization problem. Moreover, the excellent inputs with non-efficient and non-effective processes wouldn't lead to expected optimized output. For optimum results the processes must be efficient and effective.

6.8. Affiliated Colleges: Not Proportionate Growth of Colleges and Universities

From the trends in growth of higher education institutions, it is seen that the **number of affiliated colleges has grown much faster than the number of university level institutions**. Eighty seven per cent of all enrolment is in affiliated colleges. Affiliated colleges function under the **academic governance of a university**, whereas these are **independent entities as far as administrative and financial matters are concerned**. This makes **higher education in India highly dispersed, much more than any other higher education system in the world.** A large number of institutions are non-viable and under-enrolled posing serious problems of governance and regulation. [17]

In 1857, the British Government had established universities at Calcutta, Mumbai, and Madras. It laid down guidelines for founding of a university system modeled on the University of London that would affiliate the existing colleges, set standards for courses, prescribe appropriate textbooks, conduct examinations and confer degrees. **Even after 150 years the same system is continuing.** The Indian universities could not come up with the identity as a "Knowledge Hub" and preferred to remain as the "**Examination Control Board for Affiliated Colleges**".

Mr. Pawan Agarwal, Adviser (Education), Planning Commission, Government of India, stated in his excellent research paper published in ICRIER that "Higher education system in India largely resides in the affiliated colleges. Affiliating system is based on the practice of affiliation started in the London University (established in 1836). Neither London nor any other long established universities such as Oxford and Cambridge had colleges other than their constituent **colleges on the same campus affiliated to them**; whereas affiliated colleges in India are **geographically dispersed throughout the states or regions over several hundred square kilometers**. Normally an affiliating university has a defined geographical service area and all colleges located in the area are expected to be affiliated to that university…. **The concept of jurisdiction by assigning a geographical service area within which they are entitled to affiliate colleges limits competition and creates a monopolistic situation for the affiliating university**….. Many of the ills of Indian higher education are often attributed to the system of affiliation. The affiliating

system was devised to regulate and standardize the quality of education. But with the tremendous increase in the number of institutions, the system has been serenely riding piggyback on the reputation of the mother institution. **Most people consider that the affiliating system in India is a drag on the better intuitions that could otherwise innovate and excel**." [17]

The Yashpal Committee Report 'Renovation and Rejuvenation of Higher Education' stated that "…Indian university system has a large number of affiliated colleges. This structure has **burdened many universities** with the management of academic content, examination, and quality of these colleges….. **Eliminate the affiliation system in India**, which has been the bane of our higher education system…… There is also a suggestion of creating universities, which would be only examining bodies to which these colleges can be affiliated……. Many of the State universities have, over the years, had more and more colleges affiliated to them, which has made it very difficult for them to perform the role of maintaining academic quality." [143]

Dr. Sam Pitroda also said that "it was also imperative to separate a lot of the colleges that are affiliated with universities and said for example the **University of Bombay as well as the University of Andhra Pradesh had each several hundred affiliated colleges**, which placed "**an extra burden on these universities.**" So, we want to create a system where all these colleges can be separated from the universities and create community colleges where we can provided gradation in the university system." [172]

Rashtriya Uchchatar Shiksha Abhiyan (RUSA) report stated that "As a part of his report on higher education submitted on behalf of National Knowledge Commission, Sam Pitroda argued for higher education reforms, adoption of course credit system, decentralization of examination system, internal assessments as well as criteria-based resource allocation for strategic growth in higher education. Another important suggestion was the **setting up of the central and state Boards of Undergraduate education** to control quality, conduct examinations and reduce the administrative burden of universities in terms of affiliated colleges." [72]

Philip Altbach and Pawan Agarwal stated that "Many of India's 34,000 undergraduate colleges are too small to be viable. They are generally understaffed and ill equipped**; two-thirds do not even satisfy government-established minimum norms**, and they are unable to innovate because of the rigid bureaucracy of the affiliating system that links colleges to a supervising university. All this makes **the system highly fragmented, scattered and difficult to manage**. There is a strong case for consolidation and merging of small institutions. But the **affiliating system is vast and deep rooted and, therefore, it is neither feasible nor desirable to dismantle it**. Clustering and even merging colleges that are very small would also have to figure in reform. In addition, universities that affiliate a large number of colleges would need to be reorganized into two or more universities, with each affiliating a smaller number of colleges to improve overall academic effectiveness." [91]

The distinguished scholar and educational leader, Professor Kulandai Swami (2006), argues, for example, that the **affiliating system** is 'outmoded, anachronistic, and **acts as a real curse** on the Indian higher education system'. It **holds back any genuine attempt at reform and renewal**. It ensures that **reforms are inevitably symbolic and piecemeal, leaving most of the system unaffected**. [173]

The following table shows the twenty Universities in the country with the largest number of affiliated colleges. Affiliated colleges enroll about 86.7% of all students and are the mainstay of the higher education system. They enroll 90% of the undergraduate students, over 70% postgraduates and 17% 74 of doctoral students. **From the perspective of the state university, affiliation system is a lucrative option of raising funds as it brings affiliation and examination fees.** However, the rampant rise in number of **colleges affiliated to universities has deteriorated the quality of higher education significantly**. The active university resources and systems are diverted towards management and conduction of exams with consequent dilution of focus on academic quality and research. There is hardly any incentive for the affiliated colleges to undertake any meaningful quality improvement programme in teaching and research. There are a number of weaknesses in the existing affiliation system.

- First, the relationship between state university and affiliated colleges is one of administration – affiliation, course recognition, syllabus prescription, and examination. The university departments as source of academic strengthening of college teachers, are generally **very weak and unstructured**.
- Secondly, since a typical affiliating university has to cater to hundreds of colleges, it **cannot provide customized curricula to meet the local needs** of colleges, but instead offers the same curriculum to all. The academic condition of affiliated colleges also prompts **strong resistance to curriculum revision**. The university departments and affiliated colleges are then reduced to common, minimal curriculum with **no scope for improvement and innovation**.

One of the schemes of UGC, namely 'Autonomous Colleges' scheme does encourage colleges to acquire autonomous status, but there are systemic problems encountered, with the result that only about 400 colleges in the country have acquired that status so far. **The affiliation model separates teaching from assessment** and **separates research from teaching.** A teacher needs to use student assessment in order to adjust his or her teaching to the needs of students and to provide feedback to students on their performance; but the affiliation system envisages that the assessment is done away from the college. These features significantly **reduce the accountability** for results. The affiliation system also means that **research is done at the university** while **teaching is done at the colleges**, so the latest knowledge is not available to those teaching undergraduates, except through the laborious process of curriculum reform. In the same way, teachers of colleges are denied all opportunities of self-improvement, continuous upgradation, and access to resources and research facilities. Students coming through the affiliated colleges miss a whole lifetime of opportunity for all round personality development, access to good faculty, laboratories, libraries and consequently lack both soft and applied skills. This naturally gets translated into lower levels of employability for affiliated college pass-outs. [72]

University	Number of affiliated colleges
Osmania University Hyderabad Andhra Pradesh	901
Pune University Maharashtra	811
Rashtrasant Tukadoji Maharaj Nagpur Maharashtra	800
Rajasthan University Jaipur Rajasthan	735
Bangalore University Karnataka	687
Mumbai University Maharashtra	711
Tamil Nadu Teachers' Education University Tamil Nadu	661
Gautam Buddha Technical University Uttar Pradesh	614
Andhra University Andhra Pradesh	614
Rajeev Gandhi Health Sciences University Karnataka	560

M.L.C National Journalism & Communications Madhya Pradesh	549
Kakatiya University Andhra Pradesh	480
Jawaharlal Nehru Technological University Andhra Pradesh	451
Maharishi Dayanand University Haryana	448
Kurukshetra University Haryana	435
Sant Gadge Baba University Maharashtra	401
Dr. NTR Health Sciences University Andhra Pradesh	400
Barkatullah University, Madhya Pradesh	386
Swami Ramanand Teertha Marathwada University, Maharashtra	370
Rajeev Gandhi Prodyogiki University, Madhya Pradesh	365
Punjab University, Chandigarh: Times Higher Education World Ranking 226-250	**184**

Table 6.2: Number of affiliated colleges for selected universities [72]

In many states, the **single Medical University** is controlling all the medical colleges of the state. Similarly **State Technical Universities** are controlling all the technical colleges of the state. Such geographically scattered affiliated college system is unable to address many problems.

Philip G. Altbach stated that "India's higher education achievements since independence in 1947 are impressive…. To some extent the affiliating system provides quality control but also **eliminates autonomy** from the colleges. As Pawan Agarwal points out in his article in this Brief, the affiliating system **prevents innovation**." [46]

It is difficult to establish World Class University or World Class Education System along with all the affiliated colleges. The **80% time of Vice Chancellor** and other authorities is required to solve the problems of affiliated colleges and thus unable to devote time to establish World Class Education System.

Many in India would like to abolish the system of affiliated colleges, but this is easier said than done. To begin with, **deeply entrenched economic and political interests would make this impossible**. But, more importantly, without a system of affiliated colleges, India would not be able to absorb the massive increase in the demand for higher education. The universities would simply not be able to cope with the demand. Since the system of affiliated colleges has provided the growing middle class in India access to higher education, it has become a central plank in India's capacity to implement the principles of meritocracy. Furthermore, there are not enough qualified teachers in India to carry out the full tasks of a university academic. The dilemma facing Indian higher education is therefore not how to abolish the system of affiliated colleges, but how to better manage it. [173]

Solution Space 6.8

In fact, I feel that, Indian universities had deviated a lot from "the concept of modern university of 21st century", which is globally accepted. We have stretched affiliated system beyond limits. Thus the system has become highly fragmented, scattered and problematic to manage. It is not an easy task to eliminate this deep rooted system. The affiliated system has many problems like

- It separates teaching from assessment and separates research from teaching. It assumes research is the responsibility of university and affiliated colleges become teaching institutes.
- It makes higher education in India highly dispersed and fragmented
- A large number of institutions are non-viable and under-enrolled posing serious problems of governance and regulation.
- The system is overloaded. Thus Universities are unable to maintain academic quality of affiliated colleges and unable to act as role model for affiliated colleges.
- Instead of Knowledge Hub, the University has become an Examination Control Board for affiliated colleges
- The concept of jurisdiction by assigning a geographical service area within which the universities are entitled to affiliate colleges limits competition and creates a monopolistic situation for the affiliating university.
- It eliminates autonomy from the colleges and prevents innovation

Look at the two parameters of this complex higher education system.

- For 60 million students of USA, China and Entire Europe require just 10,800 institutes and in India for 20 million students we have 36,000 institutes. This indicates the uncontrollable growth of institutes in India, which is not at all proportionate with number of degree awarding universities.
- Surprisingly, the regulatory mechanism couldn't control the number of affiliated colleges per university and in some universities it has already crossed 800 mark. This is the biggest failure of the complex regulatory mechanism.

In spite of this, there is no urgent action from the authorities because of legislative difficulties. The situation is pathetic. It's a deadlock and need urgent attention.

The comprehensive education reform is the only solution to this problem. The government should initiate the actions like

- Every state should create separate regulatory board for handling the affairs of affiliated colleges; so that the University can focus on developing world class education system.
- Provide Autonomy and Permanent Affiliation to all established affiliated colleges (say 10 year old) to reduce the burden of examination on universities.

6.9. Recognition from University but Not from UGC: Funding Problem

It is estimated that **sixty per cent of all colleges continue with temporary affiliation even after decades**, for want of minimum infrastructure and facilities. Such colleges are not eligible for

recognition by the UGC under Section 2(f) of the UGC Act. This leaves us with a very unusual situation. **Though degrees for study in these colleges is awarded by the affiliating university and is recognized** (because these universities themselves are recognized), **these colleges are not recognized by the UGC.** More than two-thirds of all colleges in the country are not recognized by the UGC. This defeats the whole process of recognition by the UGC. [17]

Nearly sixty five per cent of the budget of the UGC is meant for meeting the operating expenses of the central universities and Delhi colleges. The remaining 35 per cent plan budget is spent for the system at large… Somehow, there is an impression that only the central university system is the primary responsibility of the UGC and the central government…. In terms of its mandate, **UGC is expected to inquire into the financial requirement of the universities** (and colleges affiliated to them) **and advise the governments to provide the same – a role that UGC never performed** - perhaps for reasons of such exercise being futile due to the inability and unwillingness of the governments to meet the genuine requirements of higher education institutions in the face of financial constraints. The private un-aided universities and colleges are expected to be self-financing institutions and are expected to meet all their expenses from their own revenue sources, which is mostly from tuitions. **Many institutes are not eligible to get UGC grants**…. These institutions either do not meet the minimum standards to be eligible for UGC grants or have not bothered to get UGC grants because of its trivial amount. In recent years, UGC's policy on the eligibility for its grants has become somewhat restrictive **because of constraints of funds**…. There are however wide interstate variations. Private spending is higher in richer states, where government spending also tends to be high. [17]

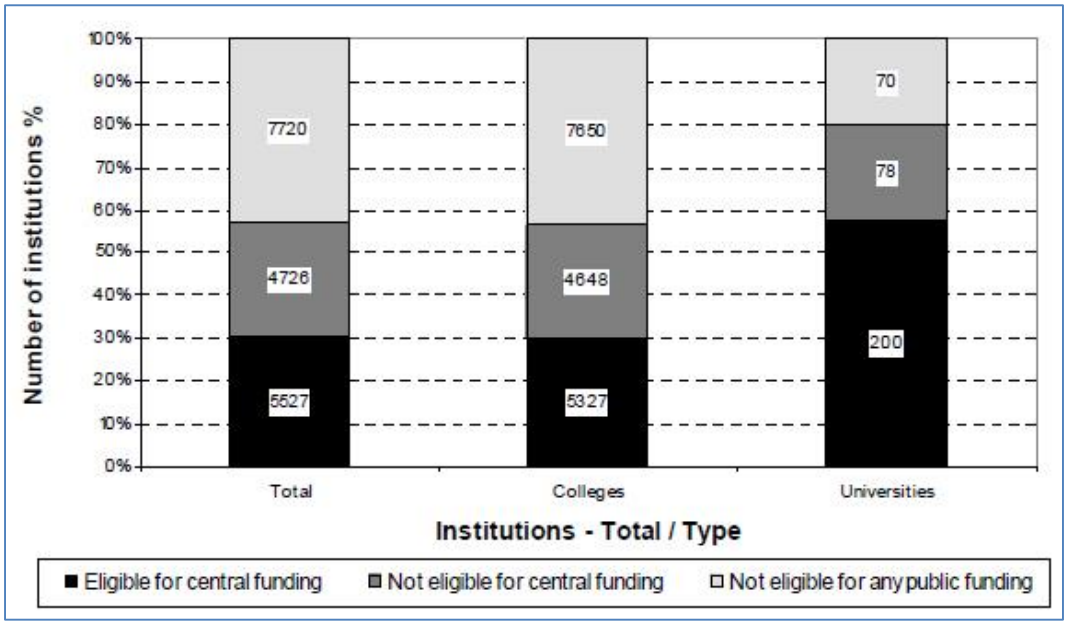


Fig. 6.7: Universities and colleges with/without central and public funding (2006) [17]

Solution Space 6.9

The large and complex system always becomes unmanageable. More than 2/3 colleges in the country are not recognized by UGC. It is not a good sign. These colleges are not eligible for funding from UGC and thus hampering the quality of education. It's national loss and major hurdle for providing world class education. This process must be rectified urgently.

6.10. Overloaded System: Not Taking Timely Decisions

Prof. Yash Pal, while answering the question, "In your report, you have suggested for scrapping higher education regulatory bodies like UGC, AICTE, what was the thought process behind it?", said that "How do you create a new one unless you scrap the old ones? The old ones, we said, should be subsumed. Subsume means people are subsumed. I was myself chairman of UGC; I know what its strength is, what it could do and there are lot of good things it has done and **delay occurs all the time and people don't realize what kind of trouble delay can cause**. If you want to do a project, if you want to start a course and **it takes you two or three years to do that**, by that time, you lose your enthusiasm. People should be able to start doing things. You don't do research; you don't do new things. If you get an idea today, tomorrow you will have to call somebody that we have to do it together, let's find out if we can get resources for it and start, that's how research is done." [48]

Dr. Shyam Sunder, School of Management, Yale University stated that "The Department of Higher Education in the Ministry of Human Resource Development seems to have been burdened with a potpourri of responsibilities that might have originated as historical contingencies or been pushed by specific influential constituencies at various times over the past six decades (the list of 42 items is given in Appendix A of reference paper). While it is not possible from this list to assess the amount of administrative resources consumed by each item, their importance for building Indian higher education appears to be uneven. It would not be surprising if the 20-80 rule (**80 percent of the time spent on things that account for only 20 percent of importance**) applies to this list of responsibilities." [19]

Solution Space 6.10

The large and complex system always becomes unmanageable. The delay is inevitable. There is an urgent need of process optimization.

6.11. Regulatory Mechanisms, Politicians and Bureaucracy

Most institutions of higher education in India fall under substantial control of political, civil service, and commercial interests. Political control takes the form of

- Chancellors, who tend to be governors of their respective states (mostly former politicians or civil servants);
- The appointment of vice-chancellors by federal or state governments through an opaque process in which caste and money are suspected of playing major roles;
- Control of funding and presence on the governing boards; and
- Close links with student groups and unions on campuses, which serve as training grounds for budding politicians. Civil servants who serve as ex-officio members of the governing boards exercise outsized influence on decision making through their control of purse strings and appointments. [19]

A common grievance about politicians in education is that **first they enact complex legislation investing massive discretionary power in the bureaucracy**, and **then use their influence to get discretion exercised in their favor to operationalize education institutions promoted by them** urgently. Thus promotion of K-12 schools or colleges needs negotiating a maze of rules and regulations, which discourages the uninitiated, while politicians' applications for starting new institutions are approved smoothly. The formidable entry barriers of the regulatory system (in addition to the University Grants Commission there are 13 national professional councils, and directorates of technical education/ departments of school/higher education in each state of the Indian Union), opaque grants systems and accreditation processes, have contributed to the growing involvement of politicians in Indian education, while dissuading ordinary citizens from attempting to promote education institutions. [174]

Reforms for India's higher education will have to be **found within India**. **Outside solutions are not acceptable to a proud society**, and **they attract immediate counter arguments as to why they would not work**. Nor are they likely to work. There is **evidence that the top policy makers in India recognize the urgency and importance of reforming the higher education system in India**. The Yash Pal Committee Report and legislation to open India to universities from abroad are indicative of a change in the thinking of the policy makers. Yet formidable obstacles remain. Investor-run colleges and universities have the power of money and politics behind them, and it will not be easy to divest them of the profitable franchises already granted. [19]

Wealthy individuals and their philanthropic trusts have built schools, parks, and hospitals for the public as a matter of public service. They **seem to be in the process of being replaced by businessmen who think of education as an industry from which they can earn high financial returns**. **Turning this clock back to re-establish the attitudes** that built thousands of charitable colleges in India **will not be easy**. No model of higher education in the world has been successful without significant subsidies from an exchequer or philanthropy. India is unlikely to be an exception. [19]

Umesh Chandra Vashistha, head of the faculty of education at Lucknow University said that "The rules for granting affiliation are only on paper and are freely violated in the absence of strict penalties. Affiliation and recognition is only for administrative purposes, with little concern for academic excellence. Organizations such as the Delhi-based All India Council for Technical Education (AICTE) and National Council for Teachers Education (NCTE) are invested with wide discretionary powers. Hence politicians with clout and money can easily promote educational institutions." [174]

Indeed the AICTE has come under flak for granting quick affiliations — particularly to politicians — without paying much attention to its own guidelines relating to infrastructure and faculty. Likewise NCTE, the apex body for approving teacher training colleges, has been severely criticized for clearing sub-standard teachers' training institutes countrywide, particularly in Bihar and Uttar Pradesh. According to usually reliable sources an estimated 60 percent of teacher training colleges in these two states are owned and/or promoted by politicians. [174]

Politicians loom large over education trusts / policy making bodies in India. Most educational policy formulation committees appointed by the Central and state governments are headed by politicians. Moreover the governor (a political appointee) is the chancellor of all government run universities in the states, and state governments have the power to nominate members on government-funded university senate committees. [174]

Supriya Sule, the 39-year-old Rajya Sabha MP, and daughter of Nationalist Congress Party chief Sharad Pawar, believes that politicians involved in education need to make special efforts to be above suspicion. "When politicians are involved with education projects, peoples' expectations are higher. Education is a noble cause; therefore politicians must not use it to further their vested interests. Speaking for myself I can say confidently that this is what we do in our Pawar Public Charitable Trust. As a politician I have quicker access to information than other educationists. But there's an obligation that I don't misuse it. The real issue before us is to provide quality education. Who provides it should not matter," says Sule, managing trustee of the ICSE affiliated Pawar Public Schools in Mumbai and Pune, Adivasi Ashramshala, Talasari, Thane and trustee of seven other schools offering education to tribal children in the interior districts of Maharashtra. [174]
IDFC-SSKI 2009 report stated that "Regulatory conditions are unlikely to change in a hurry as education is **a highly politically and socially sensitive sector**. If the government does decide to throw open the formal education sector to for-profit private players, we expect the liberalization process to start with HE. Though there have been talks of liberalizing private HE entities (especially Medical Colleges**),** there is no single bill pending in the Parliament with the intent. Further, **the high involvement of politicians, given the segment's high profit generation potential (though indirect), make the much-needed realignment and a structural shift look too difficult to achieve."** [13]

The UGC Report "University and Society Issues And Challenges 2011" stated that "**Political and bureaucratic interference in the appointment of Vice Chancellors and such key university functionaries, as Registrars, Finance Officers and Controller of Examinations, etc. shall have to be avoided** with concurrence of political and bureaucratic leadership. The Vice-Chancellor is the leader of the university system. Her or his appointment norms must adhere to the minimum qualifications prescribed in the UGC Regulation 2010. The Vice-Chancellors should have experience of academic administration and should be able to provide academic leadership. The process of appointment of Vice-Chancellors should be fully transparent and information on nominations received, short listed panel and final selection should be publicly available in all cases. Finally, the Vice-Chancellors should be selected on national basis." [211]

Solution Space 6.11

The large and complex system always becomes unmanageable. The complex system is a fertile ground for faulty processes and legal loopholes. Such systems give enough freedom to bureaucracy. In every country there exist social, business, and political forces. For overall growth of the country these forces are very vital. These forces dominate the system if the processes are faulty. To keep the balance there is an urgent need of process rectifications or reforms.

6.12. Top Most Institutes are Not Universities

Dr Ramakrishna Velamuri, Professor of Entrepreneurship Academic Director - International EMBA Program and Lydia Price Director Academic, MBA Programme, Europe International Business School (CEIBS), Shanghai, China said that "One barrier is Indian government policy. You may know that the best Indian business schools are not university-affiliated, which means that they cannot call their degrees 'MBA'. They have to call them PGDM (in the case of schools such as IIMs) and PGP in the case of ISB. Those of us who have lived in India know very well that these certificates are the equivalent of MBAs, but this is a much harder sell to prospective foreign students. This same problem exists for the 'Fellows" of IIMs. At CEIBS, we once received an application for a faculty position from a candidate who had a Fellow Certificate from one of the IIMs. I struggled to convince my faculty colleagues that a Fellowship was equivalent to a doctoral degree. Sometimes, we Indians are our own worst enemies". [175]

Solution Space 6.12

For establishing WCU we need multidisciplinary universities and not simply specialized institutes. We will have to convert the existing specialized institutes into

- Multidisciplinary Self-sustainable Global Research Universities, which are involved in Teaching
- Global Knowledge Hub, for creating knowledge through partnership with internationally renowned organizations, experts and nations.

6.13. Loopholes in Legal Systems

Few years back, one of the authority of the one of the council has been arrested for huge corruption ground. The same state has again nominated him for same council. Now the same person has occupied more powerful post. You can refer the references for details. [176] [177] [178] [179] [180] [181]

Solution Space 6.13

The large and complex mechanism can be efficient, provided, it is supported by prompt self-corrective mechanisms. If the rectification process is missing or not responsive then this complex mechanism boomerangs. It is said that, minimum 100 to 150 years are required to become mature democracy

6.14. No Undergraduate Education at University

One of the worst anomalies that crept into Indian higher education system is that universities are **completely removed from undergraduate education**. Nothing could be worse than this. A high quality undergraduate education is the very essence of higher education and yet most public universities restrict themselves to graduate education and research as if they are separate entities. **Without exception, all great western universities which have a world class reputation for research and graduate programs are also well-known for their rigorous undergraduate programs**. It is mandatory for the finest researchers and world renowned faculty to teach undergraduate courses in most western universities. [182]

The single discipline Universities and Universities dedicated to just postgraduate studies are not considered by Times Higher Education Ranking because of their narrow focus and areas of strength. Even IISc Bangalore has the same problem thus they could not be considered for Times Higher Education Ranking. Now they have started the undergraduate courses and will be eligible for ranking in 2017.

It should be noted that two more high-performing Russian institutions would comfortably make the world top 300 but are excluded from the overall rankings for being too narrowly focused. Russia has two institutes (Moscow Institute of Physics and Technology and the Moscow State Engineering Physics) which have done well in physical sciences in world rankings, but they are too specialist to be included in the overall analysis. [47] [183]

Solution Space 6.14

For WCU reputation of research and undergraduate programs both are essential. In India, we have bifurcated this, which is not desirable. Like IISc the universities should rectify this mistake.

6.15. Location Matters: WCU Can't Establish Anywhere

The government is establishing 14 World Class Central Universities and New Nalanda University at remote locations.

Philip G. Altbach stated that "The best minds want to be in the center of intellectual, cultural, and political life. The experience in India and elsewhere, in recent decades, is that **it is difficult to build top institutions far from centers**. Several of the original Indian Institutes of Technology were located near but not in major urban centers. Thus, there was room to build a campus, while at the same time permitting relatively easy access to a wider intellectual community and to urban centers. **Some of the new central universities, as well as the new Indian Institutes of Technology, located away from cities and communities are finding it difficult to attract the best faculty and students**." There are some examples of recently established "green field" academic institutions. Without doubt the most expensive is the King Abdullah University of Science and Technology, located near Jeddah, Saudi Arabia. Located near a large city, benefiting from a multibillion-dollar endowment and an unlimited construction budget, and connections with top universities overseas, its success is not assured. [63]

Some of the great American public universities may also offer some insights. Most of the best of them were established in the 19th century **in or close to urban centers**— the University of California-Berkeley, for example, is near San Francisco and the University of Michigan is near Detroit, while the **University of Illinois at Urbana-Champaign is in the middle of corn fields. While the latter is a fine university, it is not as distinguished as Berkeley or Michigan— and it suffers when competing for top faculty.** [63]

Governments in many countries decide on the location of new universities for many reasons.

- Students in an area may not have access to a convenient place to study.
- A particular region may be in need of investment or development.
- Or local politicians may have a loud voice.
- There are often good arguments for placing higher education institutions in locales, where they can contribute to economic growth, student access, or other laudable social goals.

India has often been quite successful with this tactic. However, it is always a mistake to try to locate a top-level research university to meet development goals. The initial investment is large, and the chances of success are limited. The fact is that the needs of a research university are quite specialized and not comparable to those of an academic institution focused mainly on teaching. **The new Nalanda's location** is dictated by the site of the original Nalanda and not by specific development goals. The challenges facing the new Nalanda, in its effort to become a world-class university, are daunting. As noted, location is a highly negative factor, perhaps even a determining one. [63]

Let us consider the case of leading industrial state of India - Maharashtra. As per 2011 census, the population of Maharashtra is 11.23 Crore, whereas the population of Mumbai-Thane-Pune-Nashik belt is around 5.93 Crore. Thus 52.80 % population is residing at 8.61% area of Maharashtra state. Moreover, this is industrial zone with high paying capacity. On the top of that, Pune is renowned education hub; Mumbai has world largest film industry - Bollywood, IT hub (second largest IT exporter and contributing 30% IT export) and the Financial Capital (17% of GDP) of India. This area is well connected by road, rail and air. **Thus it's most favorable place in Maharashtra state for establishing any educational institute**. Any other location in Maharashtra is not suitable for World Class University. [184] [185]

Area	Population in Crore	Area sq. km.
Municipal Corporation of Greater Mumbai	1.24	
Navi Mumbai Municipal Corporation	0.11	
Kalyan-Dombivali Municipal Corporation	0.15	
Vasai-Virar Municipal Corporation	0.12	
Mira-Bhayandar Municipal Corporation	0.8	
Bhiwandi-Nizampur Municipal Corporation	0.8	
Ulhasnagar Municipal Corporation	0.5	
Municipal Councils: Alibag, Ambernath, Karjat, Khopoli, Kulgaon Badlapur, Matheran, Panvel, Pen, Uran		
Mumbai Metropolitan(7 Municipal Corporations, 9 Municipal Councils covering 4 districts: Mumbai City (complete), Mumbai suburban, Thane (part), Raigad (part))	3.72	1,176
Thane District	1.10	9,558
PuneUA / Metropolitan (Pune Municipal Corporation, Pimpri-Chinchwad Municipal Corporation)	0.50	244
Nashik District	0.61	15530
Total Mumbai-Thane-Pune-Nashik	5.93	26508
Maharashtra	11.23	307,713
Thus 52.80 % population is residing at 8.61% area of Maharashtra state		

Table 6.3: Population and Area of Mumbai-Thane-Pune-Nashik belt [184]

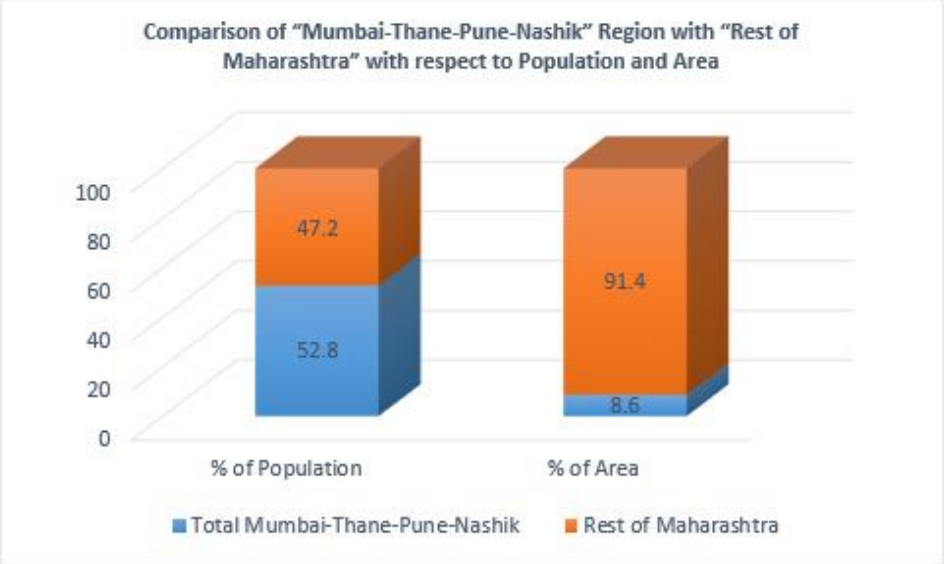


Fig. 6.8: Comparison of "Mumbai-Thane-Pune-Nashik" Region with "Rest of Maharashtra" with respect to Population and Area

The 2011 KPMG report stated that "Location is as important as choosing the right partner and program. Since education is a concurrent subject which implies that both states and the central government have the power to formulate regulations regarding education. Given below are two maps that show:

- Which states have legislations, states which passed legislation recent, density of private universities and
- Traditional education clusters in India. [7]

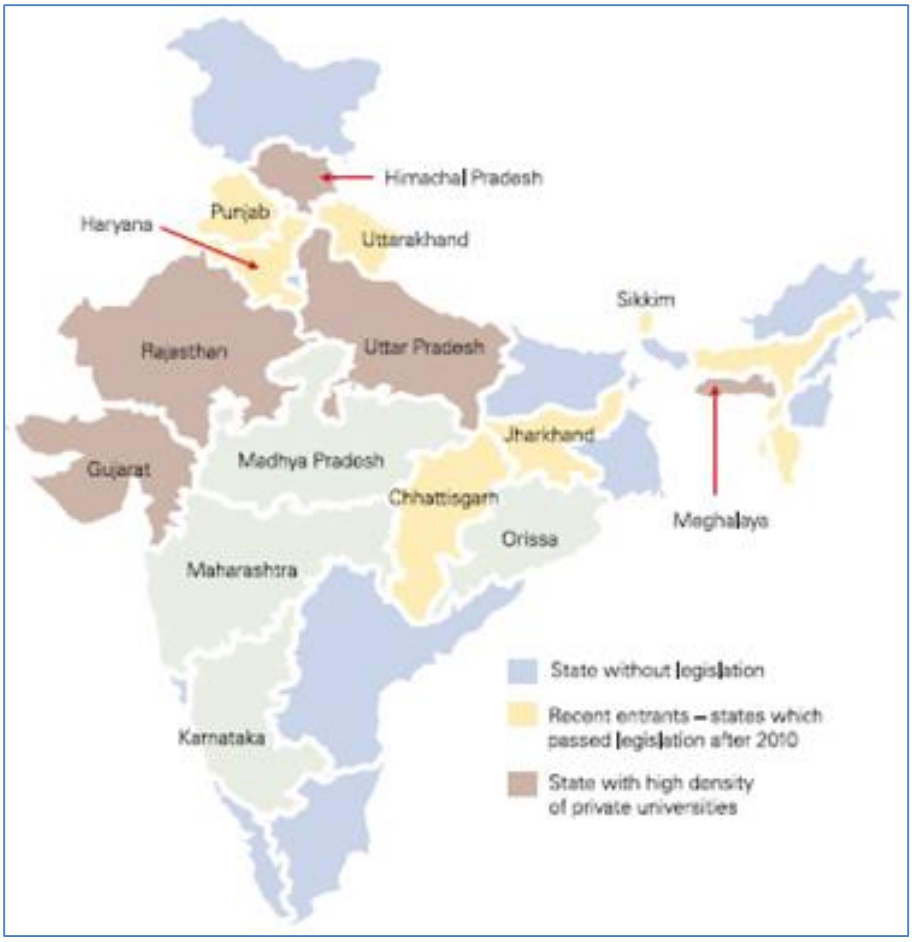


Fig. 6.9: States with private universities legislations and density of private universities [7]

Fig. 6.10: Traditional education clusters in India [7]

The figure 6.10 shows the traditional education clusters of India. It includes Chandigarh, National Capital Region (NCR) of Delhi, Kota, Ahmedabad, Nagpur, Mumbai, Pune, and Kolkata. In addition to this there are few more clusters like Coimbatore, Hyderabad, Banglore, Bhubaneswar, Chennai and Jaipur.

Solution Space 6.15

The WCU should be established near metro or mega cities, where hundreds of facilities and environment is readily available. It's difficult to establish WCU at remote places. This is also experience of globally renowned WCUs.

6.16. Need of Performance Based Regulatory Mechanism

The focus of regulation should shift towards quality of outcomes. The most important reform is arguably to institute **performance-based regulation**. Lessons can be drawn from several countries, such as **Malaysia**, which uses '**Programme Outcomes'**, i.e., statements that describe what students are expected to know and be able to perform or attain by the time of graduation. Or **Brazil**, where a **two-tier mechanism is in place to conduct internal evaluation** — by a council of students and faculty that analyses the performance of the institution — and external evaluation in which the Federal Council of Education names expert evaluators to analyze the curriculum and faculty performance. [12]

Already government of India has started the RUSA, which is based on the same theme. But it is basically for state public universities.

Solution Space 6.16

To establish WCU, one has to change education culture and it can be changed through performance based regulatory mechanism.

6.17. Strange Vice Chancellor Selection Norms

In many states, the VC selection norms are very strange. For example in Maharashtra the 4th essential condition of the VC selection norm is:

"At least 5 years of administrative experience in the field of Higher Education not below the rank of Professor and **Head of the Department in a university / Principal (in Professor's Grade) of a Senior College** / Head of a national/international institute of Advanced Learning."

This condition is valid if all the universities in Maharashtra have university departments for all the disciplines and branches. If university is not having particular department (particular discipline

and specific branch like civil, mechanical etc.) then this condition should not be applicable to the professors of that discipline.

From last 7 years, this condition deprives more than 2000 professor and head of engineering colleges from the right to apply for VC position in Maharashtra because

- The 80% universities in Maharashtra don't have engineering courses directly under university. Thus engineering professor can't acquire the status of "Professor and Head of the Department of University"
- Only affiliated colleges have engineering courses. But every engineering college professor can't become Principal in his/her life time.
- The selection criteria for 'Professor at University' and 'Professor at Affiliated College' are same. But because of this condition the Professor and Head of University English Department or University Hindi Department are eligible for post of VC, whereas Professor and Heads of Engineering College are not eligible.

The government is more liberal for releasing grants for major project to government institutes than private institutes. For example in Maharashtra the 5th essential condition of the VC selection norm is: "Execution of at least one major project". Thus most of the engineering college principals couldn't get grant for major projects and can't become eligible to apply for the position of Vice Chancellor.

I found that in 95% cases, the government is selecting faculty of government institutes for the position of Vice Chancellors and neglecting talented faculty of private colleges. The government must avoid this partiality otherwise faculty of private colleges will fill that they are still under the 'British Rules'.

These discrepancies of regulatory mechanisms are major hurdles for attracting talented persons towards higher education institutes. The talented persons prefer jobs in industries than government over regulated education sector.

Solution Space 6.17

The states can decide their own norms. There are only two ways to change it; legislature and judiciary. The faculty rarely prefer legal procedures and politicians are reluctant to go for complex judicial reforms. To solve such problem there is a need of Education Commission like Election Commission.

6.18. WCU: Always Limited in Size and Not Scalable

Recently, as per directives from court, the IIT / IIM / NIT have increased the seats. Remember that the WCU has limited size and not scalable. The average enrolment at leading universities is just 14 K students and the enrolment growth is just 1% per annum.

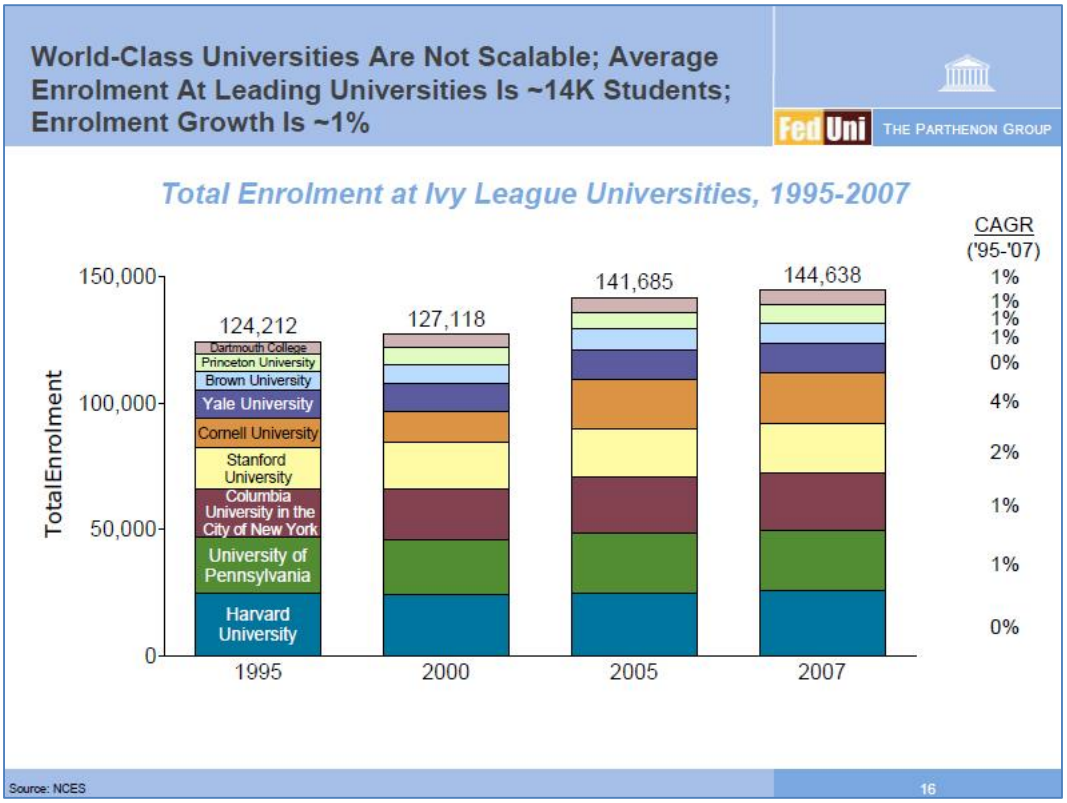


Fig. 6.11: WCU: Average Enrollment is 14 K and Enrollment Growth Rate is just 1% [93]

Solution Space 6.18

Without freedom and full autonomy, no one can develop WCU. The freedom of WCU should be protected through legislative processes.

6.19. Discrepancies in Faculty Norms

Like IT industry, the government should give freedom or autonomy to the universities for deciding the faculty norms. The PWC report 2012 stated that "Another example of differing regulations is the ambiguity over minimum qualifications for hiring faculty because AICTE and UGC lay down different requirements. While the UGC stipulation is that a candidate holding a master's degree with 55% marks in the appropriate branch of engineering and technology is eligible for appointment as assistant professor, the AICTE norm is that a candidate must possess a BE/B.Tech and ME/M.Tech in relevant subjects with first class or equivalent either in BE/B.Tech or ME/M.Tech." [15]

I observed very strange selection criterion for engineering professors. In 1990, the government allowed M.Sc. (Physics / Mathematics / Statistics) degree holders for admission to M.Tech. (Computer Engineering). Many faculty members had availed this facility and completed M.Tech.

(Computer Engineering) under this interdisciplinary scheme. After that they have completed Ph.D. in Computer Engineering. Now AICTE is not ready to specify selection norms for these faculty in their handbooks. AICTE handbook stated that B.E., M.Tech. Ph.D. is required. AICTE is not considering M.Sc.(Physics / Mathematics / Statistics), M.Tech. (Computers), Phd (Computer Engineering) faculty members for the post of teaching faculty in engineering descipline and universities are denying approvals to these faculty.

I observed another odd faculty selection norm. In many premier institutes, the M.Tech. (Computer Engineering) and PhD (Computer Engineering) are under Electrical Departments. Many universities interpret this as post-graduation of electrical engineering department and refusing approval to faculty members for computer engineering department.

If you try to point out this discrepancy to regulatory bodies then they never take it seriously and never try to give you justice. They just push the responsibility to another regulatory body. On one side there is a 40% shortage of computer engineering faculty and on another side AICTE and universities are denying opportunities to well qualified candidates. It's really a very strange situation.

Solution Space 6.19

In the large system the mistakes are unavoidable. But not rectifying the mistakes for years together is not a good sign. The regulatory bodies should be responsive, responsible and accountable. Then only they will be in a position to motivate and develop existing system in a right direction. There must be proper coordination between Feedback section, complaint section, "Right to Information (RTI)" section and decision makers. There is an urgent need of rectification of faulty processes.

6.20. University Governance Needs Professional Management, Freedom and Training

Like other World Class Universities, the premier Indian Universities should have freedom to decide the governance structure. We are following out dated mechanism for governing the Universities.

The Education Commission, 1964-66 stated that the **students should be encouraged to take part in institutional governance** and to make them realize their responsibilities in the day to day functioning of the institution. Representatives of student community should be associated with Academic Councils and all other statutory bodies of the university. The issue is not without its elements of concern and may need to be seriously deliberated by the universities, examining its practical implications. But a support to such involvement is found in some foreign universities where **alumni are associated with the governing bodies of the university** in the process of decision making. [72]

RUSA Drafted stated that "Selection of Vice Chancellors should be a process in which there should be **least political interference**, if not nil. But the trend in some of the states is quite disturbing, wherein the selection of VCs is made through considerations **other than** purely of merit and leadership qualities." [72]

The higher education sector is greatly in need of professionals to manage the administrative affairs of universities and institutions. Like the health sector, with professional cadre of hospital management and administration, there is a need to develop professionals for the higher education sector also. Given the heavy involvement of the government in the sector, the option of outsourcing certain functions has not been explored traditionally. However, it is time to look at the option of bringing in specialized agencies to undertake functions which are not the core functions of higher educational institutions. Academic leadership is another area of deficiency; there is **not enough number of academicians who have been groomed to take positions of responsibility in institutions**. Academic Staff Colleges in states may have to be rejuvenated and strengthened to bridge this gap. Autonomy must also simultaneously inculcate a greater sense of responsibility and accountability. This can only be ensured if the institutional and systemic reforms are carried out within the university system. Therefore, **while minimizing external influences on the university governance, the internal process and mechanisms need to be made more democratic and transparent.** The students, faculty and even non-teaching staff, parents etc. must become partners and participants in the decision-making processes. The need is to adopt a systematic and well-calibrated program, which encourages competition amongst institutions for excellence and prestige. [72]

Prof. (Dr.) Faizan Mustafa, Vice-Chancellor of NALSAR University of Law, Hyderabad stated that "The governance of Universities is an important aspect that should not be overlooked. All the Acts of Universities give huge powers to the Vice Chancellor. In smaller Universities, the Vice Chancellor can easily introduce reforms. But that's not the case with a big Central University, where the **Academic Council itself would have over 100 Deans and Chairmen**. It becomes a mammoth task to develop a consensus in this situation. But some steps can be taken to overcome these problems. Traditional universities have many government nominees. **These nominees are not necessarily experts.** For such specialized responsibilities, the President of India and the Governor should look at the academic credentials rather than the political profile of the nominee. Secondly, the **size of governing and executive councils should be smaller**. Finally, the Vice Chancellor has a huge role to play. He can bring about several reforms within the existing system. [210]

One higher education leader, reluctant to come forward for disclosing the identity, said that "For **universities in 21st century the leader should be technocrat having enough business exposure**. Then only we can think about WCU. The faculty selection process is totally outdated. The teaching profession is the last choice of student community. Give freehand and allow to run like private industries. Learn from the US university model."

University World News reported that at an education conference held in Delhi last month, Jerry M. Hultin, president of the Polytechnic Institute of New York University, warned, "**A global university has to be layered**. India does not only need professors and Ph.D. scholars. **It needs managers, technicians and entrepreneurs**…. **China had invited global players into the**

country to build a knowledge economy…. They want a bigger role in the world and they also want more brains. Secondly, they want **international players to set standards** that will be seen as examples by their own educators." [162] [153]

Prof. Yash Pal, while answering the question, "Do you think that too much of political intervention has also played a bigger role in degrading the quality of education in Indian universities?" said that "Bureaucratic and political. It is quiet common for political people to influence who should be appointed vice chancellor etc. That is why, **I wanted it to be that kind of a commission, that unfortunately seems may not come, I don't know**. It's a pity that it doesn't come that means that people will always think that the central government, state governments are equally obnoxious in terms of interference, interference is from everywhere and that has to reduce." [48]

Prof. Yash Pal Report "Renovation and Rejuvenation of Higher Education" stated that "**Interference, from various political or commercial vested interests, in the functioning and priorities of the universities comes in many different forms and intensities**. It touches all aspects of higher education and involves improper admission of students, pressures in selection of teachers, manipulation in appointment of senior functionaries like vice-chancellors, registrars and deans, purchase of equipment and allotment of construction contracts and so on." [143]

The Yash Pal Committee Report recognizes the diversity of **skills needed for the management of various university operations**. It therefore calls for **care in the education, training, and selection of administrators. Managing academic programs, faculty recruitment and promotion, admissions, curriculum and budgeting as well as the; financial, facilities, personnel, government, community, governance, and fundraising operations of universities requires a wide range of skills.** The NCHER would do well to help universities build such management capabilities and to encourage appropriate succession planning. Improving the management of universities will help increase the chance of success in reaching the goal of university autonomy (see the preceding section on such a program for higher education administrators at Yale University). [19]

Past collaborations with foreign universities that helped build some prestigious Indian universities have been primarily technical, involving deputations of teachers and students traveling in one or both directions. However, the organization of higher education calls for a much broader range of transfers of knowledge of university organization and management. Over the past decade, for example, **Yale University has helped train the senior educational administrators (e.g., vice-chancellors and ministers) from China in all aspects of running a university, including faculty recruitment and development, curriculum, admissions, fund raising, facilities and library management, research, intellectual property, financial management, and community relations.** The impact of this knowledge transfer is already apparent in China. Perhaps India, too, could arrange to benefit from such transfers from well-regarded universities abroad. [19]

The detailed discussion is available in Chapter 18 of the book "Strategy to Develop World Class University".

Solution Space 6.20

- Generally the academicians are not good administrators. They need professional training before occupying administrative post.
- The higher education sector is greatly in need of professionals to manage the administrative affairs of universities and institutions.
- For universities in 21st century the leader should be academician cum technocrat having enough business exposure and experience to grow.
- The alumni participation in university governance helps a lot in university building process.
- Indian higher education system doesn't require administrators like revenue services. It needs Professional Governance.

6.21. Optional Accreditation: 75% Not Interested

Since accreditation is not mandatory, monitoring private institutions is a major problem. A large number of private providers have been delivering sub-standard quality of education thereby reducing education to **merely award of a certificate**. [12]

As per the data provided by the NAAC, as of June 2010, "**not even 25%** of the total higher education institutions in the country were accredited; and among those accredited, only 30% of the universities and 45% of the colleges were found to be of quality to be ranked at 'A' level. [16]

Independent quality assurance mechanism is a sine qua non for quality and excellence. Unfortunately, in India, the accreditation is still optional. While institutional accreditation through National Assessment and Accreditation Council (NAAC) and program accreditation through National Board of Accreditation (NBA) gained momentum during the XI Plan, the coverage of institutions is still small. Only about **one-third** (172 out of 612) eligible universities and **one-fifth** (4529 out of 22500) of eligible colleges have been accredited so far. Private universities and private colleges have shown **little enthusiasm** for accreditation. This means that there is effectively no standard national level monitoring in terms of quality for most of the educational institutions. [72]

The IDFC report 2012 stated that "In addition, every institution must get itself rated by an independent and **specialized accreditation agency and publicly announce its rating to prospective students**. This will bring in **transparency and accountability and generate healthy competition between various institutions**. Given the importance of accreditation in quality assurance and the vast number of institutions that need to be evaluated, it would help if the private sector could be engaged with sufficient checks and balances to operate as accreditation agencies. Considering the importance of accreditation and ranking in quality assurance and the increasing global connect of Indian educational institutions, it is important to align the Indian quality assurance mechanism with the recognized global mechanisms." [12]

Solution Space 6.21

Accreditation and Ranking should be mandatory for every institute in India. It gives the realistic picture about the status of the institute and creates healthy competition.

6.22. Funding Schemes: Difficult to Get Timely Information

The funding is the backbone of regulatory mechanism, S&T activities and overall R&D ecosystem. It is the major source of development for every system including university. It's one of the hidden driving force for effectively implementation of regulatory mechanism. In fact performance based funding is the best way of implementing regulatory mechanism and adopted by many countries in the world.

In India various government-funding agencies are:

SN	Government Funding Agency	SN	Government Funding Agency
1.	Aeronautics Research & Development Board	42.	Ministry of Rural Development
2.	Agricultural Produce CESS Fund, Indian Council of Agricultural Research ICAR	43.	Defense Research and Development Organization (DRDO)
3.	AICTE	44.	Ministry of Environment and Forests (MOEF)
4.	India Meteorological Department (IMD)	45.	Ministry of Food & Civil Supplies
5.	Atomic Energy Regulation Board	46.	Ministry of Food Processing Industries (MFPI)
6.	Building Material & Technology Promotion Council (BMTPC)	47.	Ministry of Human Resource Development (MHRD)
7.	Commission for Scientific and Technical Terminology, MHRD	48.	Ministry of Micro Small Medium Enterprises (MoMSME)
8.	Consumer Welfare Fund, Ministry of Civil Supplies	49.	Ministry of Non-Conventional Energy Sources (MNES)
9.	Council for Advancement of People's Action and Rural Technology (CAPART)	50.	Ministry of Power, Central Power Research Institute (CPRI)
10.	Council of Scientific and Industrial Research (CSIR)	51.	Ministry of Communications & Information Technology (MOCIT)
11.	Ministry of Earth Sciences	52.	Ministry of Small Scale Industries
12.	Department of Animal Husbandry, Ministry of Agriculture	53.	Ministry of Social Justice & Empowerment (MOSJE)
13.	National Council for Economic Research and Training (NCERT)	54.	Ministry of Statistics and Programme Implementation
14.	Department of Biotechnology (DBT)	55.	Ministry of Urban Affairs and Employment
15.	Department of Coal (DOC)	56.	Ministry of Water Resources (MOWR)
16.	Department of Education (DOEd)	57.	Ministry of Welfare (MOW)
17.	Department of Electronics (DOE)	58.	National Dairy Development Board
18.	Department of Food Processing Industries Ministry of New and Renewable Energy	59.	National Bank for Agriculture and Rural Development, NABARD,
19.	Department of Information Technology (DIT)	60.	Department of Atomic Energy (DAE)
20.	Department of Non Conventional Energy Sources (DNES)	61.	National Academy of Agricultural Sciences (NAAS)
21.	Science & Technology for Weaker Sections (STAWS)	62.	National Horticulture Board, Ministry of Agriculture

22.	Department of Science and Technology (DST)	63.	India Meteorological Department (IMD)
23.	Department of Space (DOS) ISRO	64.	National Innovation Foundation (NIF)
24.	Department of Scientific and Industrial Research (DSIR)	65.	National Oilseeds and Vegetable Oils Development Board, Ministry of Agriculture
25.	Directorate of Extension (Training), Department of Agriculture & Cooperation	66.	National Research Development Corporation (NRDC)
26.	Directorate of Maize Research, ICAR	67.	National Wasteland Development Board (NWDB)
27.	Directorate of Rice Research, ICAR, Hyderabad	68.	NIPCCD
28.	Forests Research Institute	69.	Rajiv Gandhi Foundation
29.	Haryana Commission for Women	70.	Indian Navy
30.	Housing and Urban Development Corporation (HUDCO)	71.	Research Scheme Applied to River Valley Projects (RSRVP), Central Board of Irrigation and Power
31.	National Information System for Sci.& Technology (NISSAT)	72.	Research Scheme on Flood Control (RSFC), Central Board of Irrigation and Power
32.	Scheme of thrust area programme in technical education (TAPTEC), AICTE	73.	Research Scheme on Power (RSOP), Central Board of Irrigation and Power
33.	Indian Council of Agricultural Research (ICAR)	74.	Indian Council for Child Welfare
34.	Indian Council of Medical Research (ICMR)	75.	Department of Ocean Development
35.	Indian Council of Philosophical Research (ICPR)	76.	Ministry of Agriculture
36.	Indian Council of Social Science Research (ICSSR)	77.	Science and Technology Application for Rural Development (STARD)
37.	Association Export Dev. Authority of India, Ministry of Commerce	78.	Small Industries Development Bank of India (SIDBI)
38.	Indian National Committee on Irrigation & Drainage (INCID)	79.	Technology Absorption and Adaptation Scheme (TAAS)
39.	Indian National Science Academy (INSA)	80.	University Grants Commission (UGC)
40.	All India Council for Technical Education (AICTE)	81.	Voluntary Organization for Health and Family Welfare
41.	Indian Space Research Organization (ISRO) - Department of Space	82.	Science and Engineering Research Council (SERC)

Table 6.4: Indian Government Funding

Each agency has number of funding schemes. For example the Department of Science and Technology (DST) has following funding schemes

SN	DST Schemes
1.	Consumer Protection through Science & Technology
2.	Deep Continental Studies (DCS)
3.	Funds for Infrastructure in Science and Technology (FIST) for PG depts.
4.	Himalayan Glaciology (HG)
5.	Indian Climate Research Programme (ICRP)
6.	Instrument Development Programme (IDP)
7.	Intensification of Research in High Priority Areas (IRHPA)
8.	International S&T Cooperation (ISTC)
9.	Joint Technology Projects under STAC/IS-STAC
10.	Monsoon and Tropical Climate (MONTCLIM)& Agro-meteorology
11.	Natural Resources Data Management System (NRDMS)
12.	Opportunities for Young Scientists
13.	Pharmaceuticals Research & Development Support Fund (PRDSF) Programme
14.	Programme Advisory Committee on Earth Sciences (PAC-ES): R&D Projects Scheme

15.	R&D Medium Range Weather Forecasting (NCMRWF) and Crop Weather Relationships
16.	Scheme for Young Scientific professionals
17.	Science & Engineering Research Council (SERC)
18.	Science & Society Programmes (SSP)
19.	Science & Technology Communication & Popularization Programme
20.	Science & Technology for Weaker Sections (STAWS)
21.	Science & Technology indicator and Manpower Studies
22.	Science and Society Related Programmes (STARD)
23.	Science and Technology Application for Rural Development (STARD)
24.	Seismology Programme (SP)
25.	Special Component Plan
26.	State Science & Technology Programme (SSTP)
27.	Technology Development Programme (Joint Technology, Technology System Programme)
28.	TIFAC- CORE- Technology Infusion Projects in industries
29.	Utilization of Scientific Expertise of Retired Scientists (USERS)
30.	WCP (Women Component Plan)

Table 6.5: DST Funding

SN	AICTE Schemes
1.	Research Promotion Scheme (RPS)
2.	National Coordinated Project (NCP)
3.	National Facilities in Engineering & Technology with Industrial
4.	Collaboration (NAFETIC)
5.	Modernization and Removal of Obsolescence (MODROBS)
6.	Entrepreneurship Development Cell (EDC)
7.	Industrial Institute Partnership Cell (IIPC)
8.	Travel Grant (TG)
9.	Seminar Grant (SG)
10.	Faculty Development Programme (FDP)
11.	Emeritus Fellowship (EF)
12.	Career Award for Young Teachers (CAYT)
13.	Visiting Professorship (VP)
14.	Distinguished Visiting Professorship (AICTE-INAE)
15.	National Doctoral Fellowship (NDF)
16.	Research Park (RP)
17.	Innovation Promotion Scheme (IPS)
18.	Post Graduate Scholarship (PG)
19.	Teacher Research Fellowship (AICTE – INAE – TRF)
20.	Travel Grand to Student (AICTE – INAE – TG)
21.	AICTE Summer & Winter School
22.	AICTE Finishing School Scheme

Table 6.6: AICTE Funding

There are hundreds of government-funding options. It is difficult to get timely information about various schemes. There is a need of single window system for effective implementation of these schemes. I have seen many senior faculty members who are not aware of various funding options even after 25 years of experience in the education sectors.

Solution Space 6.22

There should be some dedicated web based system for getting latest information about funding schemes from hundreds of government agencies. The funds must not remain unutilized. This system should provide newsletters, email alerts and SMS for latest schemes to the subscribers.

6.23. No Objective for Any Course

Dr. Raj Singh is Vice-Chancellor of G D Goenka University, and former Vice-Chancellor of Ansal University, Gurgaon stated that "Then there is the issue of goals. A few years ago, I suggested to a director of my institute to develop curriculum with the objectives outlined for each subject. This senior educationist with high-level experience in AICTE, UGC and IIT, shot me a blank look and said: "**How can we write objectives for each course? I have never seen this in 40 years of my career.**" How can institutions attain excellence if they do not even know why they are teaching a particular course? No knowledge of objectives means no awareness of expected learning outcomes. **Sans learning outcomes, how can a college design appropriate pedagogy and evaluation methods?**" [186]

Solution Space 6.23

In majority of the universities, the curriculum design is not proper. The internationalization aspect is totally missing. Few premier institutes are following the scientific procedures. Because of NAAC and NBA accreditation processes the faculty are maintaining teaching diary and teaching plan. But it is not up to the mark and without any special efforts. These documents should reflect the innovation and creativity. There is a need of training to staff members for pedagogy, curriculum design, teaching powered by technology etc.

6.24. Rigid Curriculum and Lack of Multidisciplinary Approach

The Indian education systems have developed but in separate compartments like engineering, medical, law or social sciences etc.

Upon their arrival in the U.S., many graduates of India's top universities are often surprised to find that the subject they majored in had been dropped from U.S. curricula years ago, through just this process of continual adaptation to the changing frontiers of knowledge. [19]

In fact, virtually all the top ranked educational institutions for engineering in India are **standalone** institutions. Almost every young student studies in a narrow, specialized institution. This contrasts greatly with the situation in the US. **Most of the top engineering colleges are part of universities that have similarly excellent colleges in other fields, particularly colleges of science**. It is not uncommon at my university to see Electrical Engineering PhD students take very advanced

mathematics courses, and Chemical Engineering PhD students taking advanced Chemistry and Physics courses. Increasingly, American universities are seeing the development of interdisciplinary PhD programs, where students and faculty are immersed in an environment that encourages contributions at the intersection of the various engineering and science disciplines. [187]

Professor Philip G. Altbach, the world renowned academician said that "The IITs, which are a tiny part of India's higher education establishment, traditionally do well. But these impressive institutions are **not universities** - they are technological institutions of very high quality among the most selective institutions in the world," he says. [188]

The higher education curriculum is extremely rigid, centrally defined and doesn't leave any room for individual choice or experimentation. This resulted in creating a **rigid and stultifying** academic atmosphere, with **artificial divisions of various disciplines**, and pre-determined combinations of courses on offer. As a result more and more students are ignoring humanities education and consequently lack broad perception, depth and communication skills. Excepting the IITs and similar elite institutions, none of the other universities in India offer the students any choice or freedom in selecting what courses they can take. [182]

In an article in India Educational Review, March 2012, the Vice- President Hamid Ansari quotes the Yashpal Committee report which states that 'we have followed **policies of fragmenting our educational enterprises into cubicles**' and that 'most instrumentalities of our education harm the potential of human mind for constructing and creating new knowledge'. [189]

Nikhil Sinha, Vice Chancellor, Shiv Nadar University said that "World rankings place a huge emphasis on research and research output. This is what we lack in Indian institutions. Though institutions like the IITs rank well in engineering disciplines, **we do not have multidisciplinary** universities undertaking world class research in full range of disciplines. That is why they do not feature among the top universities in the world" [190]

The wonderful article published by Times of India on 4th Aug 2013. I would like to highlight few points from this article: "For an India emerging from stagnation under the British; our per capita income grew by 0.1% per year between 1857 and 1947; the IITs created engineers who built power plants, dams, steel plants, roads, etc. and later became the supply chain for our IT industry and Corporate India (via the IIMs). But India's progress means that our challenge now is not only labor, capital or infrastructure. Further prosperity needs knowledge and intelligence to mate with imagination and innovation. **Not more cooks in the kitchen but different recipes. New recipes are often at the intersection of disciplines, subjects and thought worlds**; this means IITs must become multi-disciplinary universities with non-engineering schools…. Multi-disciplinary campuses are more vibrant, creative and effective at research and teaching…. No country can sustain greatness without great universities. No university can sustain greatness without research. **And no research is truly creative or impactful without being informed, influenced and shaped by multiple disciplines**." [191]

Professor Yash Pal, said that "We even went to the extent of saying that **our IITs and other such institutions should become universities** and that the research aspect has to be increased and

research should happen not only in a single discipline but many other disciplines because many people working in many disciplines together make new things, not working in a single discipline, very seldom." [48]

Prof. Yash Pal, while answering the question, "If IITs and IIMs diversify and expand their scope to work as full-fledged universities, will it not dilute the quality of these internationally recognized institutions?" said that "**It doesn't; if you put other disciplines in technical institutes and also institutes of management, both management and technology will gain**. We will develop new type of technology out of new type of science and technology working together. If you want something, not something that already exists... I think unless we start doing something which doesn't exists anywhere... we are not there yet and that focus, somehow, is not there." [48]

Pawan Agarwal, adviser for higher education to the Planning Commission, while analyzing the performance of India's higher education sector for the London-based "Times Higher Education", said "Rapid growth in the face of staff shortages and declining per-student spending has affected standards, which is eroding public confidence in the value of Indian higher education. To build a world-class academy, India must develop a **group of multi-disciplinary research universities** capable of world-class research in a wide range of disciplinary and inter-disciplinary areas." [192]

The quick solution is merging three to four premier institutes or universities of different disciplines in to one university like China. The following references justify my stand.

- The article published by Dr. V. V. Krishna, Professor, JNU and Visiting Senior Research Fellow at NUS, Singapore highlighted this issue in his article namely "No World Class Universities (WCU) in India?". The following figure shows the clear picture. [193]
- Merging universities to create centres of excellence has been a policy in Denmark, France and the Russian Federation. [194]
- Jamil Salmi is an author of two World Bank reports namely "The Challenge of Establishing World-Class Universities" and "The Road to Academic Excellence: The Making of World-Class Research Universities". Based upon international experience, he summarized three strategies, from the perspective of government, which can be followed to establish world-class universities:
  - First, governments could consider upgrading a small number of existing universities that have the potential of excelling (picking winners);
  - Second, governments could encourage a number of existing institutions to **merge and transform into a new university** that would achieve the type of synergies corresponding to a world-class institution (hybrid formula); and
  - Third, governments could create new world-class universities from scratch (clean-slate approach).

2007-2008: Comparing NUS, JNU, IIT Delhi, AIIMS				
Parameters	**NUS**	**JNU**	**IITDelhi**	**AIIMS**
Total student enrollment	30350	5454	4931	945
Faculty	2103	469	421	550
THE-QS Rankings	30**	***	181	NA
Publications	4114	299	958	1064
US Patents	49	2	8	12

General Sources:
Institutional Annual Reports and International Data Bases
Publications source: Science Citation Index expanded version Social Science Citation Index accessed on 12 November 2009
THE-QS overall rankings for Top 200 universities in the world
Only figures in social sciences subject rankings at 73 in 2009

Fig. 6.12: Comparison of NUS, JNU, IIT-D and AIIMS [193]

Chinese higher education system adopted the second option of merging of universities. The Recent Chinese higher education policy promoted so-called "**elite" universities and consolidated other universities**, reducing their numbers. Elite universities are the top ten universities in China, which receive the largest education funds from central and local governments. They have priority in selecting students through national entrance exams and have the best faculty and research resources in China. The policy focus is to elevate a small number of Chinese universities to world-class status while enlarging them. **The Zhejiang University is outcome of merger of five universities.** [195] [196]

The single discipline Universities and Universities dedicated to just postgraduate studies are not considered by Times Higher Education Ranking because of their narrow focus and areas of strength.

It should be noted that two more high-performing Russian institutions would comfortably make the world top 300 but are excluded from the overall rankings for being too narrowly focused. [183]

A fourth consequence is that the specialized research institutes have been given **narrowly defined disciplinary charters and staffs**. These smoke-stack structures have **isolated them from the exciting dynamic interfaces among disciplines**, which is **where most innovation occurs**. In India, each research institute is bound by its own charter, and its organization does not facilitate or encourage the kinds of casual interaction with ideas from outside the discipline that may occur in broader university settings. **An institute to conduct research on candles is no more likely to have discovered electricity than an institute set up to conduct research on horse carts could have invented automobiles.** Yet, India continues to spend its money and talent on organizations that are narrowly focused on yesterday's inventions. [19]

Like research, higher education also has suffered from **narrow specialization**. Frustrated with the lumbering pace, complex processes, and Kautilyan politics of universities, governments have found it expeditious to achieve their immediate goals by creating free-standing, single-purpose institutes as green-field projects. They furnish a building, staff, faculty in half-a-dozen specialties, and funding to run them, and they grant diplomas to a few hundred students in the desired discipline. **This institute model efficiently achieves short term—largely vocational training—goals, but defeats the larger goal of building a firm foundation for broad-based education to prepare the young for responsible citizenship, and to innovate.** That larger goal requires an understanding of a range of disciplines that is absent in such special purpose institutes. **A healthy tree requires hundreds of nutrients present in the soil; planting and watering a seed in a heap of urea quickly yields a tall plant that wilts and dies before bearing fruit**. [19]

The detailed discussion on this topic is available in Chapter 12 of the book "Strategy to Develop World Class University".

Solution Space 6.24

Further prosperity needs knowledge and intelligence to mate with imagination and innovation. Not more cooks in the kitchen but different recipes. New recipes are often at the intersection of disciplines, subjects and thought worlds; Multi-disciplinary campuses are more vibrant, creative and effective at research and teaching…. No country can sustain greatness without great universities. No university can sustain greatness without research. And no research is truly creative or impactful without being informed, influenced and shaped by multiple disciplines.

After Independence, as per need, the systems have been developed. The Innovative research and teaching need multidisciplinary culture. It cannot grow well in watertight compartments. It's difficult to established World Class Universities without multidisciplinary environment.

India is having good separate undergraduate institutes, specialized postgraduate institutes, good research institutes and excellent research laboratories but not having the multidisciplinary research universities. We will have to merge few specialized institutes to develop these universities.

6.25. Resistance for Multidisciplinary Approach and Funding Model

These separate fiefdoms tenaciously defend **what they see as their turf without regard to the necessary and changing interactions of the substantive disciplines and professions they seek to control**. Since they have been **assigned to separate ministries**, this bureaucratic **resistance to change is especially fierce**. **It comes not only from the councils and institutions they regulate, but also from the civil servants and ministers who control them**. The broad-based resistance to the Yash Pal Committee Report and its proposal to create an integrated National Commission on Higher Education and Research is a good example of this phenomenon. [19]

Jamil Salmi stated that "Managing the change from a well-known institution within the country to a global, world class institution is particularly challenging considering that there may be some **individuals who are well-entrenched in their comfort zones and thus may not agree with the idea of becoming world class**." [41]

The existing system always resists for changes. The recent example is "**Dr. Anil Kakodkar Recommendations for Financial Autonomy to IIT**". IIT directors are against Anil Kakodkar's recommendations and have told the HRD ministry that such a model will "strongly constrain the future growth of the IITs". Nuclear scientist Anil Kakodkar's model suggests that IITs' reliance on government funding must be curtailed. While this may assure greater financial autonomy to IIT's, the **directors do not seem to agree**. The IIT directors have pointed out that IITs are not just about teaching but are "strategic assets of the nation". They thus summed up their desire to remain funded by the government. This matter will be taken up at the IIT council meeting in September 16. The IIT directors have spoken on the Kakodakar Committee's recommendations on governance, autonomy and finances saying that "the proposed model is not consistent with the funding pattern of any reputed public research university"." [197]

Solution Space 6.25

The human beings always resist changes. Large-scale change – the shifting of strategies, implementation of new systems, significant revamping of structures and processes – is critical to the success of every company as well as country. There are various reasons for the opposition for the changes like Misunderstanding about the need for change, Fear of the unknown, Lack of competence, Connected to the old way, Low trust, Poor communication, Changes to routines etc. The new branch "Change Management" deals with such type of problems.

6.26. Need Choice Based Inter University Credit System

The present university structure doesn't permit "Choice Based Inter University Credit System". The government is planning for Meta University. In this system, the student can choose the subjects from other university and thus the parent university loos the revenue. Thus "retention of student" becomes major issue, which becomes driving force to enhance the quality of teaching-learning process.

Prof. (Dr.) Faizan Mustafa, Vice-Chancellor of NALSAR University of Law, Hyderabad stated that "I think India is still **lagging behind other countries** when it comes to **collaborative, multidisciplinary and integrated learning**. The concept of **meta-universities** and of a **choice based credit system** can prove to be beneficial for students. So far, we have had a water-tight compartmentalization in education, but this integration of knowledge should be promoted. As a first step, this can be put into effect in Delhi University, Benaras Hindu University, as they already have several disciplines on campus. The next step is to open up courses available at institutes like BITS Pilani, University of Hyderabad, English and Foreign Language University. This is already underway in NALSAR. Similarly, the courses at NALSAR will be open for them. This concept of a joint degree being issued by a number of institutions is the next step." [210]

Prof. Ved Prakash, Chairman UGC stated that "It is necessary to move to a transfer credit system to enable mobility of students across different universities. This is required to happen at two levels; (a) between Indian Universities within the country; and (b) between Indian Universities and foreign Universities." [211]

Solution Space 6.26

The government already announced the plan and started application at few places. The clustering of university and Meta University must be introduced at all the universities. We Indians are good debaters but very slow and poor implementers.

6.27. Misuse of Platform of Educational Institutes

Philip G. Altbach stated that "**Significant segments of Indian higher education are highly politicized.** Colleges and universities are, in much of the country, coveted local institutions. They have significant budgets and offer employment to many—from professors to janitors to tea-wallahs. Thus, local and state political authorities **want to control academic budgets, staffing decisions, and other aspects of academic life**. Politicians like to establish colleges in their districts as **sources of patronage**. Academic life, in many colleges and universities, is also politicized. Academic appointments, election to governance bodies, and other decisions are sometimes influenced by local or party politics." [46]

Sarvendra Vikram Singh, additional director, secondary education, UP, says that financial considerations apart, there are several valuable non-monetary pay-offs. "**Owning or managing a school or college also confers social respectability and power. This matters during elections. Not only do school buildings double as polling booths, school staff and teachers are deployed to canvass for promoter-politicians**. Invariably, when a politician comes to me for help to promote a school, he is uninterested in rules and procedures. 'Tell me how it can be done and if you can't do it, tell me who can' is the usual refrain. Their intentions are mala fide from the very start," says Vikram Singh. [174]

With increased student and parent awareness and an ever vigilant print and television media on the prowl, it's hard for politicians actively involved in education to get away with dumbed down academic standards and/or brazenly furthering their vested interests. Nevertheless there is an urgent need for greater accountability, local community involvement, and citizen activism to ensure politicians and education entrepreneurs deliver a combination of quality education and market-related skills. Moreover the **public needs to support liberalization and deregulation of the education sector**, to ease the stranglehold of politicians on education and stimulate competition. [174]

Solution Space 6.27

India is a developing country and young democracy. In this stage, existence of these problems is a natural phenomenon. In every country there are social, economic and business forces. To avoid these problems many measures are required like purify the processes, reduce the complexities and make the system more transparent and accountable. Most of the time liberalization is the best method to solve these problems.

6.28. Education Bills: Doubts About Achieving Objects

Government has introduced several new Bills in the Parliament. Some of the key Bills are:

- The Higher Education and Research (HER) Bill, 2011 to establish the National Commission for Higher Education and Research (NCHER);
- The National Commission for Human Resources for Health (NCHRH) Bill, 2011;
- The National Accreditation Regulatory Authority for Higher Educational Institutions Bill, 2010;
- The Educational Tribunals Bill, 2010;
- The Prohibition of Unfair Practices in Technical Educational Institutions, Medical Educational Institutions and Universities Bill, 2010;
- The Foreign Educational Institutions (Regulation of Entry and Operations) Bill, 2010

The IDFC report 2012 expresses **doubts over whether these Bills will achieve their objectives**. **In many cases, there are already similar extant provisions but it is the enforcement that is currently lacking**…. Perhaps most importantly, Goswami (Chapter 17) argues that the **Bills introduced by the government still leave the issue of autonomy largely unaddressed**. As Goswami points out, curbing bad behavior is important, but there should be serious reflection on how good performance needs further encouragement to become institutions of excellence. As he aptly says, the political economy of higher education seems to be guided by a premise that autonomy has to be the exception and that largely what is required is more regulation. Although the promise of autonomy lies in some portions of the HER Bill, there is no policy initiative yet on how to move beyond the 'over-regulation but under governance' impasse or how regulatory principles can be better evolved that could help create more autonomous universities of excellence which are also privately funded. [12]

Solution Space 6.28

I have just included the authentic comment. The issue is debatable.

6.29. Vocational Training Not Within Purview of University

European universities were originally regarded as vocational schools, providing training in law, theology and medicine. These three vocations developed into what has been called the first

generation of professions, and the education and training of these professionals is firmly **institutionalized in universities**. [319]

Relationships between higher education and VET are significant and complex, and of increasing interest in many countries. In Ireland and Norway, the difference between the university sector and the professional tertiary Education / VET sector is blurring. [319] [320]

The United States doesn't have a world-class higher education system because it has many world-class universities; instead **it has world-class universities because it has a world-class higher education system**.' (Birnbaum, 2007) [315]

The world class higher education system needs cohesion between the various education pathways and levels such that the individual can obtain qualifications and competences and contribute to fostering a learning culture that promotes creativity, independence and responsibility. The components of the pathway are

- Pre-school
- The primary and lower secondary school
- Secondary education
- Vocational education and training programmes
- Higher education

Manchester Metropolitan University website stated that "Our claim is to be the University for World Class professionals with an emphasis on **vocational education** and employability." [316]

In recent years there seems to have been a shift in Australian workplaces. The Daily Telegraph indicates that in 2012, the **average bachelor-degree graduate earns $50,000** a year, compared to **$53,200 for a Certificate III or IV graduate**. Workers with a Diploma or higher qualification earn even more on average – $60,800 a year. [317]

A spokeswoman for Universities UK, the umbrella body for UK universities, said: "**UK universities should offer more practical and vocational learning**, a survey for a think tank suggests…. A key strength of the UK's higher education system is the diversity of courses offered across many different types of institution. It is vital that this remains the case in order to ensure student choice. **In practice it is difficult to distinguish between vocational and academic subjects.** Some subjects thought of as 'traditional' or 'academic', such as **law, medicine, architecture and engineering, are in fact largely vocational.**" [318]

Dr. Pawan Agarwal, Adviser (Education), Planning Commission, Government of India stated that "India has a binary system where vocational training is done in institutes and centers that do not fall within the purview of the universities, and thus **vocational education is separated from general higher education**. It is necessary to merge general higher education with skill-based and professional education in order to bring in greater curricular diversity and to ensure the mobility of students, scholars, and academics between these sectors." [46]

Ms. Swati Mujumdar, Director, Symbiosis University stated that "Vocational Education and Training (VET) is an important element of the nation's education initiative…..the need for

introducing Vocational education at **higher and tertiary levels and for establishing a Vocational University**….In developed countries, the Vocational University offers all kinds of degree and diploma programs in vocational higher education sector (Bachelor, Masters, and Doctoral). For example, In Germany, some of the examples of vocational degrees offered by Vocational Universities are as under:

- Bachelor in Automotive engineering, Clothing design by Berlin School of Applied Sciences (HTW),
- Bachelor of Jewellery and Objects of Daily Life by Pforzheim University of Applied Sciences.
- Bachelor of Motor Vehicle Industry, Bachelor of Printing and Media by Munich University of Applied Sciences
- Bachelor of Arts in Facilities Air Conditioning by Biberach University of Applied Sciences. [314]

Fig. 6.13: Vocational Training: extremely low in India [62]

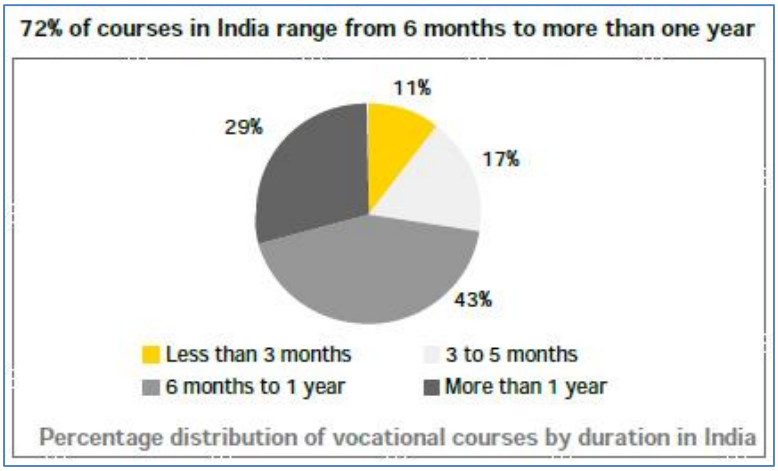


Fig. 6.14: Vocational Training duration in India [62]

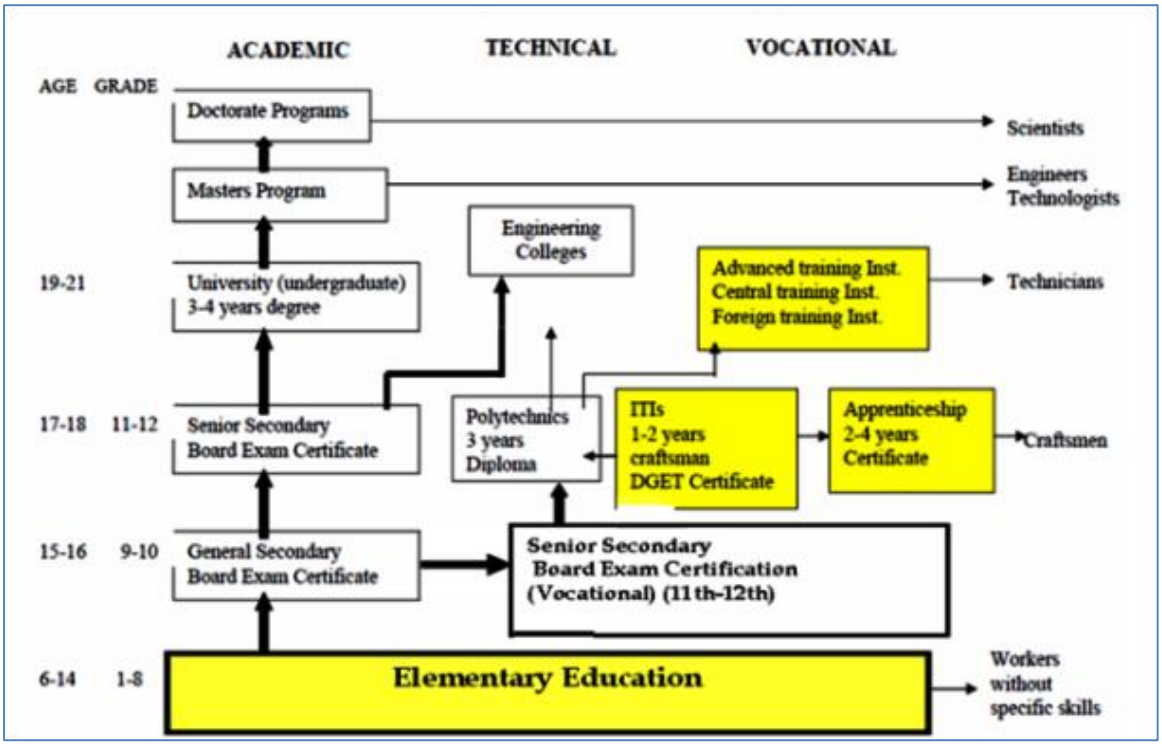


Fig. 6.15: Education System in India along with Vocational Education [314]

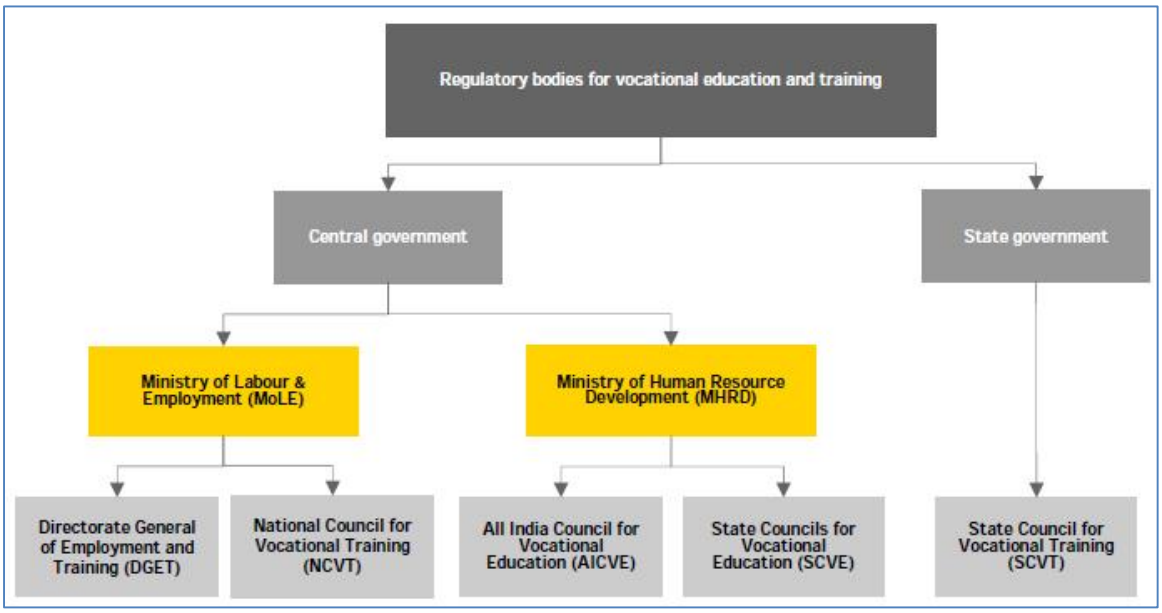


Fig. 6.16: Vocational Education regulatory bodies in India [62]

Fig. 6.17: Vocational Education Regulatory bodies and Challenges in India [62]

Figure 1. **Cross-sectoral qualification links**

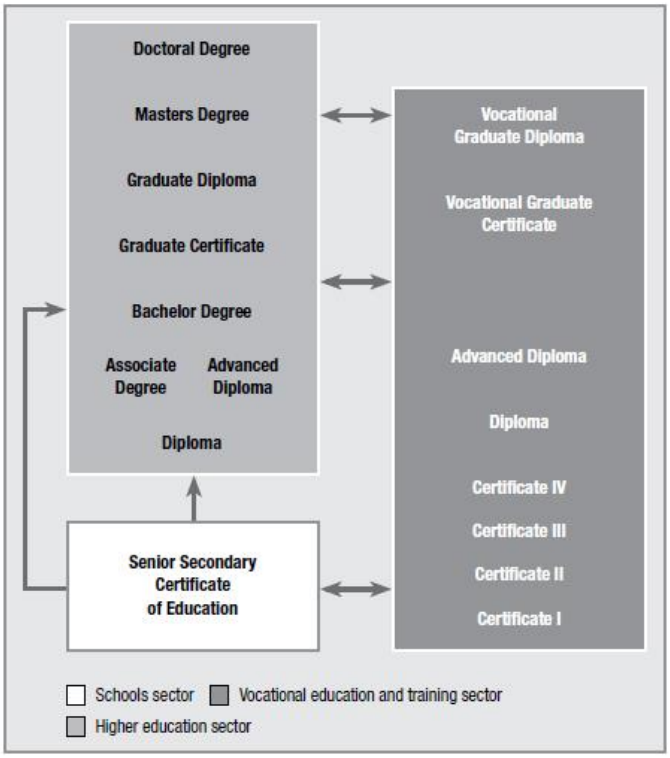


Fig. 6.18: Need of Cross Sectorial qualification links [320]

Solution Space 6.29

- To provide low cost education for developing the specialized labor forces was the basic reason behind keeping the vocational education separate from higher education sector.
- There is a need to match the "Vocational education's Perspective" as per the needs of 21st century. The Vocational education should be introduced in multidisciplinary environment and should not be separated out from higher education. In future the role of VET in WCU can't be neglected.
- Recently the UGC is planning to introduce vocational courses at graduation level. Recently the AICTE has permitted the ITI certificate holders to take admission to the 2nd year Engineering Diploma courses. Similarly the Engineering Diploma holders can take admission to the 2nd year of engineering degree courses.

6.30. Along with Funding there is a Need of Autonomy and Effective Governance with Less Bureaucracy

Answering to the question "So why has China not progressed further, given the huge resources at the disposal of its institutions and a state-backed drive to build world-class universities?" Philip Altbach, director of the Center for International Higher Education at Boston College said that "**It is not just about funding, It is about autonomy for academics; it is about effective governance that is much less bureaucratic** and top-down than is the pattern in China; it is about full meritocracy; it is about a spirit of cooperation; it is about ending the common practice of academic inbreeding (i.e. hiring one's own graduates). The mix of these and other elements constitute the academic culture in China." He warns: "China has a way to go in terms of developing a vibrant and effective academic culture in its top research universities." [183]

Solution Space 6.30

This is genuine problem and need urgent attention.

6.31. Indian Planning & Governance: Need Balanced Focus on Tangible and Non-Tangible Resources

Indian planning and governance is **dominated by the concept of physical resources**—property and goods—as the wealth of society. Human resources—the creative ability of people to think and do—is given less weight. Plans for the expansion of higher education through new colleges, institutes, and universities are specified in terms of acres of land, square meters of buildings, employment generated, number of degree programs, and the number of students to be admitted and granted degrees. **The critical feature of education—the talent necessary to think, innovate,**

inspire, and teach—is more difficult to judge, is not emphasized, and remains in short supply. [19]

India has raised its **educational expenditures faster than other developing countries**, so that such spending, as a percentage of annual GDP, is now at a level comparable to the average percentage achieved elsewhere in the world. Nonetheless, India has achieved **slower growth in enrollments**, and lags behind all regions of the world **in teachers per capita and per student**. Agencies that control various parts of India's higher education system pay **scant attention to the quality of intellectual and human resources for education**. Instead, the **focus remains on tangible resources—especially inputs—which can be measured**. [19]

Solution Space 6.31

The tangible things can be measured and thus naturally the regulatory mechanism goes for it. The critical feature of education—the talent necessary to think, innovate, inspire, and teach—is more difficult to judge, is not emphasized, and remains in short supply. If we check input, processes and output parameters then balanced growth of tangible and non-tangible academic activities can be achieved.

6.32. Involvement of Teachers in Politics

Following Article 171(3c) of the Constitution of India, teachers of government aided schools are the only class of employees paid from the exchequer who are permitted to serve as elected members of the Parliament, state legislatures, municipal councils, and councils of ministers. **One-twelfth of the seats in the legislative councils are reserved for secondary or higher level teachers and, in the state of Uttar Pradesh, they have constituted more than a fifth of the Council and more than a tenth of the Assembly**. In addition, scores of them have served as chief ministers, education ministers, and in other ministerial posts. Principals and managers have little control over such teachers, with destructive consequences for both morale and instruction. Many of those who are not yet in the legislature spend their energies campaigning to get elected, and hold influential offices in most political parties. [19]

Solution Space 6.32

This is Constitutional problem, unable to comment.

6.33. Teachers Union

Teachers' unions… in India have been opposed to virtually all educational reforms, including local controls on schools and performance evaluation of teachers, single-mindedly using their enormous political power to push for higher compensation and the freedom to not teach. While

some members of the Constituent Assembly expressed grave doubts about the wisdom of affording this unique status to them, the metaphor of teachers as the "builders of the nation" carried the day. A constitutional amendment may be necessary to overcome the unintended consequences of that noble sentiment to free Indian education from the accumulated political power of the teachers. Such an amendment, however, may be virtually impossible to pass. [19]

Solution Space 6.33

It's common problem all over the world. We need to apply Change Management Techniques. If government decides then they can do it easily like the "Nationalization of Banks".

6.34. Not-For-Profit Clause is Only on Paper: Innovative Escape Routes

6.34.1. Restrictions

Once you invest in Education Trust then it is difficult to withdraw from it. The only way is transfer the society to another party. Directly one cannot dispose the land and building. This clause discourages the investment in higher education.

Not-for-profit and anti-commercialization concepts dominate higher education fee structures. To prevent commercialization and profit-making, institutions are **prohibited from claiming returns on investments**. While earning returns on investment would not be permissible, development fees may provide an element of partial capital cost recovery to the management, serving as a resource for upkeep and replacement. [198]

6.34.2. Relief within Judicial Framework

The Supreme Court had ruled that educational institutions are permitted a '**reasonable surplus to meet the cost of expansion and augmentation of facilities**' but they are prohibited from charging a capitation fee or profiteering. [12]

6.34.3. Escape Rout: Innovative Structures Unlock Profitability

The traditional charitable and managerial participation of civil society in institutions of higher education appears to be in the **process of being overtaken by commercial interests**, who see higher education as an industry with prospects of high private financial returns on their invested capital. Although most institutions are incorporated as not-for-profit organizations under the Societies Act, **the failure of government to enforce their not-for-profit charters makes them private companies for all practical purposes**. [19]

Any investment in an institution, such as an education trust, will limit the ability to exit from that investment as distributions of dividends cannot be made. In such cases**, the PE firm sets up another vehicle external to the trust that provides services to the trust**. [169]

In order to be awarded university status by the UGC, institutions must comply with the objectives set forth in the Model Constitution of the Memorandum of Association/Rules, and ensure that no portion of the income accrued is transferred as profit to previous or existing members of the institution. **Payments to individuals or service providers in return for any service rendered to the institute are, however, not regulated**. [198]

The regulatory restraints on running profitable businesses in the K-12 and higher education sectors have driven Indian lawyers to devise **innovative structures that enable private investors to earn returns on their investments.** These typically involve the establishment of separate companies to **provide a range of services** (operations, technology, catering, security, transport, etc.) to the educational institution. The service companies enter into long term contracts with the trust operating the institution. Payments made by the trust to the service companies must be comparative and proportionate to the services rendered by such companies. Furthermore, in order to qualify for tax exemptions, the expenses paid by the trust to the service companies **must not exceed** what may reasonably be paid for such services under arm's length relationships. [198]

For each owned school, Educomp Solutions forms a trust that runs the school's operations

Educomp has two formed two subsidiaries -

Educomp Infrastructure (69.4% stake with Educomp Solutions) - owns the real estate and leases it out to the schools

Edu Infra gets: i) Returns of 14.5% on capital employed in setting up schools ii) 4.5% of annual tuition fee and iii) one-time fee of Rs5m per school

Educomp School Management (68% stake with Educomp Solutions) provides IP/ content and management services (content, delivery, canteen, transportation, text books etc) to the schools

Source: Company, IDFC-SSKI Research

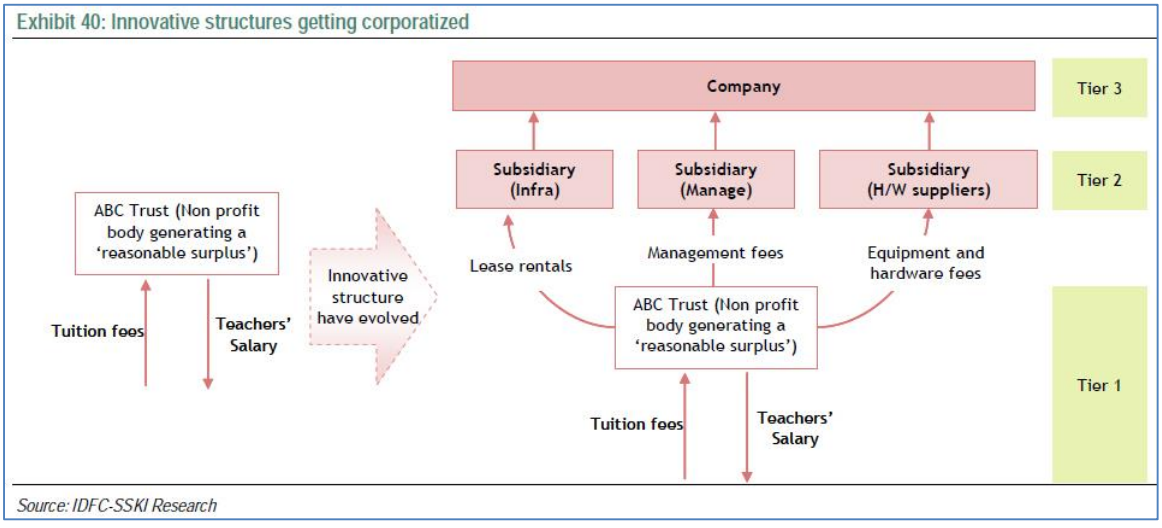


Fig. 6.19: Innovative Way to bypass "Not-For-Profit" clause [13]

Regulations governing a corporate entity providing management services and land/ capital goods on lease to a K12 institution running as a trust: A company set up to offer services and land/ capital on lease can be run as a for-profit body and does not fall under the purview of the school education boards. The trust will have teachers on the rolls and collect fees from students while the remaining services are outsourced. This structure has been in existence for years and has not been challenged. However, it is recommended for the trust and the managing company not to be run by the same management and common directors, and that the transactions are done at an arm's length. (The transactions have to be done at a fair market value, as if the two parties were unrelated.) [13]

In order to own and operate schools, companies like Educomp Solutions have created a structure wherein a trust (non-profit body) is created to run the school at one level. At another level, the company creates an entity that supplies the trust with land, services and infrastructure for a rental/ fee. In this way, the 'surplus' profit flows to the latter entity in the form of fees for providing these services and is at its disposal to be then distributed as dividend or used to fund another venture. The model runs the risk of being struck down in view of education being a 'socially sensitive' sector, more so at K12 level. However, the structure has been in existence for a long time at the standalone school level and we believe the model could become the norm till regulations change for the better. [13]

Since these need to be registered as not for profit entities, they cannot distribute profits. **However, it is possible to structure provision of services to them through private companies.** [14]

Solution Space 6.34

It's unavoidable problem. The legal loopholes can be blocked.

6.35. Academic Performance Indicator for Promotions: Not Yet Fully Implemented

Philip G. Altbach Pawan Agarwal stated that "While it is true that Indian academics, by international comparisons, are **relatively well paid, they are not necessarily effective**. Academics, and especially college teachers, are constrained by rigid bureaucracy. Further, their work is not carefully evaluated — **salary increases and promotions are awarded rather on the basis of seniority**. Unfortunately, when salaries were increased in 2006, this boon was not accompanied by any reforms in the teaching profession or requirements for evaluation. A System of **Academic Performance Indicators** for promotion and appointment of professors and lecturers is **yet to take roots**. It appears that Indian academics want to do a good job and most are committed to their profession. However, structural impediments and an ossified culture get in the way." [199]

Solution Space 6.35

The implementation is always very slow in India. We need professional managers and governance to implement our schemes.

6.36. WTO and GATT: Education as a Service Industry

In most of the countries the education sector is treated as service industry and comes under World Trade Organization. As per GATT agreement one cannot stop foreigners to start education business in other country. The decisions are pending for more than a decade.

If the education sector gets the status of Service Industry then like "IT industry", the open market can decide the fate of this sector. In 2007, we could achieve 9% GDP growth just because of "Economic Liberalization Reforms of 1991". Similarly "Education Reforms" can show the results within ten to fifteen years.

Solution Space 6.36

India needs "Education Liberalization Reforms" like "Economic Liberalization Reforms of 1991".

6.37. Not Same Rule for Everybody: Example of IIT and Medical Colleges

IIT graduates occupy key positions in industries in India and abroad. In 1998, the renowned Indian Institute of Technology sent **30 percent** of all of its graduates to the United States, including **80 percent** of its computer science graduates. About 20,000 IIT graduates currently live in the United States, almost 20 percent of the total IIT grad population since the system's inception. A topic of much debate in India is should the government continue subsidizing the education of IIT students since so many of them end up working in foreign countries? There are many who are asking that an "exit tax" be imposed on students who pass out from prestigious institutions like the IIT only to take up jobs abroad. There is also a proposal to ask them **to serve time in Indian rural areas – just like medical students are required to do**. [44]

At the time of admission, the medical colleges are forcefully executing the bond of Rs. 5 to 10 lakh against compulsory 2 years rural services after MBBS degree. The rules for IIT and Medical college students are different. The policy for all the students should be same.

Solution Space 6.37

There should be some policy to reduce the brain drain. Our human capital is going abroad and becoming the strong pillar of their economy. We are investing precious national resources for developing these brains. We must utilize these brains for developing our economy.

6.38. Retirement Age

In recognition of **India's extreme shortage of scholars**, it has been proposed that **all age limitations on teachers be removed**. It is true that, **in the U.S. universities, tenured faculty do**

not have a fixed retirement age, and can continue their employment for as long as they can perform their duties. However, their duties include not only instruction but also significant scholarship and other service functions. Beyond a certain age, most faculty members find these duties too onerous. This provides an incentive to choose retirement. Should they remove the retirement age altogether, without the assurance that their senior scholars perform their full range of duties, India's new centers of excellence will undertake considerable risk. Perhaps **a better option would be to set a default retirement age limit of 70**, subject to waiver in exceptional cases. **Faculty could also be offered the option of post-retirement teaching or administrative assignments, as currently the practice in India, Japan, and many other countries**. [19]

In 2011, a survey conducted TIAA-CREF Institute senior researcher Paul J. Yakabushki estimated that **73% of professors with senior tenure ranged between the ages of 60 and 66** and that the remaining **27% were above the age of 66**. Yakabushki estimated that 75% of these professors have acknowledged that they have made no preparations for retirement due to the ongoing financial crisis and reluctance to leave their profession. A 2013 survey conducted by Fidelity Investments would echo similar results when the question about retirement came up. [321]

A survey commissioned by Fidelity Investments and reported at Inside Higher Ed in June found that "some **74 percent of professors aged 49-67** plan to delay retirement past **age 65 or never retire at all.**" [322]

According to Thomas Palmer, a senior business analyst, Human resources Department, University of Michigan "The average age of retirement for University of Michigan staff is 62 and for **faculty members 66**, up just slightly from 10 years ago." Meanwhile, the number of faculty in the 20-29 age group has actually fallen in the last ten years from 160 to 133, while those **70 and above has doubled to 181**…. About 18 percent of University of Michigan faculty are in their 60s, 70s, or beyond, up almost 4 percent in the last decade. Currently some **40 University of Michigan employees are 80 years or older**, most of them faculty and most of them part-time. [323]

Solution Space 6.38

There is no retirement age for professors at most of the World Renowned Universities. In India, for educational institutes, the concept of Retirement should be redefined. There should not be any retirement age limit for at least internationally renowned professors.

6.39. Development of Set of Values and Commitment

Dr. Shyam Sunder, School of Management, Yale University stated that "The broad recognition of the difficulty of running universities **according to procedures used for civil services** has generated proposals to give "**complete" autonomy** to the new centers of excellence. **Institutions that depend on government or charity for financial sustenance cannot, by definition, be completely autonomous, and no organization can or should receive resources without being accountable for their use**. Instead, it is better to **think of autonomy in terms of a governance structure**, in which each participating individual finds it in his or her own best interest to do what

the other participants expect him or her to do in various conditions. The autonomy of renowned scholarly institutions in the U.S. and the U.K. is possible in this sense because **they have developed a set of values and commitments among students, faculty, staff, administration, government, donors, and society which mesh together in a reasonably harmonious fashion. By acting in their own (broadly defined) self-interest, these parties to a university also fulfill the expectations of others. Autonomy, in this sense, is not granted, but rather it is grown through decades of hard work by all participants for their shared good**. Absent such shared commitments, and the expectations that must accompany them, the up-front grant of autonomy runs a **high risk of abuse**, followed by quick retribution. Having allowed the expectations of its universities to be degraded in pursuit of narrow interests over the decades since independence, **India now faces the difficult chicken-and-egg problem of rebuilding the trust and mutual expectations among the constituents of higher education**." [19]

Solution Space 6.39

Need to develop mindset of stakeholders. Autonomy is not granted, but rather it is grown at universities of USA and UK.

6.40. Government is Making Serious Changes at a Time When Things Seem To Be Going Very Well

But India's impressive economic performance has made the problem seem less urgent than it actually is, and **allowed the government to defer difficult choices**. … **Ultimately, the Indian government has to pull off a very tough trick, making serious changes at a time when things seem to be going very well.** It needs, in other words, a clear sense of everything that can still go wrong. **The paradox of the Indian economy today is that the more certain its glowing future seems to be, the less likely that future becomes.** [19]

The dominant conception of higher education in India is **as brick-and-mortar facilities**, and **not an ecosystem of interacting intellects**. The current government in India is **beginning to pay attention to this long-neglected challenge**, but many obstacles remain. **Changing the mindset of society, of the ministries of government maneuvering for control over various pieces of the educational pie, and of the government-paid teachers exercising their political power as members of the legislature, will require a serious rethinking of the future of India's economy, if the current trends in higher education continue.** Conversations with the department heads, deans, vice-chancellors, and senior civil servants, even some politicians, about the current status of higher education and scholarly innovation in India are peppered with adjectives such as "crisis," "grim," "vicious cycle," "broken," and "need for outside intervention." **These concerns are often buried under the excitement generated by the recent high rate of economic growth**. But outside solutions will not work. [19]

Solution Space 6.40

The Indian economy is growing rapidly. But it is difficult to sustain this growth rate without building knowledge based society and world class education system. It's really a tough task in front of government to make serious changes at a time when things seem to be going very well.

6.41. Lack of Coordination between Govt. Agencies: Conflicting Decisions

The PWC report stated that "In December 2010, the AICTE notified regulations for grant of approval of technical institutions. The AICTE permitted **section 25 company** to act as a sponsoring body of a technical institute with the rider that **no foreign investment** (directly or indirectly) will be permitted in such a company. While Foreign Direct Investment **FDI policy permits 100% FDI in the education sector**, this conflict has resulted in barring foreign investment in the AICTE-regulated technical institutes in the country." [15]

The Government has permitted **100% investment in higher education under the FDI Policy**; however, the regulations prescribed by **AICTE for setting up technical institutions specifically prohibit direct or indirect investment.** Similar, issues are being faced for investment in universities and professional institutions, which permit only **Society/Trust and Section 25 Companies as entity options**. [16]

Solution Space 6.41

It's again the synchronization problem of different departments of GOI. The fragmented education sector and regulatory bodies are unable to resolve these problems. Only Education Commission by Act of Parliament can resolve these types of problem quickly.

Chapter 7: Difficulties Related to State Governments

Phil Baty Editor Times Higher Education Rankings, while answering the question "Which of these economies has an overall good infrastructure for education or which country has performed spectacularly well in comparison to other countries?" stated that "The outstanding performer by a long, long way is China. It prioritized developing world-class universities in the 1990s. It has had a very specific focused government drive to improve the quality of its research universities, with a strong investment in building its research infrastructure. It has had generous scholarship schemes to attract Chinese nationals back into China, and those who left China for their Master's courses and doctorates have been lured back with generous salaries and good packages. Though I think it's also a political drive. China has earmarked a smaller number of elite universities for special attention to make them globally competitive, and that has made a big difference. This is where it perhaps ***differs from India*** *as both countries have had huge expansion of student numbers, so they have to build capacity just to meet the massively growing demand. But while doing that,* ***China also gives special support to universities to keep them world class****." [47]*

7.1. Little Coordination between States and Central Government

Philip Altbach and Pawan Agarwal stated that "There is little coordination between the states and the central government." [91]

Pawan Agarwal stated that "More than **90 percent of students** study in academic institutions **controlled by India's 28 state governments**. These institutions require special attention. Growing divergence and tensions between the central and state systems of higher education require skillful coordination." [46]

Professor Fazal Rizvi, Professor in Education at the University of Melbourne stated that "The complexity of Indian higher education has **made it difficult for both central and state governments to implement programs of reform in any systematic and coordinated manner**. In 1985, for example, the Indian Ministry of Education proposed an extensive reform package that included such measures as a moratorium on the expansion of conventional colleges and universities; a fair and robust admissions regime based on scholarly merit; a new accreditation and accountability scheme; decentralization of educational planning; and a campaign to ensure 'academic de-politicization'. **As sensible as these reforms were, they were widely resisted by most state bureaucracies and universities, and produced little improvement,** leading one writer to conclude that ***'higher education in India stands as an immobile colossus – insensitive to the changing contexts of contemporary life, unresponsive to the challenges of today and tomorrow, and absorbed so completely in trying to preserve its structural form that it does not have the time to consider its own larger purpose'***. Subsequent reform attempts have met a similar fate, while the system has become ever more complex and unwieldy, and the challenges ever more urgent." [173]

Former Union Human Resource Development Minister Kapil Sibal while addressing the conclave stated that "Education came into the Concurrent List way back in 1976. Before that it was on the State List and the responsibility of delivery of education at the district and the taluka levels was that of the state government. **There was a general feeling that those delivery systems were not working and by bringing education in the Concurrent List in 1976**, the Central Government became, in a sense, a permanent partner of state governments in seeking to make that delivery process more efficient. The problem with education in our country is that **there is no partnership between the Central Government and the state governmen**t and that is the heart of why we have not been able to move forward very quickly. [200]

Solution Space 7.1

In USA, the central government is not directly controlling education sector and the states are fully responsible for education sector. In India the same system was adopted before 1976. Before 1976, education was the exclusive responsibility of the States. The Constitutional Amendment of 1976 has included education in the Concurrent List (Entry 66 in the Union List of the Constitution). After 37 years the situation has changed a lot. The regulatory arrangement become very complex and fragmented and thus not working properly. The Yash Pal Committee Report and Sam Pitroda NKC report, both had suggested the (IRAHE or NCHER) there should be National Commission like the Election Commission by an act of Parliament. The government should not introduce another super regulatory body to solve this problem.

7.2. Mumbai Budget: Greater than 9 State Governments Budgets

Greater Mumbai Municipal Corporation budget is larger than that of 9 state government budgets while Municipal Corporation of Delhi's is larger than 4 state government budgets in India. The city of Mumbai's budget (Rs 26,581 crore or Rs. 265.81 Billion) is larger than many small Indian state government budgets, including Goa, Himachal Pradesh, Uttarakhand, Meghalaya, Manipur, Nagaland and Arunachal Pradesh. [201] [202]

The funding capacity of such states is quite low and unable to match with other economical stronger states of India. The UGC provides only development funds to state universities. Provision of the maintenance funds to the state university is the responsibility of the state governments. Naturally the higher education couldn't develop properly in these states.

In recent years, UGC's policy on the eligibility for its grants has become somewhat restrictive because of constraints of funds…. There are however wide interstate variations. **Private spending is higher in richer states, where government spending also tends to be high**. [17]

Solution Space 7.2

The development of state universities depend upon economic growth of states. Variation is expected. It leads to the state wise unequal growth of education sector. Every citizen of India should get equal opportunity, at least in education sector. The schemes like RUSA may help to reduce the imbalance and can give equal opportunity to every university for world class education.

7.3. State Wise Policy Variations and Skewed Growth

Philip G. Altbach stated that "A variety of governmental entities have authority over higher education. Higher education is a shared responsibility of the state and central governments, but most funding comes from India's 28 states. The **states have varying policies and differing abilities to provide financial support**." [46]

7.3.1. Few States: Favorable for Growth

The PWC report stated that "The costs of land and building constitute a significant portion of the capital expenditure for a private university and pose a challenge because formal educational institutes have to be run on a not-for-profit basis. In this scenario, **the initial capex becomes a sunk cost as it is not possible to recover it**. Keeping that in mind, **some state governments** (such as Haryana and Gujarat) have **relaxed the land ownership requirement to encourage private investors to enter without having to write off the large capex as sunk costs**." [15]

Criteria / States	Himachal Pradesh	Rajasthan	Haryana	Gujarat	Assam	Punjab
Role of Sponsoring Body and 3rd Party Investors for Private University	Apart from sponsoring body a 3rd party investor is allowed to contribute funds	Sponsoring Body + others donors can contribute to Univ.	Sponsoring Body + others donors can contribute to Univ.	Sponsoring Body + others donors can contribute to Univ.	Sponsoring Body + others donors can contribute to Univ.	Sponsoring Body + others donors can contribute to Univ.
Reservations Policies (for students & employees of University)	25% of natives in students & 80% natives in Class III, IV in staff	No reservation mentioned	25% of natives (out of that 10% SCST, 5% get full fee exemption, 10% get 50% fee exemption, 10% get 25% fee exemption) in students. No reservation in staff.	No reservation mentioned	No reservation mentioned	No reservation mentioned

Table 7.1: Variation of State policies for establishing private university [328]

7.3.2. No Private University Act, Limited Operational and Financial Autonomy

Several states do not yet have a State Private University (SPU) Act. Only 16 states have taken initiative to start private universities. Many bigger states have not yet started the state private universities like Andhra Pradesh, Bihar, Maharashtra, Tamil Nadu and West Bengal etc.

Very few engineering institutes in Maharashtra got autonomous status (about 3%). The authorities and faculty of rest of the 300 engineering colleges don't have any exposure to the autonomous environment.

There are huge entry barriers for new universities. Each university needs to be separately legislated into existence, by parliament or state legislature, unless it is recognized as a 'deemed university' by the UGC. [12]

The following table shows the variation of state policies for establishing private universities.

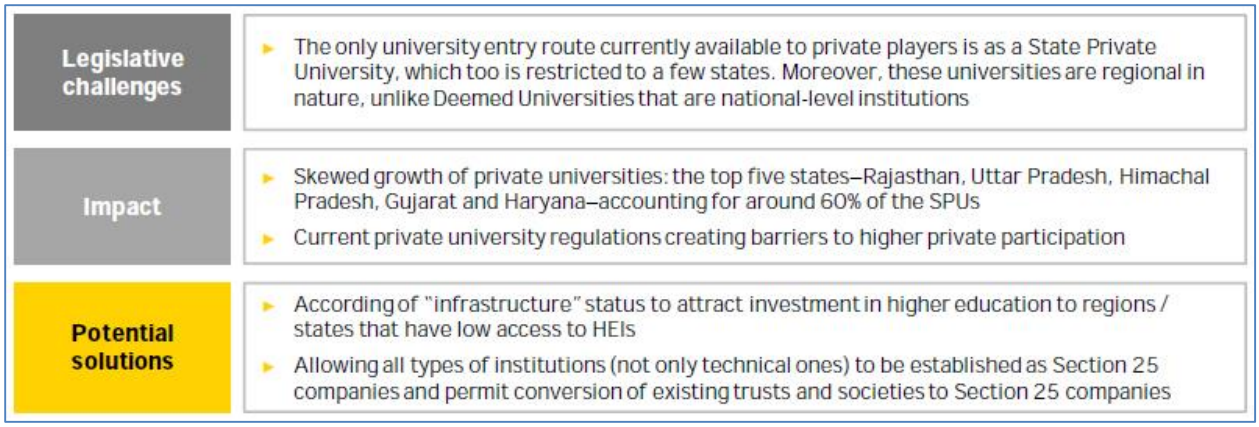


Fig. 7.1: FICCI report: Restricted Entry to Private Universities [6]

Few States have Limited Operational and Financial Autonomy

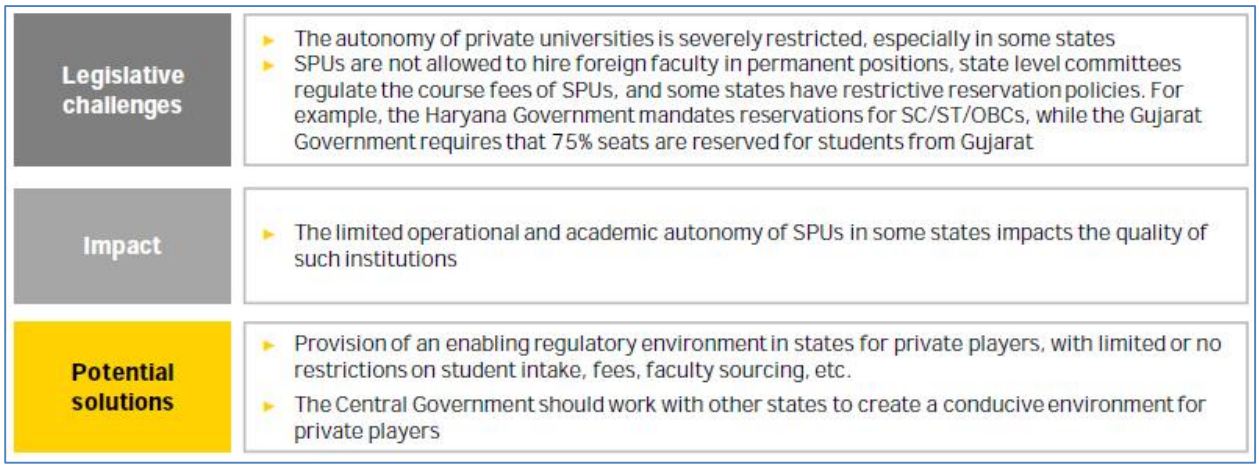


Fig. 7.2: FICCI report: Limited operational and financial autonomy [6]

7.3.3. Weak Links in the Indian Higher Education System

Most public higher education institutions funded by state governments. States have limited role in maintaining standards. Because of reducing funding role and weak oversight, **states are considered as weak links in the Indian higher education system**. Many state institutions operate outside the states. [17]

Solution Space 7.3

The financial status of each state government is different. The education sector is mainly responsibility of state and thus growth of education sector varies from state to state.

Every state has its own policies. It's a constitutional right of state government. Once the power of implementation is in the hands of state government, variation is unavoidable. Few states have understood the legitimate requirements of private players in the field of education and provided the appropriate framework to boost the private participation. The education is flourishing in these states.

The government is trying to solve these problems through new schemes like RUSA. I feel that, instead of finding new solution to every problem, there should be Education Commission by Act of Parliament to resolve such issues.

7.4. States: Reluctance for Reforms and Implementation Problems

Union Human Resource Development (HRD) Minister Kapil Sibal spoke against the politicization of education in the country**. He was critical of the state governments and lamented their reluctance to reform the education system**. He said that "**The biggest challenge was to get the states to implement the reform policies introduced by the Centre**. And any bid to exert pressure is misinterpreted as "**interference**" in state governance. We (the Centre) can **introduce policies and allocate funds**. But it's impossible for us to monitor if a child is receiving quality education in Bihar or Orissa. The reality is that the implementation of policies happens at the state level." [203]

Solution Space 7.4

Every state has its own policies. The solution is already mentioned in previous sections.

Chapter 8: Difficulties Related to Important Issues

In this way, Indian higher education may be compared to the American health care system. The US spends the most per capita on health care, but ***expenditure does not yield results****. The Barack Obama reforms,* ***like the 12th Plan in India****, may finally improve an ossified system traditionally dominated by special interests and conflicts between the federal government and the states. [91]*

Prof. Yash Pal, former UGC Chairman said that "The key challenge is there is too much interference, there are not enough resources, and not teachers of teachers are produced. IITs have become under graduate factories, the focus is not on producing researchers and some universities feel poor cousins of IITs, they don't have enough money, enough resources and so on. I think we have to move in that direction." [48]

HRD minister Kapil Sibal criticized the influence of politicians in the field of education and said that "A large number of politicians own educational institutes and this is standing in the way of reforms. This is a national battle, we have to fight it." [204]

In sharp contrast, India's public spend on education amounts to ~5.2% of the world's cumulative public spend, but the country is home to 20% of the population in the target group. [13]

8.1. Reservation Policy

Designing of an appropriate policy would require a tradeoff between excellence and equity. The overall development of the nation the 'Equity' is most essential factor, whereas for overall Economic Growth of the nation one can't compromise 'Excellence' To keep the balanced growth of the society and to adopt the inclusive approach for various weaker sections, the Reservation Policy for education institute is adopted by Indian Government. It is essential. But at least for World Class University the policy can be reconsidered.

Already in two cases the policy is relaxed.

- The Supreme Court ruled that there can be no reservation in appointment for faculty posts in speciality and super speciality courses in medical colleges, including the prestigious All India Institute of Medical Sciences (AIIMS). [205]
- In addition to this, the Reservation policy is not applicable to private institutes run by linguistic and religious minorities.

Solution Space 8.1

The approach of Inclusion and Equity is must for India. The reservation policy is needed for balanced growth of the nation. Only for specific institutes, which can be converted in to WCU the policy can be reconsidered with unanimous and wholehearted support from all corners like social, political and government etc.

8.2. Parliament: Over Delay in Passing Crucial Bills

Sam Pitroda, Advisor to Prime Minister of India, Advisor to Prime Minister of India said that "We have now taken **four-five years to debate on all these issues over and over again**. We have multiple bills still those bills have not been tabled and I believe **we just don't have the sense of urgency**. We waited for some of these reforms to take roots and unfortunately **not much has happened**." [329]

Minister of State for HRD Shashi Tharoor said that "The delay in passage of crucial bills on higher education including one on research and innovation was due to repeated adjournments of Parliament…. while expressing concern over low spending in R&D….**Unfortunately this bill (The Universities for Research and Innovation Bill, 2012) has been a victim of the dis-functionality of the Parliament where those who believe in disruption rather than debate, have ensured that this and many other higher education bills have not even been discussed**." [207] [208]

The PWC report stated that "Recognizing the urgent need for reform, the government introduced a large number of legislative and administrative measures. **It has had limited success on the legislative front**. Among the plethora of Bills presented, five important bills that were aimed at reducing multiplicity of regulators, creating transparency, replacing licensing with self-disclosure

and punitive measures for false representations and addressing issues of quality. These had the potential to lay the foundation for a **robust and transparent regulatory regime** in the higher education sector allowing the participation of public, private and foreign investors. Regrettably, all these are still pending in Parliament. **Faced with legislative paralysis,** the government has opted for, wherever possible, **regulation instead of legislation** to achieve the objectives of these bills." [15]

Within a system that is overloaded, the growth of private higher education in India has been rapid, but is taking place in a policy vacuum, as a **major private education bill has languished in the Indian parliament for over two decades**. [173]

Solution Space 8.2

It's the problem of democratic country, even the government is helpless. Unless all the political parties come forward for this urgent issue related to 550 million citizens of India, nothing can happen.

8.3. Largest Young Population, GER and Economic Growth

India and China are battling to overtake one another in terms of economic growth in the coming decade. However**, higher education enrollment is the principal indicator of economic growth** as per World Bank statistics. **When a nation significantly increases the number of university students it educates, that nation is likely to see an increase in economic growth in the decade that follows**, reports William H Avery for the Economic Times. The same was witnessed in case of Japan and Korea in the early and late 1980s respectively. [208]

8.3.1. Indian Average Age

More than 50% of India's current population is below the age of 25 and over 65% below the age of 35. Right now, its median age is 25 years and it is expected that in 2020, the average age of an Indian will be 29 years, compared to 37 for China and 48 for Japan. [209]

8.3.2. Required GER and Resource Gap

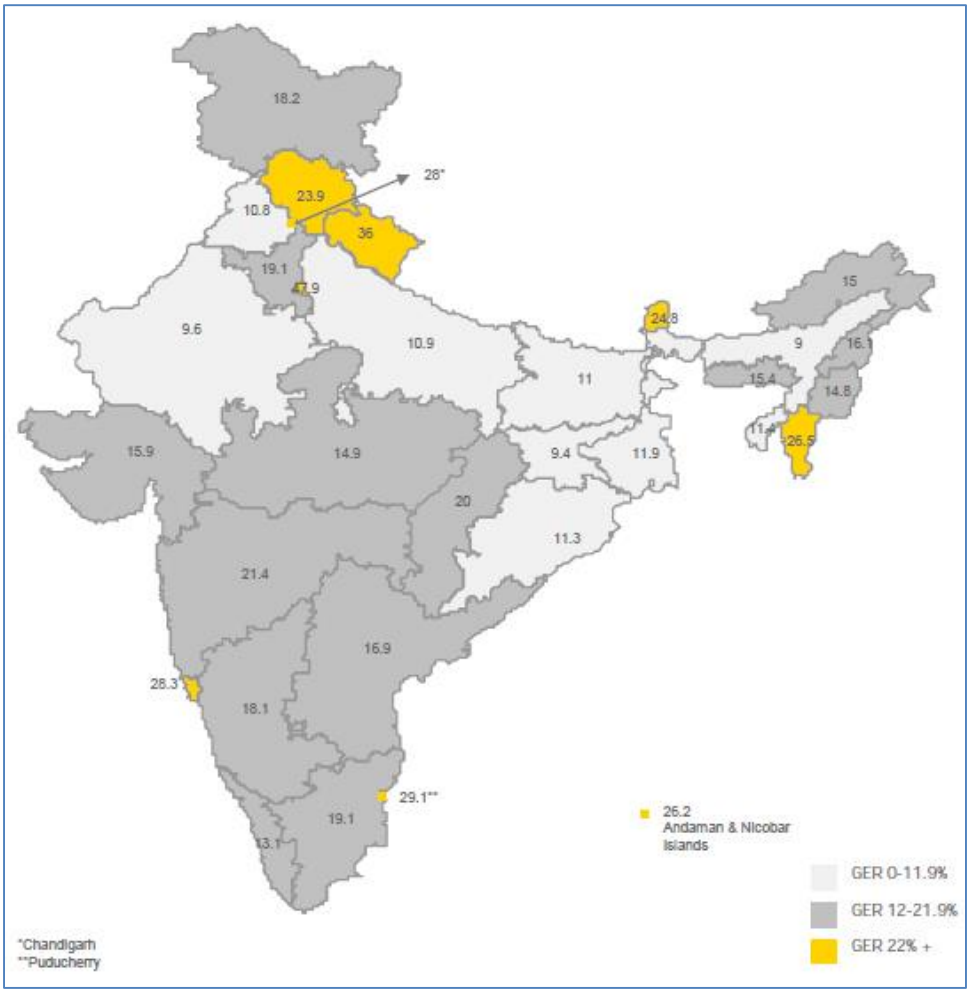


Fig. 8.1: GER by States [6]

The GER is the number of actual students enrolled divided by number of potential students enrolled. In 2011, the Gross Enrollment Ratio (GER) in higher education in India is 12%, which is still about half the world's average GER (24%) and about two thirds that of the developing countries (18%) and much lower than that of developed nations (58%). Our target is 30% GER by 2020. The target of 12th Five Year Plan is to increase the GER from 12% to 25% up to 2017 and 30% by 2020. India requires an impressive amount of investment to achieve the goal of doubling its GER. **The additional investment requirement may cross Rs 350,000 Crore mark and cannot be met through philanthropy, or government grants, alone.** In the 11th Five Year Plan, the government allocated around Rs 850 billion for higher education but **according to Planning Commission, there is resource gap of about Rs 2.2 trillion.** In GDP and GDP-PPP ranking, the position of Japan and Germany is 4th and 5th respectively. The 2012 World Bank KEI ranking the position of Germany and Japan are 8 and 22 respectively. These countries are very small in size and don't have much natural resources. Still their world ranking is good because their economy is Knowledge Base Economy. [78] [212] [213] [214]

8.3.3. Economically Advanced Country: Required Minimum 20% GER

Since **no country can become economically advanced without a minimum enrolment ratio of 20% in higher education**, the foremost priority at this juncture must therefore, be to enhance access to higher education such that the Gross Enrolment Ratio is raised to a minimum threshold level of about 20%. [215]

Remember that to support India's huge economic growth rate there is a need of higher GER. The present rate of 15% is not at all sufficient. Thus the government of India is keenly pursuing the target of 30% GER by 2020.

8.3.4. India: Four Decades Behind

Philip Altbach and Pawan Agarwal stated that "While gross enrolment rates are not bad by relevant international standards, India is about four decades behind most advanced nations in enrolments." [91]

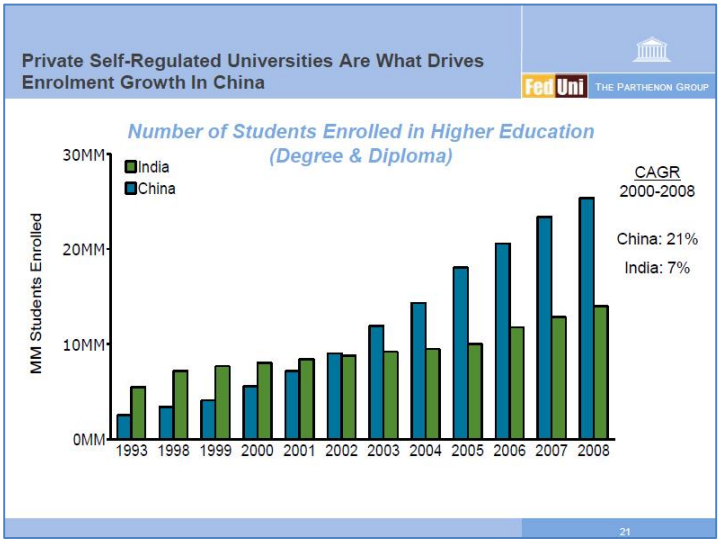


Fig. 8.2: Private Universities and GER in India and China [93]

Fig. 8.3: GER of different countries [16]

8.3.5. GER, Vacant Seats, Education Expansion, Income Growth and Employment

India is the only major economy in the world where the government is still spending money on setting up new higher education institutions, and building up capacity in the old ones. However, it is also important to note that some of India's new higher education institutions are starting to struggle, if the number of empty seats in engineering and MBA colleges is any guide. It seems that while investment has poured in and seat capacity has been expanded, students are not interested in what the university has to offer and as a result overall student numbers in higher education, while growing, aren't going up proportionately. By historical precedent, a country's GER tends to grow alongside its income, leveling off somewhat as it approaches the 40 per cent level. **It requires a somewhat bigger leap in income thereafter for the GER to grow again.** The Indian model, therefore, represents an anomaly. The student numbers have grown, but this can be solely attributed to **demography** and **growth in income**….Colleges are up for sale, and this trend is likely to accelerate in the coming days….Clearly, the **current model of higher education expansion is somewhat out of sync with the level of demand from students**. And after the next election, Indian politicians are likely to refocus their attention towards **boosting economic growth and employment**. This is a good time, therefore, to reflect where the model is going wrong and what could be improved…Since countries like India often model their higher education systems after the United States, we may come up with valuable insights by looking at the American trajectory. A parallel can be drawn between India's current situation and the **US in 1940, when high-school enrolment jumped to 73 per cent of the school age population, while the college-going population stood at only 16 per cent of those who completed high-school – somewhat at the level India is today.** [216]

8.3.6. Access and Equity: Need Two Different Types of Universities

We need universities for 30% GER as well as WCU for economic growth of the country. The balance approach is needed.

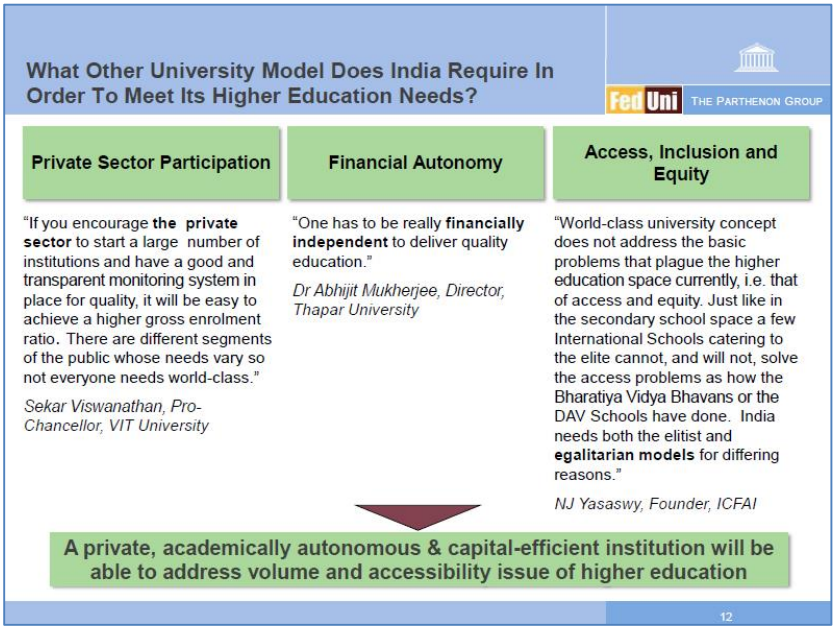


Fig. 8.4: Higher Education Needs: Two Different types of universities [93]

8.3.7. Our 50% Population is in Agricultural Sector: Is the GER is Adequate?

Philip Altbach and Pawan Agarwal stated that "**Considering that over half of the people in India are still engaged in the farm sector with limited need for higher qualifications, current levels of enrolment in India appear to be adequate.**" [91]

8.3.8. India: Excess Number of Colleges, Need More Universities

Today, while in terms of enrolment, India is the third largest higher education system in the world and the largest higher education system in the world in terms of number of institutions. Just watch the following table.

- The India is having 4 times more institutions as compare to total number of institutes in United States and entire Europe.
- We are having 10 times more institutes as compare to total number of institutes in USA, China and entire Europe.
- The China is accommodating 12 times more students per institute than India.

That is, our system is highly fragmented and difficult to manage than rest of the world. [17]

Thus I feel that India need not worry about rate of growth of higher education institutes but for smooth administration we need more number of universities.

SN	Year	Country	Total Number of Institutes	Total Enrollment	Average enrollment per institute
5.	2010	USA	4495	21,000,000	4671
6.	2010	China	2305	21,446,570	9304
7.	2010	Europe	4000	20,000,000	5000
Total USA, China, Europe			**10,800**	**62,446,570**	**5782**
8.	2012-13	India	**35,539**	20,297,126	**571**

Table 8.1: Number of student enrollment per institute in USA, China, Europe and India [6] [10] [11] [7]

At an all India conference of higher education ministers on Rashtriya Uchchatar Shiksha Abhiyan (RUSA), a flagship scheme of the UPA, the Higher Education Secretary in the HRD Ministry Ashok Thakur said that "**The Centre plans to create 278 new universities and 388 colleges**….at present more than 300 colleges are affiliated under each university which means they are busy looking at administrative issues without much time for research and impart quality education. We want to reduce it to an average of about 100 (colleges per university)…" [217] [218]

Solution Space 8.3

The government is seriously tackling this issue. We need more number of universities and degree granting institutes to reduce the affiliation system load. While framing the policy they must consider the points discussed in sections 8.3.7 and 8.3.8. Designing of an appropriate policy would require a tradeoff between excellence and equity.

In fact, India need diverse education system containing WCU, specialized institutes of higher learning and institutes for mass education to cater the need of industry.

8.4. Political Involvement, Will and Advantages

8.4.1. Political Involvement: Advantages

The capital-intensive professional higher education sector has particularly **benefited from the entry of politicians, known for their deep pockets and fund-raising capability**. Across the country most engineering, business, pharmacy and medical colleges are owned and/or managed by politicians. In the states of Maharashtra, Karnataka and Tamil Nadu, which together boast 807 engineering and 50 medical colleges, it's estimated that over 30 percent are owned and/or managed by politicians. [174]

It's a national tragedy that educationists and intellectuals who should be running institutions can't promote them, and it is left to people such as builders, businessmen and politicians. There is no doubt that education, particularly higher education, has been stymied by shortsighted government policies. Against this backdrop, politicians entering education have done society a big favor." [174]

8.4.2. Political Involvement: Double Edge Sword

Uttar Pradesh's senior leader of the Bharatiya Janta Party (BJP) and former higher education minister Om Prakash Singh, concurs that the involvement of politicians in education is a **double-edged sword**. "Politicians can raise standards of education because of their political and social contacts, but they can also do great harm. The real danger arises when an education institution is run for the sole purpose of making money," says Singh. The MLA from Chunar in Mirzapur (UP), who has promoted three postgraduate colleges in his constituency, has made a conscious decision not to hold any executive or non-executive position on the managing committees of any of the colleges. "As a matter of principle I don't entertain any applications for admission. If I do it for one student, I have to do it for everyone with the result that the reputation of these painstakingly developed institutions will suffer," he reasons. [174]

Philip G. Altbach stated that "It is significant that King Abdullah, who established the King Abdullah University of Science and Technology, **kept it separate from the Saudi government**,

with its own budget and endowment. **He did not want the new institution to get bogged down in governmental bureaucracy**. **This example may have some relevance for India**." [63]

Mr. Pawan Agarwal, Adviser (Education), Planning Commission, stated that "More than thirty five years ago, Nobel laureate Amartya Sen analysed the crisis in Indian education in his Lal Bahadur Shastri Memorial Lectures on the 10th and 11th of March 1970 at Hyderabad. Rather than attributing the crisis in Indian education to the administrative neglect or to thoughtless action, he pointed out that the grave failures in policy making in the field of education require the analysis of the characteristics of the **economic and social forces** operating in India, and response of public policy to these forces. He emphasized that due to the Government's tendency to formulate educational policies based on public pressure, often wrong policies are pursued. Unfortunately, even today, the education policies (if any) - particularly on higher education, seek to achieve arbitrarily set goals that are either elusive or pursued halfheartedly." [17]

8.4.3. Only One Way is Open: Quality

Since 2011, 225 B-schools and more than 50 engineering colleges across India have closed down. While many others have trimmed programmes, branches of engineering or streams in the management course. More than a 100,000 engineering seats are currently vacant in Andhra Pradesh and many institutes are contemplating sale or shutting down. [219] [220]

The private players have already invested huge money in the system. The over expansion of professional colleges has reduced capitation fees to zero. On the top of that, among the educational institutes, there is a cut throat competition for existence. In Andhra Pradesh and Maharashtra number of professional colleges have requested for closure. Now the regulatory mechanism wouldn't protect their interest. For supernormal gains only one way is open i.e. quality education.

"**In higher education, quality is all that matters**. The colleges promoted by politicians in Uttar Pradesh are far behind those started by their counterparts in the southern states when it comes to offering good infrastructure and qualified faculty. The result is that there are enough takers for seats in most southern colleges. There is **no money to be made without delivering quality** education as students can't be gulled into enrolling in substandard institutes," says Jagdambika Pal, former chief of the Congress party in Uttar Pradesh who has promoted eight schools in two districts of the state's eastern belt, in addition to three colleges (pharmacy, engineering and management) in Lucknow. [174]

The Government has decided to confer, the Bharat Ratna, the highest civilian award to eminent scientist Prof C N R Rao. He said that "The Government of India should make massive investment in higher education (3 per cent of GDP). **Improving the quality of higher education should be a national mission since it will determine the future of our country**. **Planners, politicians and administrators as well as citizens should whole heartedly support this mission**." [130]

As Prof Natarajan, former Chairman AICTE, puts it, "**There is need of political will and ambition, massive funding**. We must recognize that in the special social circumstances that we have, we must recognize the importance of an astute balance of 'expansion, inclusion and

excellence'. Balancing 'expansion, inclusion and excellence' in the Indian context requires great will, skill and innovation." [130]

Solution Space 8.4

The politicians played leading role in education sector and India got enormous benefits out of it. The future growth of this sector solely depends upon quality and everybody has realized this issue. Instead of more debate on this issue some concrete action is needed.

8.5. The Mindset

Sam Pitroda, adviser to Prime Minister Manmohan Singh, voiced concern over the quality of education in India and called for educational reforms by replacing age-old systems and changing mindsets. "How to think out of the box and restructure education? **This is where mindset comes in**... **The mindset of government, the ministries and UGC (University Grants Commission) is just not changing fast enough**... Some of these **people are living in dark ages**. The need of the hour is to create wealth. It is one thing to do research and development and it is another to innovate." he said. [124]

Chief Economist, Netcore Solutions, University of California, raised many questions and stated in his article "Begging for a World Class University" that "Why does the government of **India continue to imprison the educational system** even now? What is the reason that it will not allow Indians the freedom to build educational institutions in India? Why does the government then go out with a begging bowl to foreign governments asking for help with building "world class universities" when **Indians are quite capable of doing so? Do you have any doubts that Indians can build world class institutions of learning? Will the US and the UK help out India build world class universities in India?"** [78]

Garga Chatterjee, Brain Scientist at MIT, has written in his article "There is a Bengali idiom called "bon gaye sheyal raja", which means that in a far-way forested village, even a fox can be king. Such is the state of affairs around us….Founded in 1857, the Calcutta, Bombay and Madras universities celebrated 150 years of their existence and also the Massachusetts Institute of Technology (MIT), in USA that was founded four years later. During the celebrations, everybody in the sub-continental universities talked about a glorious past, long-standing heritage, and famous personalities associated with the institutes. In contrast to this at MIT, **everybody talked about the future – new avenues of research, newer expansions, and newer challenges**. There wasn't much mention of personalities in the institution that has produced 78 Nobel laureates. Neither is MIT peppered with 'museums' dedicated to Nobel laureates. Museums are same as temples and mosques – places of praying for things to go right miraculously, not places of action. This may be the reason why no university in the subcontinent figures in top 200 universities in the world." [222] [223] [224]

Solution Space 8.5

The mindset can't be changed overnight. It can be changed through constant perseverance of social, political, government forces. The motivation and incentive based mechanism can bring the positive change.

8.6. Technology Redefining University: Not Maintaining Pace

Sam Pitroda, adviser to Prime Minister said that "we need to use technology effectively. We are known all over the world for expertise in IT and **we use very little of information and communication technology to that productivity and efficiency in our education especially in higher education**." [329]

Dr. Ray Clifford said that "**Technology will not replace teachers but teachers who do not use technology will be replaced**." The technology is changing the learning space or options of the student community. The curriculum design, infrastructure, teaching techniques, pedagogy must change accordingly. Unfortunately in India the things are not moving in right direction. Lot of changes are required. [229]

Sam Pitroda, adviser to Prime Minister Manmohan Singh, voiced concern over the quality of education in India and called for educational reforms by replacing age-old systems and changing mindsets. He said that "We need to create a new model of learning and fortunately web offers great deal of opportunities. It was time India focused on restructuring educational institutions. **The technology is the key driver for development**. Do not take great pride in old model of education. **The old model is about to die**." [230]

Technology plays a major role in learning revisited, be it games, simulations, online learning, or mobile learning, another emerging area that is facilitating a shift in the place of learning, from artificial contexts out in the world where it allows students to capture information, perform tasks, communicate and collaborate around that information, and layer learning on top of the experience. The new age learning model is an instructional model that combines technology with powerful content and pedagogy, with the aim of helping students to learn. Technology is the underlying enabler. [231]

Confederation of Indian Industry (CII) white paper 2013 stated that "We still mostly follow old and traditional methods of teaching and training. Much of the teaching is theoretical without connecting it with direct practical experience. In addition, in the era of digital advancements, we will have to connect to and use information and communication technologies extensively so that we can grow at faster pace and meet the global standards of education. Inter-disciplinary approach in teaching and training requires innovative minds to get involved with the development of curriculum. As in the real world so also with knowledge, it cannot be broken up and be confined within the narrow boundaries of discipline. Hence not only inter-disciplinary but trans- disciplinary approach is required to meet the challenges of the real world, with practical experience being a touchstone at each stage." [5]

The technology is changing everything, including business models of many businesses. In the 21st Century, ATM changed the Banking Sector; E-books changed Publishing Industry; MP3 changed Music Industry; Email changed Postal Services, Digital Camera changed Photography Industry; Mobile changed Telephone Industry; Satellite Film distribution changed Business Model of Film Industry; ICT changed Stock Market and so on. Beware that the Next is Education.

The Technology-storm has stretched the boundaries of Universities across the globe. The Digital revolution is changing the dimensions of student's Learning Space beyond the campuses. The classrooms are converted into Global Studios. Through Technology, the Teachers are playing the role of Universal Connectors to International Knowledge Hubs. The Games & Simulation Technologies are changing the Pace of Human Learning. The Google, Interactive E-Books, Digital Library adding global component to University Libraries. The Administrators are using range of CRM software along with Social Networking to manage customers like alumni, international students and campus placement and companies across the globe. The Cloud Computing, VNC and BYOD are pushing the computer labs and server rooms to the remote corners of the earth. The Virtual and Augmented Reality technologies facilitate the global laboratories and adding new dimension to learning. University Industry Technological Partnerships are diluting Geographical Boundaries between Nations. The technology facilitates satellite campuses throughout the world. On the top of this, the e-learning technology, YouTube, Wikipedia, Video Repositories, Open Course Ware, Podcast and MOOC are threatening the existence of University Empires. The Collaborative software, Facebook, LinkedIn, Smart Phones, Kindle, all these have changed the way society has defined its boundaries. The 3D Printing is reshaping Teaching, Learning, Visualization Capability, Rate of Innovations at universities, industries and medical field. Robot Surgery is revamping medical profession. Virtual Office tools, Online Surveillance Systems, Paperless office and Integrated Internet based Management Information Systems gives the power to operate the university office from any corner of the globe. One cannot afford to overlook these EDU-storms. It's all about journey from Campus 1.0 to Campus 2.0.

Desmond Bermingham, Director, The Save the Children Education Global Initiative stated that "**Technology is transforming our lives – and making learning possible in new ways and new places**. In 2002, only 2 countries had 100% mobile penetration – in 2010 this had risen to 92 countries. Total mobile-cellular subscriptions reached almost 6 billion by end 2011, corresponding to a global penetration of 86%. Growth was driven by developing countries, which accounted for more than 80% of the 660 million new mobile-cellular subscriptions added in 2011. By end 2011, there were more than 1 billion mobile broadband subscriptions worldwide although developing countries are lagging behind with less than 5 subscriptions per 100 inhabitants. We are just beginning to see the transformative effect on education systems of this increased access to technology and information. The recent emergence of massive open online courses (MOOCs) has led to hundreds of thousands of students accessing courses from elite universities for free." [232]

Lev Gonick, the VP for information technology services and CIO at Case Western Reserve University and CEO of OneCommunity, in his keynote address at the Campus Technology 2013 conference in Boston, stated that "Higher education faces an onslaught of disruptive forces right now and no one should be surprised to hear that news. Burgeoning technologies such as MOOCs and mobile devices are **disrupting institutional structures from the classroom and across entire campuses**. As tech transforms these learning environments, universities must decide

whether to resist the change or get out in front of it. To choose the latter option, however, we need to envision what universities of the future will look like—if they exist at all." [233]

Dr. Sam Pitroda, the Chairman Knowledge Commission, said that "In India that flexibility is needed. We can't carry forward with the **19th century mindset, 20th century process and 21st century needs**. There is a need for theoretical and practical experiences and to achieve this, students should also be allowed to work in their respective sectors of interest even while studying". "Professors from outside are not called and Professors in the country do not do the researches, so it has become a chain where nobody wants to change. Innovation requires collaboration." [130] [86] [87]

Dr. Sam Pitroda, advisor to the Prime Minister has criticized government for not implementing the educational reforms efficiently. He has expressed displeasure over the UPA government's inability to act on a series of reforms suggested by the National Knowledge Commission (NKC) which he headed during the first UPA term. "Five years have gone since we made our recommendations. Nothing has happened. All I see is more talk, more discussions. We do not need more discussions, we need to act," Pitroda said, speaking to over 200 Vice-Chancellors of state and central universities from across the country. The Commission has submitted around 300 recommendations on 27 focus areas during its three and a half year term. While the term of the NKC has come to an end. [234]

Altbach says that the current government's plans to create a series of centrally funded universities may help in the long run, "but it will take several decades for these institutions to mature sufficiently". [225]
Addressing the 90th Convocation of Delhi University, Hon. President of India, Pranab Mukherjee said that "The time has come to "redefine" the way education is imparted in India as it is "simply unacceptable" that no Indian university finds a place amongst top global institutions."….. "An honest answer would reveal that we have miles and miles to go before we can say that we have arrived," he said. [235]

Professor Andrew Hamilton, **VC, Oxford University** has delivered speech on "**World-Class Universities in an Era of Globalization**" at IIT Kharagpur on the occasion of IIT Kharagpur's Diamond Jubilee ceremony on March 23 2012. He stated that

- Faculty: "This example reminds us that faculty searches in world-class universities are now genuinely global. People over-use the term 'war for talent' in the business world, but the truth is that there is real and increasingly global competition for the best academic talent. At Oxford, 40% of our academics are citizens of countries other than the UK. India is one of our most important sources: we have almost 100 Indian nationals on staff today…. In world-class universities, it is world-class academics who are doing the teaching. This makes for an incredibly powerful introduction to the world of ideas, and the way in which its boundaries constantly shift….
- Students: World-class universities also require world-class students. You can see the effort that leading universities put in to selecting the very best students…. The ability to attract international talent—both students and staff—requires not only that universities create welcoming environments, but that governments do the same…. At Oxford, more than a third

of our students – 15% of our undergraduates and 61% of our graduate students – are citizens of countries other than the UK….

- Research: The ability to bring minds together in collaborative work across disciplines will, I think, be increasingly important to tackling the fundamental research questions of the 21st century….
- Funding: At Oxford, about 40% of the university's income comes from research grants, and two-thirds of our academic staff are on research-only contracts…. world-class universities require sustainable funding that helps them to achieve excellence and to ensure access for their students, regardless of means. This may sound like a less glamorous subject than the other three, but it is of course absolutely fundamental. One of the reasons that US universities have been dominant in the league tables is their financial resources: their endowments have provided them with secure funding and therefore the ability to support great professors, build cutting-edge facilities, and provide financial aid and scholarships to attract the best students, regardless of means. UK universities have historically had smaller endowments but have relied on diversified funding streams – research grants, government grants for teaching and for research, and in Oxford's case, publishing income – to maintain their position. Excellence in universities, as in virtually everything else, costs. That is why, as the head of a world-class university, I spend a significant amount of my time fundraising." [236]

The National Educational Technology Plan (NETP) 2010 draft of U.S. Department of Education Learning namely "Transforming American Education: Powered by Technology" covers lot of details. This draft stated that "Just as technology is at the core of virtually every aspect of our daily lives and work, we must leverage it to provide engaging and powerful learning experiences, content, and resources and assessments that measure student achievement in more complete, authentic, and meaningful ways. Technology-based learning and assessment systems will be pivotal in improving student learning and generating data that can be used to continuously improve the education system at all levels. Technology will help us execute collaborative teaching strategies combined with professional learning that better prepare and enhance educators' competencies and expertise over the course of their careers. To shorten our learning curve, we can learn from other kinds of enterprises that have used technology to improve outcomes while increasing productivity. The National Educational Technology Plan (NETP) calls for revolutionary transformation rather than evolutionary tinkering." [237]

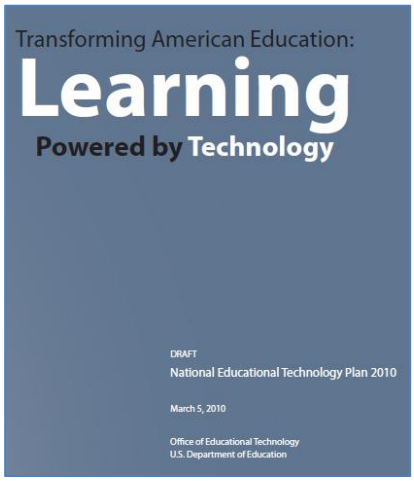


Fig. 8.5: USA Education Policy 2010: "Learning Powered by Technology" [237]

Solution Space 8.6

I have discussed hundreds of technologies which has changed the entire concept of universities in developing countries in my book "Technology-Storms Redefining World Class Universities". The Indian universities are ignoring this technological revolution.

The U.S. Department of Education Learning has introduced the reforms namely "National Educational Technology Plan (NETP) 2010: Transforming American Education - Powered by Technology". We must follow similar strategy.

8.7. Global Employability

In February 2013, no less a figure than Prime Minister Manmohan Singh told a conference: "Too many of our higher education institutions are simply not up to the mark. Too many of them have simply not kept abreast with changes that have taken place in the world around us ... [and are] **still producing graduates in subjects that the job market no longer requires**." [162]
The basic objective of higher education throughout the civilization was to be employable. A recent McKisnsey report has found that only **15 percent of India's finance graduates and 25 percent of its engineering graduates are employable**. The National Employability Report on Engineering Graduates, released by Aspiring Minds, an employability solutions company, last week shows that out of the five lakh engineers who graduate from various engineering colleges across the country every year, only **17 per cent** are fit for the IT services sector. The report was based on a sample of more than 55,000 engineering students from 250 colleges chosen from the length and breadth of the country [238] [239] [240] [241]

Philip Altbach and Pawan Agarwal stated that "**The bigger challenge is that students do not choose to study in fields that will best contribute to economic growth – or to their own job prospects. Also, employers regularly complain that graduates are not adequately prepared for available jobs**." [91]

Apart from international rankings, other parameters of judging quality **are employability and employer satisfaction**. According to a survey done by World Bank-Federation of Indian Chambers of Commerce and Industry (FICCI), **64% of employers** are "somewhat", "not very", or "not at all" satisfied with the quality of the engineering graduates they hire. In another study, **Infosys found less than 2% of its 1.3 million job applicants acceptable in 2006**. [72]

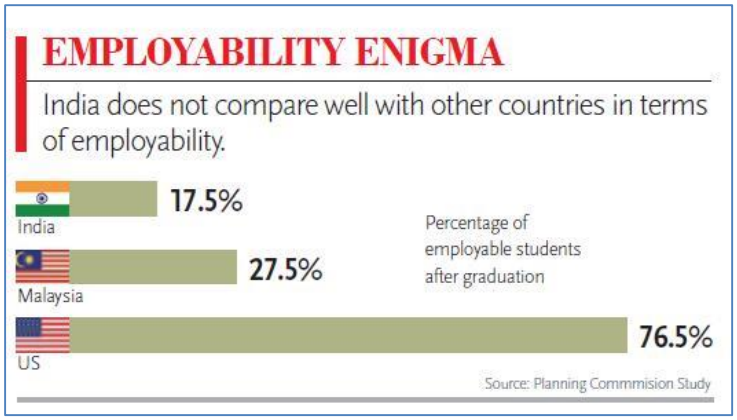


Fig. 8.6: Employability in India [242] [243]

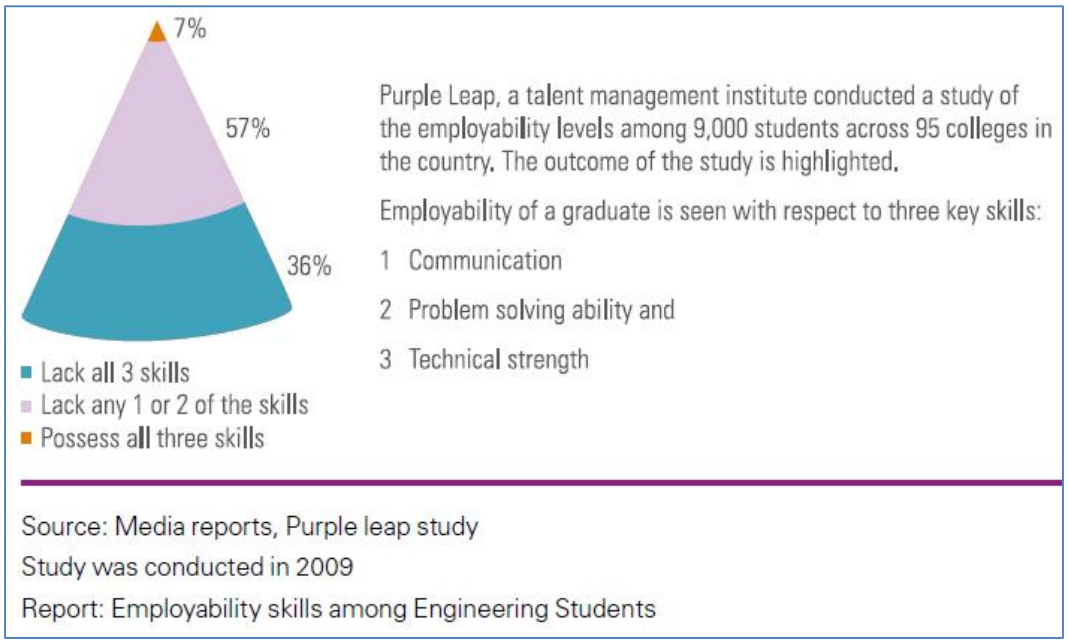


Fig. 8.7: Employability level with respect to 3 key skills in India 2009 [105]

The following table shows the Global Employability Ranking 2012 of Top 100 Universities. The IISc Bangalore got 35th position. No other institute of university from India could secure the position in the list.

SN	Global Employability Ranking	SN	Global Employability Ranking
1.	USA - Harvard Univ.	51.	Switzerland - Univ. Basel
2.	USA - Yale Univ.	52.	Germany - Univ. Mannheim
3.	Great Britain - Univ. of Cambridge	53.	Canada - McMaster Univ.
4.	Great Britain - Univ. of Oxford	54.	Sweden - Stockholms Univ.
5.	USA - Stanford Univ.	55.	Switzerland - Swiss Federal Inst. of Tech. Zurich
6.	USA - Mass. Institute of Technology	56.	Canada - Queen's Univ.
7.	USA - Columbia Univ.	57.	Switzerland - Univ. de Lausanne

8.	USA - Princeton Univ.	58.	Belgium - Univ. Gent
9.	Great Britain - Imperial College London	59.	USA - Johns Hopkins Univ.
10.	Germany - Goethe-Univ. Frankfurt am Main	60.	Great Britain - Univ. of Birmingham
11.	China - Peking Univ.	61.	Germany - Ludwig-Maximilians-Univ. München
12.	Germany - Univ. Heidelberg	62.	France – ESSEC
13.	France - H.E.C. Paris	63.	Switzerland - Zürich Univ.
14.	Japan - Tokyo Institute of Technology	64.	Belgium - Katholieke Univ. Leuven
15.	Great Britain - London School of Economics	65.	France - École de Management de Lyon
16.	Great Britain - Univ. College London	66.	Australia - Univ. of New South Wales
17.	USA - Boston Univ.	67.	USA - Northwestern Univ.
18.	Switzerland - Univ. St. Gallen	68.	USA - Georgetown Univ.
19.	USA - California Institute of Technology	69.	Netherlands - TU Eindhoven
20.	France - École Normale Supérieure Paris	70.	Great Britain - Univ. of Nottingham
21.	USA - Univ. of Chicago	71.	Great Britain - Univ. of Manchester
22.	USA - Brown University	72.	USA - University of Southern California
23.	Japan - Univ. of Tokyo	73.	Sweden - Goteborgs Univ.
24.	Canada - Univ. of Toronto	74.	Switzerland - Univ. Bern
25.	USA - Univ. of California, Berkeley	75.	France - ESCP Europe
26.	USA - Duke Univ.	76.	Germany - Frankfurt School of Finance and Management
27.	France - École Polytechnique ParisTech	77.	Denmark - Univ. of Copenhagen
28.	China - Fudan Univ.	78.	Germany - Georg-August-Universität Göttingen
29.	Canada - McGill Univ.	79.	France - Univ. Paris Sud
30.	Canada - Univ. of Montreal, H.E.C Montreal	80.	Sweden - Karolinska Institutet
31.	France - École des Mines ParisTech	81.	The Netherland - Rjksuniversiteit Groningen
32.	Australia - Monash Univ.	82.	USA - Carnegie Mellon Univ.
33.	Australia - Australian National Univ.	83.	USA - Boston College
34.	Spain - Univ. de Navarra	84.	China - Tsinghua Univ.
35.	**India - Indian Institute of Science**	85.	Canada - Univ. of Western Ontario
36.	Singapore - National University of Singapore	86.	Netherland - Technische Univ. Delft
37.	USA - New York Univ.	87.	USA - Cornell Univ.
38.	Great Britain - King's College London	88.	Germany - Univ. zu Köln
39.	USA - Univ. of Pennsylvania	89.	Australia - Macquarie Univ.
40.	France - Ecole Centrale Paris	90.	USA - Univ. of North Carolina
41.	USA - Dartmouth College	91.	USA - Univ. of Virginia
42.	Great Britain - Univ. of Edinburgh	92.	USA - Michigan State Univ.
43.	Spain - IE Univ.	93.	Italy - Politecnico di Milano
44.	China - Shanghai Jiao Tong Univ.	94.	USA - Arizona State Univ.
45.	Usa- University of California, Los Angeles	95.	Brazil - Fundação Getulio Vargas
46.	Hong Kong - Hong Kong Univ. of Sciences and Tech.	96.	USA - Univ. of Michigan, Ann Arbor
47.	Japan - Kyoto Univ.	97.	USA - Purdue Univ.
48.	Italy - Bocconi Univ.	98.	Sweden - Handelshogskolan i Stockholm
49.	Australia - Univ. of Sydney	99.	Sweden - Lunds Univ.
50.	Germany - TU Munchen	100.	The Netherland - Technische Univ. Eindhoven

Table 8.2: Global employability University Ranking 2012 [244] [245]

The purpose and expectations from the universities are also changing along with time. The British government (Lord Macaulay) established universities in India **to produce army of clerks**. Later on after independence, as per demand, these universities started **producing skilled workers** who

had excellent domain knowledge. This technical manpower had been trained to solve stereotype of problems mechanically. Definitely this workforce was essential in 20th century and helped a lot for development of nation. Gradually the demand of the situation changed. Now we need real life problem solver, which needs multidisciplinary expertize.

Sam Pitroda, adviser to Prime Minister said that "**if Henry Ford arrives today the only industry where there is mass production it is in education**, everywhere else production is **gone** in terms of mass production. Education is the only area where we haven't focused on economies of scope, it is all economies of scale so we need to deregulate" [329]

In an article for CNN Opinion, John D. Sutter quotes Sir Ken Robinson, British author and international advisor on education, as saying that the educational system **works like a factory**. According to Robinson, a typical school or institute has in it all the qualities of a factory- there is a bell, there are separate subjects, and separate facilities, children are educated by batches and by age group. Education system is based on the model of **mass production** and conformity and views the child as the product of the mechanical system. It could not have been otherwise, Sir Robinson adds, as **the whole idea was developed and conceived in the economic circumstance of the industrial revolution** and was driven by the economic imperative of the time. [189]

Brig (Dr.) R S Grewal, Vice Chancellor Chitkara University stated that "Indian higher education system is **teacher-centric** with tremendous emphasis on **rote learning**. It inhibits **critical thinking and creativity**. Till the recent past, the Indian industry, especially the **manufacturing sector**, was driven by **imports and relied on low-end technology**. Therefore, the academia, instead of nurturing problem solvers and knowledge creators **produced process managers**. Both application-oriented and fundamental research, have been neglected in the universities. Though the USA and India have almost similar numbers of engineers per million of population, the former produces about 3,500 PhDs in engineering per year while the corresponding number in India is close to 1,000 and that too of questionable quality. Professional bodies like the Institution of Engineers and others have failed to set benchmarks and nurture industry-academia linkages. Their journals are no match for those of their counterparts in developed countries. Our universities are still biased towards manufacturing and services sectors and have, by and large, ignored the life sciences that would, in all probability, be the areas in which cutting-edge research is likely to be focused in the 21st century. Moreover, liberal arts have been neglected, and no society can hope to progress by ignoring these." [228]

In 21st century, the industry needs the manpower to identify and solve the highly interdisciplinary real world complex problems. To solve such problems they need a team of experts with diverse educational backgrounds across the globe. They expect that the student should have the experience of working with such diverse teams (i.e. global employability) and the university should provide such training, teaching-learning mechanisms, pedagogy, educational atmosphere, academic culture etc.

The current system is based on the concept of "Mass Education" and need of the hour is student centric system.

The WCUs have adopted many of new techniques to achieve these goals and developed robust mechanisms. I have covered everything in detailed in Chapter 9 of the book "Strategy to Develop World Class University".

The factors, which affect the global employability, are

- Quality of faculty
- Quality of students
- Teaching quality
- Research environment
- Industry Institute interface
- International Curriculum design
- Employability attributes implanted in overall curriculum design
- Involvement of alumni association in institute development
- Financial position of the institute
- Mindset of faculty
- Governance mechanism
- Level of use of technology in the institute etc.

The student's learning options have changed. The needs of 21st century learners are different. I have covered these aspects in details in initial chapters of the book "Technology-Storms Redefining the World Class Universities".

Solution Space 8.7

The Indian universities need to focus on many parameters like well-defined strategy, implanting the 176 employability parameters into curriculum design and academic activities, the student's PDP (personal development plan), industry exposure, international exposure etc. Many more aspects about this issue are covered in Chapter 09 of the book "Strategy to Develop World Class University".

8.8. Up-To-Date Information at Websites

The Indian universities don't keep the up-to-date information at their websites, which ultimately push them down in world ranking. Recently IIT-K and IIT-D could not provide the "Industry income" data to Times Higher Education Ranking 2013-14.

SN	Criterion	Punjab University Ranking 226-250	IIT-Kharagpur Ranking 351-400	IIT-Delhi Ranking 351-400
1.	Teaching	25.8	39.3	33.8
2.	International outlook	29.3	14.7	15.3
3.	Industry income	28.4	**No Data Supplied**	**No Data Supplied**
4.	Research	14.0	30.0	23.0
5.	Citations	**84.7**	35.3	38.5

Table 8.3: Times Higher Education Ranking 2013-14: Score of PU, IIT-K and IIT-D

Dheeraj Sanghi, former Director, LMIIT, Professor at IIT Kanpur suggests a five year plan which can get IIT's into top 100 world rankings. He stated that "Academic Peer review: 40% of the QS score is from Academic peer review which is based on the perception of the academicians around the world about the institute, where academicians can go to the institute website and try to get more information on the institute. **All the IIT websites have obsolete information even of the faculty and engineering excellence is not reflected on the website**, keeping the institutes website up to date and having a good presence social media and building a good enough mailing list of academicians around the world will increase the visibility and also the peer review score by a good percentage" [70]

A **lack of transparency** and **difficulties in accessing data** are major problems for Indian higher education. Colleges and universities do not have mandatory disclosure requirements in areas including fees, expenses, funding, faculty salaries, research output and citation, and placement records. Many are also **unwilling to share information openly**. [135]
There is a need to develop compulsory robust mechanism for providing International Outlook, International Activities, Reputation and Employers Opinion through Website of the respective institute, which will provide all the data to the ranking organization instantly.

Prof. Ved Prakash, Chairman UGC stated that "**Every university should have a website which should be constantly updated**. The website should include information on all teachers and their research activities and courses taught should be available on the university/college/institution website and should be updated every year before the start of the admission process. All the information related to admission policy, courses and curricula, inputs and expected outputs of each course should also be displayed on the university website. It should further be **mandatory** that courses are revised at least every three years. Every course described on the website should provide the date on which it was revised." [211]

Solution Space 8.8

Loosing ranking because of unavailability of data, that too from premium institute is a great surprise. At top 100 universities and higher education institutes must keep up to date data on their respective websites. It should be mandatory.

8.9. Missing Center of Excellence and Focus Areas

Even the best universities are not the best in everything. **Harvard does not rank at the top in engineering**, for example. Many countries and institutions might do better to focus on building world-class departments, institutes, or schools— especially in fields that are relevant to the national or regional economy or society. For example, **Malaysia has focused on disciplines such as informatics and rubber technology that are important to the local economy**. A few highly ranked institutions specialize to a certain degree. For example, the California Institute of Technology is a small university focusing almost exclusively on the **sciences**, yet it **ranks fourth** in the United States according to U.S. News and World Report. [4]

Solution Space 8.9

In addition to multidisciplinary aspect, the Indian universities need to focus or decide the specialization areas. They must be known world wide for specialization or center of excellence.

8.10. Industry-Institute Interface: Technology Transfer, Incubation Centers, Patents and Income

India suffers from inefficiency in transforming its S&T investments into scientific knowledge (publications) as well as into commercially relevant knowledge (patents). [114]
Prof Sharma, Vice Chancellor, Delhi Technological University said "**Strong interface with industry for relevant research and innovations have not been on the agenda of most Universities in India**." [130]

The top 20 technology transfer programs among universities included in the Association of University Technology Managers (AUTM) survey, ranked by 2010 licensing income [246]

SN	University	Royalty
1.	Northwestern University	$180 million
2.	New York University	$178 million
3.	Columbia University	$147 million
4.	University of California System	$104 million
5.	Wake Forest University	$86 million
6.	University of Minnesota	$84 million
7.	Massachusetts Institute of Technology	$69 million
8.	University of Washington/Washington Research Foundation	$69 million
9.	Stanford University	$65 million
10.	University of Wisconsin-Madison/Wisconsin Alumni Research Foundation	$54 million
11.	California Institute Of Technology	$52 million
12.	University of Rochester	$42 million
13.	University of Massachusetts	$40 million
14.	University of Michigan	$40 million
15.	University of Texas System	$38 million
16.	University of Utah	$38 million
17.	University of Florida	$29 million
18.	University of Iowa Research Foundation	$27 million
19.	Duke University	$26 million
20.	University of South Florida	$17 million

Table 8.4: University Technology Transfer Licensing Income of 2011 [246]

The number of patents by country is given in the following table.

Rank	Country	No. of Patents Granted
1	Japan	238,323
2	United States	224,505
3	China	172,113

4	South Korea	94,720
5	European Patent Office	62,112
6	Russia	29,999
7	Canada	20,762
8	Australia	17,877
9	Germany	11,719
10	Mexico	11,485
11	France	10,213
12	United Kingdom	7,173
13	Italy	6,380
14	North Korea	6,290
15	Singapore	5,949
16	South Africa	5,296
17	**India**	**5,170**
18	Israel	5,104
19	Hong Kong	5,050
20	New Zealand	4,710

Table 8.5: Patent Ranking by country [247]

The table shows that there is an urgent need to focus on transforming its S&T investments into the commercially relevant knowledge (patents). The industrial income has special weightage in Times Higher Education Ranking.

The current need is switching from two way relationship with industry to partnership with industry. The factors, which affect the industry institute interface, are

- Quality of faculty
- Industrial exposure and experience of the faculty
- Research infrastructure of the institute
- Research contribution level of the institute
- Governance mechanism
- Functioning and strategies of Industry-Institute Interaction Cell
- Financial position of the institute

The detailed discussion on this topic is available in Chapter 10 and 11 of the book “Strategy to Develop World Class University”.

Solution Space 8.10

In most of the universities the industry interface is poor. The best parameter to measure the industry interface is the income from industry. It is quite low everywhere. While launching the performance based funding schemes like RUSA, this aspect should be considered and enough weightage must be given.

8.11. Industry Inertia & Corporate Social Responsibility: Section 135 of Companies Act 2013

The Scientific Manpower Committee (1947), Engineering Personnel Committee(1956), AICTE (1958, 1966, 1969, 1971), Thacker Committee (1961), Kothari Education Commission (1966), National Policy on Education (1968), Ministry of Education, Government of India (1978), Draft National Policy on Education (1979), AIEI (1980), Nayudamma Review Committee (1980), Challenge of Education - a policy perspective, Ministry of Education, GOI (1985), IIT Review Report (1986), National Knowledge Commission (NKC), Government of India Recommendations..... many more committees, commissions, seminars, symposiums have repeatedly advocated and emphasized on the need for strong university industry linkages in India. [248]

Collaboration between industry and academia in India has been **restricted to one dimension - talent**. It made sense. Graduating students needed jobs. The companies on a sharp growth curve needed to hire talented people. But, if we wish to become an economic superpower and interested to establish world class universities, industry and academia will have to collaborate in a more effectively for mutual benefits. Enough emphasis is needed on the cultivation of strong links with industry and promotion of various industrial activities by the faculty members and students of the institutes. In order to keep up with the growing volume of industrial liaison activities, and even more importantly, to catalyze the further growth and development of interaction between the Institute and Industry many activities are needed. In case of India, there are many problems like

- Industry **doesn't believe** that Indian academic institutions are **useful partners**. In fact, many top Indian companies (read: Infosys, Mahindra & Mahindra and TCS) are forging relationships with foreign universities, rather than Indian ones.
- Another problem on the demand side is a **lack of emphasis on research and development (R&D) within companies**. According to latest R&D statistics published by the Union department of science and technology, more than 60 percent of Indian industry's expenditure on R&D is concentrated **in two sectors**— pharmaceuticals and transportation. Given that the total R&D expenditure is also small.
- Faculty does **not have deep expertise** in specific areas and no time for research.
- The industry and the academia **don't understand each other**. When industry gives academia a problem to solve, they often don't define it adequately. On its part, the academia has its blind spots, too. It tends to see the industry as the golden goose and tries to squeeze as much as it can from it. [249]

The World Intellectual Property Organization (WIPO), Japan report stated that "It is only in recent years that Indian industry has really started collaborative programs with universities. … Major global IT companies have outsourced some part of their operations to India and have established R&D centers there as well. … **But overall, few Indian industries are supporting research projects within universities**. Most of the collaboration is in the form of consultancies, which typically do not involve large-scale projects. On the other hand, according to the survey questionnaire conducted by P. Ganguli in the Indian national study, **Indian universities are not fully aware of the importance of intellectual property rights** (IPRs) and lack the resources to manage them. Both sides need to reach out if University-Industry collaboration is to flourish." [250]

To improve the academia-industry relationship the Corporate Social Responsibility (CSR) activities can be utilized.

Section 135 of the Companies Act, 2013 stipulates that companies with a net worth of Rs 500 crore ($100 million) or more, or turnover of Rs 1,000 crore ($200 million) or more, or a net profit of Rs 5 crore ($1 million) or more during the past three financial **years must spend at least 2 percent of their average net profits** from the three preceding years on CSR, or corporate social responsibility initiatives. According to Union Minister of State for Corporate Affairs Sachin Pilot, **this stipulation makes India the first country in the world to legally mandate corporate spending on social welfare**. [5] [251]

Former Union Human Resource Development Minister Kapil Sibal Released Confederation of Indian Industry (CII) Report on "Administrative Reforms in Higher Education" at "AICTE-CII Global University-Industry Congress 2013" on 7th Nov 2013. This white paper has given few recommendations for CSR policy for and academics. "**A good part of CSR activities could thus be focused on higher education**. In this context, the following suggestions may be considered:

- Promotion of scientific research
- All proposals for industry-academia interaction for enhancement of quality and provision of training may be specifically identified as constituting CSR activity.
- Social business projects may be defined further as including pilot projects and innovative demonstration units and all incubation arrangements.
- Since it becomes a Board policy and may apply to a large number SMEs and not only to large corporations, there is considerable potential for contributing to higher education in this area both individually and collectively while SMEs may benefit through training, advisory and project research.
- Industry in the first few years may adopt few specific project (such as interaction between industry and academia) with highest impact may as priority area for CSR.
- Corporate can use this opportunity not only to make substantially more contribution to education, research and incubation projects but also professionalize the implementation through training, research and monitoring. The various capabilities of corporate sector could also be utilized for optimal use of funds in this area.
- Case studies of successful CSR activity in higher education in India and abroad may be widely disseminated." [5]

Solution Space 8.11

These recommendations on CSR are quite useful and can be utilized to reduce industry-institute gap.

8.12. India Needs Diverse Higher Education System

Dr. Pawan Agarwal, Adviser (Education), Planning Commission, Government of India stated that "It is wrongly assumed that all institutions of higher education in the country must engage in both teaching and research. This is both unfeasible and wasteful. **A mass higher education system is**

necessarily comprised of diverse types of institutions. These institutions must meet a variety of economic and social needs within the country and provide a range of alternate paths to success for young people. While **the country must have some world-class research universities**, it must also have a large number of sophisticated teaching institutions and of institutions that impart vocational or generic skills." [46]

Solution Space 8.12

India needs WCU as well as diverse education system. That is, India needs equity and excellence. It is difficult to find common solution to satisfy problems of the both the issues. We will have to opt for new solutions like Education Hub.

8.13. Admission Process: Recommendation Letter

It is not always possible to measure the knowledge, skillset, experience, talent and physical capacity through the entrance examination system. Thus in USA and UK they ask for Recommendation letters from experts with whom you have worked. This is a better system than simply admitting students through entrance test. Unfortunately this system is not fully adopted in India.

Let's consider the medical PG Surgery (MS Surgery) admission process. We have adopted entrance examination rout for such admissions. Normally these entrance examinations are based on multiple choice question pattern. Through this kind of entrance exam, can we select better medical MBBS student for admission to PG surgical courses with following required capabilities

- God gifted excellent surgery aptitude and talent
- Strong mental setup for bearing stress and strain of lengthy and complex surgical procedure
- In case of emergency, the capability to take wise spontaneous surgical decisions
- Perfect human anatomy for surgical process like lengthy and slim fingers
- Wide surgical experience etc.

Remember that medical sciences, Architecture, Law and Engineering are specialized versions of Vocational courses. Through entrance examinations no one can judge the skillset, knowledge, experience, talent and expertise. For such admission processes, the recommendation letter system is more appropriate.

Solution Space 8.13

The Recommendation Letter system could not grow in India because the cultural problems and mindset of society. There is a fear of misuse of this system. Unfortunately our system is unable to select innovative, creative, talented, experienced, knowledgeable and appropriate brains for many professional courses.

8.14. Excellence Can Only Grow Organically

I have seen many Board of Governance and Management, mostly from industry or civil services who are trying to build excellent educational institute overnight. The infrastructure building and culture building are two different things. Infrastructure can be build overnight but to develop culture needs few decades.

Dr. Shyam Sunder, School of Management, Yale University stated that "Centers of excellence can only be grown **organically, over a period of time**, starting from small seed groups of scholars. Their **culture must be allowed to evolve**. When organizations **grow rapidly, they risk destroying their culture**. If the size, buildings, budget, and staff of these organizations is specified ex ante, the administrative positions tend to be filled up promptly, while the search for scholars, who are not readily available, drags on. It is easy for such over-staffed organizations **to fall into a bureaucratic routine** within a few years of their founding. Organic growth from a small size over time may help overcome this problem. Unfortunately, there is **no known method of rapidly building quality educational capacity**, any more than **one can induce a healthy mango tree to bear fruit in only a year or two**." [19]

Solution Space 8.14

The culture must be allowed to evolve. The WCU can't be developed overnight.

Chapter 9: Solution Space 01: Need Modified RUSA Reforms

Sam Pitroda, adviser to Prime Minister said that "Today we are growing at 8.9 percent, we hope to grow at 10 percent in next couple of years and lot of **credit goes to deregulation, liberalization, private entrepreneurs and innovations**. Today the **challenge is to deregulate education**, if Henry Ford arrives today the **only industry where there is mass production it is in education**, everywhere else production is gone in terms of mass production. Education is the only area where we **haven't focused on economies of scope, it is all economies of scale** so we **need to deregulate** we need Public Private Partnership, we need **seamless connectivity between vocational education and higher education** which cannot be done today in Indian education system. All of this is pretty straight forward not rocket science, I just don't understand why we take 4-5 years to prepare four cabinet notes or bills all recommendations wants to do one bill overacting sort of commission and leave that commission alone and let that commission decide what needs to be done as opposed to micro manage at the end of the day it is all about control, people don't want to let it go off until be decide it is time to let go, **decontrol education**, I don't think we make any significant change. I am worried, I am concerned but sometimes it's a **lonely battle**, because we just seems love to discuss, more conferences, more debates, more discussions, fine tuning, tweeting but not acting. **My message today is time is running out, we have to act, we know all there is to know, we will make mistakes as we go along but from that we will learn, if we are willing to deregulate be flexible, open and trust our academic community sitting in Delhi you can't really manage education system of a country of this size we just have given broad outline that's what we did in 1991 to our economy and perhaps that's what we need to do in 2011 to our education**." [329]

9.1. RUSA Reforms Shows the Ray of Hope

In 2013, the government of Indian has launched the ambitious 1 lakh crore plan "**Rashtriya Uchchatar Shiksha Abhiyan (RUSA)**" for reforming state higher education system. The RUSA draft has highlighted hundreds of lacunas of Indian education system especially state level education system, which is catering the need of **96% higher education students of India**. If government could implement this policy then the Indian education system can show radical desired changes.

The Cabinet Committee on Economic Affairs has approved the Rashtriya Uchchatar Shiksha Abhiyan (RUSA), a Centrally Sponsored Scheme (CSS) for reforming the state higher education system.

During the 12th Plan period, 80 new universities would be created by converting autonomous colleges/colleges in a cluster to State universities. 100 new colleges, including professional/technical colleges would be set up and 54 existing colleges would be converted into model degree colleges. **Infrastructure grants would be given to 150 universities and 3,500 colleges** to upgrade and fill critical gaps in infrastructure especially libraries, laboratories etc. RUSA would also support **5,000 faculty positions**.

In the 12th Plan period, RUSA would have a financial outlay of Rs. 22,855 crore, of which Rs.16,227 crore will be the Central share. In addition, allocation of Rs. 1,800 crore in the 12th Plan for the existing scheme Sub-Mission polytechnics would also be subsumed in RUSA. Thus the total central share, including the existing scheme of polytechnics will be Rs. 18,027 crore during the 12th Plan. Centre-State funding would be in the ratio of 90:10 for North-Eastern States, Sikkim, Jammu and Kashmir, Himachal Pradesh and Uttarakhand and 65:35 for other States and Union Territories.

RUSA will be a new Centrally Sponsored Scheme **spread over two plan periods** (XIIth and XIIIth), for improving access, equity and quality in the state higher education system. With over 96 percent of students enrolled in the state higher education system, there is a need for State colleges and universities to be strengthened through strategic Central funding and implementing certain much needed reforms. RUSA also aims to incentivize States to step up plan investments in higher education.

The important objectives of the scheme are:

- Improving the overall quality of existing state higher educational institutions by ensuring conformity to prescribed norms and standards and adoption of accreditation as a mandatory quality assurance framework.
- Correct regional imbalances in access to higher education through high quality institutions in rural and semi urban areas as well as creating opportunities for students from rural areas to get access to better quality institutions.
- Setting up of higher education institutions in un-served and underserved areas.
- Improve equity in higher education by providing adequate opportunities to socially deprived communities; promote inclusion of women, minorities, SC/ST and OBCs as well as differently abled persons.

- Ensure adequate availability of **quality faculty** in all higher educational institutions and ensure capacity building at all levels.
- Create an enabling atmosphere in higher educational institutions to devote themselves to **research and innovation**.
- Integrate skill developments efforts of the government with the conventional higher education system through optimum interventions.

All funding under RUSA would be norm based and future grants would be performance based and outcome dependent. Commitment by States and institutions to certain academic, administrative and governance reforms will be a precondition for receiving funding.

The National Development Council (NDC) approved RUSA as part of the 12th Plan. It was subsequently included in the list of 66 schemes approved by the Cabinet on 20th June 2013, as part of the restructured CSSs for implementation in the 12th Plan. [252]

9.2. Objectives and Framework of RUSA

- To achieve the Gross Enrolment Ratio (GER) target of 25.2% by the end of 12th Plan and 32% by the end of 13th Plan
- Improve the overall quality of existing State higher educational institutions by ensuring their conformity to prescribed norms and standards. The key objectives of RUSA are to improve access, equity and quality in higher education through planned development of higher education at the state level.
- Adoption of **accreditation as a mandatory** quality assurance framework.
- Usher transformative reforms in the State higher education system by creating a facilitating **institutional structure for planning and monitoring**.
- Ensure governance, academic and examination (and evaluation) reforms and establish backward and forward linkages between **school education and the job market**.
- **Expand the institutional base** by creating additional capacity in existing institutions and establishing new institutions in un-served and underserved areas by way of upgradation and consolidation.
- Create opportunities for states to undertake **reforms in the affiliating system**.
- Ensure adequate availability of **quality faculty** in all higher educational institutions and ensure capacity building at all levels.
- Create an enabling atmosphere in institutions to facilitate **research and innovation**.
- Integrate the **skill development** efforts of the government through optimum interventions.
- Correct regional imbalances in access to higher education.
- Improve equity in higher education by providing adequate opportunities to socially deprived communities; promote inclusion of women, minorities, SC/ST/OBCs and differently- abled persons.
- To identify and fill up the critical **infrastructure gaps** in higher education by augmenting and supporting the efforts of the State governments.
- Promote **healthy competition** amongst states and institutions to address various concerns regarding quality, research and innovation.

- Clearly define role of State governments vis-a-vis higher educational institutions. Facilitate the creation of State Higher Educational Councils (SHECs).
- A total of 316 state public universities and 13,024 colleges will be covered under RUSA.
- Funding will be made available to private government-aided institutions also, subject to their meeting certain pre-conditions for permitted activities based on laid down norms and parameters. RUSA will adopt a completely new approach towards funding higher education in state universities. The key principles for RUSA funding will be **performance-based funding**, incentivizing well performing institutions and decision making through clearly defined norms. Under the scheme, an initial amount will be provided to the State governments to prepare them for complying with the above requirements. Once eligible for funding under RUSA, after meeting the prerequisite commitments, the States will receive **funds on the basis of achievements and outcomes.** The yardstick for deciding the quantum of funds for the states and institutions comprise the norms that reflect the performance in key result areas (access, equity and excellence).
- These principles will help establish and rely upon a **management information system** to gather the essential information from institutions.
- RUSA will aim to provide **greater autonomy to universities as well as colleges** and have a sharper focus on equity-based development, and **improvement in teaching-learning quality and research.**
- The reforms initiated under RUSA will build a self-sustaining momentum that will push for **greater accountability and autonomy of state institutions** and also to unleash the potential of the state universities.
- The State plans will capture the current position of the states and institutions with respect to these indicators, as well as the targets that need to be achieved.
- The State Higher Education Council will undertake this process of planning, execution and evaluation, in addition to other monitoring and capacity building functions.
- At the **national level**, the scheme will be implemented by the RUSA Mission Authority and assisted by the Project Advisory Group, Technical Support Group and Project Directorate.
- The main agency through which RUSA will work in the States will be the **State Higher Education Council (SHEC)**, an autonomous body that will function at an arm's length from the state and central governments. SHEC will be assisted by State Project Directorate and Technical Support Group.
- In every institution, the Governing Body and a Project Monitoring Unit will oversee the project progress. [253]

Solution Space 9.0

In next 10 years, the RUSA Reforms can partially remove few obstacles on the path of WCU like

- Better Affiliated College system
- Better implementation system
- Reduce the gravity of problem of faculty vacant positions and not the scarcity (while achieving 30% GER the faculty shortage will continue)
- Better Center-State coordination for development of higher education sector
- Can develop at least one Research University in every state
- Better industry-institute interface
- Better active international collaborations
- Better Curriculum Design process
- Better infrastructure
- Better employability
- Performance based funding system
- More freedom
- Correct regional imbalances
- Better employability

The RUSA is basically scheme for Public Institutes and covering 45.14% universities and 36% colleges. India needs more comprehensive and advanced Reforms.

Chapter 10: Solution Space 02: Need IRAHE or NCHER by an Act of Parliament like Election Commission

Both, NKC and Yashpal Committee had suggested the IRAHE or NCHER should be National Commission like the Election Commission.

10.1. Recommendations of NKC and Yash Pal Committee

The National Knowledge Commission (NKC) has recommended the setting up of an independent regulatory authority for higher education by an act of Parliament.

The Comparison of Yash Pal Committee and National Knowledge Commission Reports highlight many aspects of the solution of this complex problem of reforms of higher education in India.

Prof. Yash Pal while answering the question "In your report, you suggested for setting up of National Commission for Higher Education and Research (NCHER). Do you think it will work as an independent organization or will it fall in line with the existing regulatory bodies?" said that "**My proposal was that the National Commission for Higher Education and Research should be a constitutional body**; it should be **like the Election Commission**, which is **not under any government department**, **not in the centre**, **not in the state**. So, there would be few bureaucrats who can interfere, few politicians who can interfere and if you move in that direction then there is a possibility... and add to that, the first requirement is that the **universities should be self-regulating bodies**; universities are the places where real academics reside. The commission is only for co-ordination and helping as a catalyst not as a Czar, this is the important statement I made that this commission will not be a Czar, it will be a catalyst." [48]

Thus both NKC and Yashpal Committee had suggested the IRAHE or NCHER should be National Commission like the Election Commission.

Dr. Shyam Sunder, School of Management, Yale University stated that "The Report proposes a bold structural move in the creation of a new constitutional body, the National Commission for Higher Education and Research (NCHER), to take over the responsibilities of the Universities Grants Commission, the All India Council for Technical Education, and all educational aspects of 13 professional regulatory bodies, such as the Bar Council of India. The **Commission will be directly responsible to the Parliament**, **along the lines of the National Election Commission, to protect it from political interference."** [19]

The **Commission** will serve as the highest regulatory body in the field of higher education in India and will seek to redefine the field through

1. Developing a vision of higher education as reflected in the framework for curricula, university benchmarks, international comparisons, and educational policies, including costs and pricing;
2. Advising the union and state governments,
3. Creating norms, processes, and structures for entry, accreditation, and exit of institutions and programs;
4. Developing sources and mechanisms for funding;
5. Promoting effective and transparent governance;
6. Creating a national database on higher education;
7. Promoting an environment to attract talented youth to education and research;
8. Creating processes for enriching the environment for learning and exploration through softer interaction among students and teachers;
9. Finding ways of gradually freeing the universities from the administrative burdens of affiliated colleges; and

10. Reporting annually to the Parliament on the state of higher education. [210]

Dr. Pawan Agarwal, Adviser (Education), Planning Commission, Government of India stated that "On review now, one sees that many of the recommendations of the NPE, 1986 read with PoA, 1992 have been only partly fulfilled. Moreover, there has been **no effort to modify the previous policy prescriptions** or to develop a new one. **After the economic reforms were undertaken in the early 1990s their influence on development of higher education has been ignored**. With economic reforms of 1990s, private sector has come to occupy a central role in economic development of the nation. There is a need for a holistic review of the instruments currently available for managing the high education system such as the UGC Act, the AICTE Act, etc. **which have become outdated in the present context**. In this context, it is important to develop a new national policy framework for higher education in the current and emerging context. **Such a policy framework should not be developed by political processes but by an independent high powered Commission."** [17]

National Knowledge Commission	Yash Pal Committee
Regulatory structure	
• **Establish an Independent Regulatory Authority for Higher Education (IRAHE) through an Act of Parliament to set standards and determine eligibility criteria for new institutions.** • It shall also settle disputes and licence accreditation agencies (both public and private). • UGC shall only disburse public funds. Abolish all professional bodies except the MCI and BCI who shall provide licences to those wishing to enter the profession.	• **Establish a National Commission of Higher Education and Research (NCHER) through a Constitutional Amendment, to replace UGC, AICTE, NCTE and DEC.** • Professional bodies such as MCI and BCI should conduct qualifying examinations. • NCHER shall create norms for accreditation and certify accrediting agencies, independent of the government. • Constitute a National Education Tribunal to adjudicate disputes.
Access	
• Expand the number of universities to 1,500 by establishing 50 National Universities and giving autonomy to individual colleges or clusters of colleges, with proven track record. • Give admission without taking into account a student's ability to pay. Have a National Scholarship Scheme and allow institutions to set their own fees if at least two banks are willing to give a loan without any collateral. • Address disparities of income, gender, region by creating deprivation index.	• Regulatory mechanism should make rational and consistent rules for setting up institutions (both public and private). Education should be made affordable either through scholarships or loans. • Allow only the top foreign universities to establish campuses. • The best colleges should be upgraded to university status. A number of colleges can be clubbed into clusters and be recognised as universities.
Quality	
• Existing universities: revise curricula, follow course credit system, promote research, performance incentives to faculty. • Colleges: Replace affiliation system with autonomy to top colleges, remodel some into community colleges, and establish a Central Board of Undergraduate Education. • Make disclosure norms for institutions stringent, including their accreditation level. • Enhance quality through competition by allowing foreign institutions to operate in India.	• Allow institutions to set their own targets and achieve those in a specified time frame. Reform the curricula based on principles of mobility and academic depth. Universities should have rich undergraduate programmes. • Optimise size of state universities. • All private institutions have to be mandatorily accredited. • Granting of deemed university status should be put on hold.

	• Competitive remuneration and improved infrastructure is required. Student feedback should be taken to identify poor performers.
Governance	
• Governance structures should preserve autonomy and ensure accountability of universities. Vice Chancellors should be appointed through a search process and peer judgement alone. • The large size and composition of university courts, academic councils and executive are impediments. Decisions should be taken by standing committees of academic councils. • Address the problem of politicisation of universities.	• Governance structure should preserve the autonomy of universities. Need to develop expertise in educational management and separate it from academic administration. • Need for exclusion of politicians and limited representation of government in governance structures. • Teachers should have autonomy to frame their courses and assess the students.
Funding	
• Government funding should be 1.5% of GDP by 2012. Asset of universities such as land should be managed for revenue. • Rationalise fees by requiring it to meet at least 20% of the total expenditure. UGC's grants-in-aid should not be reduced and needy students should have fees waived plus scholarships. • Encourage philanthropic contributions through incentives for universities and donors. Allow private investment in universities. Public-private partnerships to set up universities. • Make efforts to attract international students.	• Need to find complementary sources of funding, including encouraging philanthropy. Alumni should be tapped as a source. • Universities should hire professional fund raisers to attract funding from non-government sources. • Give government funds as a block grant based on a plan. • Guaranteed students loans for students who can pay and free education for poor students should be implemented.
Sources: "Report to the Nation: 2006-2009," National Knowledge Commission; Report of 'The Committee to Advise on Renovation and Rejuvenation of Higher Education' Prof Yash Pal, 2009; PRS.	

Table 10.1: Comparison of Yash Pal Committee and NKC Reports [254]

The NKC stated that "Change the system of regulation for higher education. The present regulatory system in higher education is flawed in some important respects. The **barriers to entry are too high**. The system of authorizing entry is cumbersome. There is a **multiplicity of regulatory agencies** where mandates are both confusing and overlapping. The system, as a whole, is over-regulated but under-governed. We believe that there is a clear need to establish an Independent Regulatory Authority for Higher Education (IRAHE). **The IRAHE must be at an arm's-length from the government and independent of all stakeholders including the concerned Ministries of the Government**, along the lines specified in our attached Note.

- The IRAHE would have to be established by an Act of Parliament, and would be responsible for setting the criteria and deciding on entry.
- It would be the only agency that would be authorized to accord degree granting power to higher education institutions.
- It would be responsible for monitoring standards and settling disputes.
- It would apply exactly the same norms to public and private institutions, just as it would apply the same norms to domestic and international institutions.
- It would be the authority for licensing accreditation agencies.
- The role of the UGC would be re-defined to focus on the disbursement of grants to, and of, public institutions in higher education. The entry regulatory functions of the AICTE, the MCI

and the BCI would be performed by the IRAHE, so that their role would be limited to that of professional associations." [255]

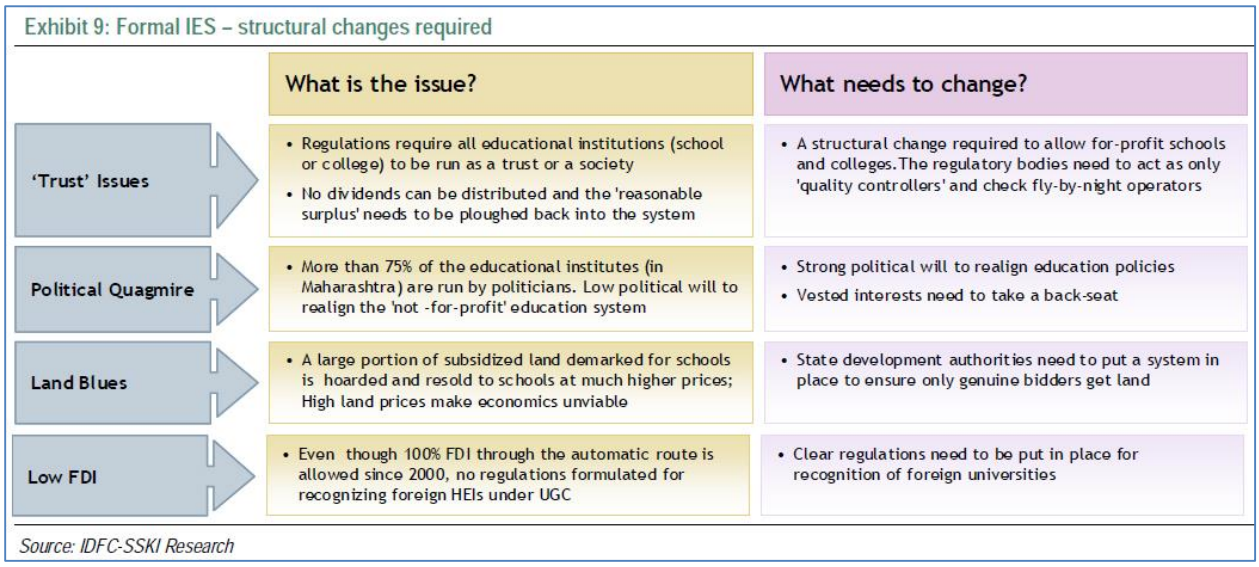


Fig. 10.1: IDFC-SSKI Report: Formal Indian Education System – Structural Changes Required [13]

10.2. Major Cause: Trying Reforms after Years of Neglect

In the report by Professor Fazal Rizvi, Professor in Education at the University of Melbourne stated that "What this new investment regime does not adequately address is the quality of educational provision in the colleges. Nor does it adequately deal with the issue of the organizational cultures of Indian universities and colleges which, **after years of neglect**, are widely known for their outmoded approaches to curriculum and pedagogy, their ineffective modes of assessment, and corrupt practices of staff recruitment and promotion. **Pouring good money into a largely dysfunctional system cannot be expected to produce the desired changes,** for the sources of dysfunction lie not only in the lack of resources but also in a **range of reform dilemmas** that have become an inherent feature of Indian higher education**.** These dilemmas have their origins in both the historical constitution and the contemporary organizational practices in Indian higher education. As we have already noted, **previous attempts at reform have not enjoyed great** success in India, and this has not been solely due to the lack of resources but also to a **deep-seated organizational culture resistant to reform.** At the same time, however, there is a deep level of nervousness, particularly within India, about its **capacity to sustain growth**, and indeed about the distribution of the benefits of growth. Major concerns surround the country's poor infrastructure. **With years of neglect and under-investment, it is argued,** the Indian Government has been **too slow to pursue a vigorous program of reform.** This is said, in particular, of Indian higher education, which, as a system, remains in a poor shape, characterized by inadequate infrastructure, poor operating conditions and ineffective teaching and learning programs, producing large cohorts of graduates who are barely employable in the professions for which they have ostensibly been trained. In 2007, no less an authority than the then Indian Minister of Human Resource

Development, Arjun Singh, referred, as reported in The Times of India (September 18, 2007) to **Indian higher education as a 'sick child'**. It is clear that the Indian system of higher education faces enormous challenges. Attempts by the central government to coordinate reform initiatives have also met a **great deal of resistance from the state educational bureaucracies, as well as from the universities and colleges themselves**. Indian federalism has a complex structure, which worked reasonably well during the first two decades after independence, but is now increasingly characterized by highly contentious politics. State governments have become increasingly protective of their regional identity and political power. Within the structure of this competitive federalism, the **authority of the UGC has declined**, with no other agency emerging that can develop, coordinate and steer the processes of reform down to the local level. However, even if it is possible to negotiate programs of reform across central and state governments, an understanding of the reforms seldom reaches the local institutional level. The structures of policy communication in India are largely ineffective, with policy ideas remaining confined to administrative leadership, often far removed from the level of professional practice. This suggests that the capacity of the state to promote reform practice is limited. At the colleges in particular, the curriculum arrives in a packaged form, and the students are prepared for examinations that are set elsewhere. At the same time, Indian institutions, while they are proud of their autonomy, rarely exercise this autonomy to debate policy ideas at the level of practice. There is furthermore no marked tradition in Indian higher education of policy ideas emerging 'from the bottom', despite its distinctive democratic political traditions. In India, **university teacher unions enjoy a proud tradition, but remain concerned largely with industrial conditions, and pay little attention to academic issues**. [173]

A strident critic, Altbach (2005), has repeatedly argued that for India to continue to succeed in the knowledge-based global economy, its system of higher education needs

- Sustained financial support, with an appropriate mix of accountability and autonomy;
- Development of a clearly differentiated academic system—specifying distinct missions, resources, and purposes for each component;
- Managerial reforms and effective administration; and
- Truly meritocratic hiring and promotion policies for academics, and similarly rigorous and honest student recruitment, selection, and instruction.

Transnational corporations investing in India have similarly suggested that **India cannot continue to achieve economic success with cheap labor, call centres and "low-tech" manufacturing** alone, but needs a more differentiated academic system that fosters excellence by preparing students to work within a global context characterized by a networked logic and higher levels of mobility. Similar arguments are made by the Indian academic diaspora. [173]

10.3. Needed Efforts Like China

China has a multifaceted programme to build world-class research universities, and well over 20 billion purchasing power parity dollars have been spent on building an elite sector in Chinese higher education. At the core are several strategies. A series of mergers of more specialized universities were implemented in the 1990s to form the basis of some institutions, essentially

reestablishing the comprehensive universities that existed prior to the Soviet-style changes in the 1950s. The most important effort included two major initiatives supported by the central government: the 1993 211 Higher Education Project that identified 100 universities for upgrading and establishing them as research-intensive institutions; in 1998, at the time of Peking University's centenary, the 985 project was inaugurated, aimed at creating 40 "world-class" universities in China (Liu 2007; Ma 2007). The 985 project built on China's existing research-oriented universities in all parts of the country but with the predominance in the coastal provinces and in Beijing. Central government funds were provided for infrastructure, including a number of impressive new campuses, and for a range of interdisciplinary centres and other upgrades. Provincial and other authorities gave additional support. For example, the Shanghai government has supported its four 985 project universities, adding resources to those of the central authorities. In some cases, neighboring universities were merged, new campuses built, and emphasis placed on the research mission. A few additional universities, supported by provincial governments, have also attempted to join the ranks of the research universities…. The current Ministry of Education policy will **not expand the number of 985 universities but will rather further strengthen the existing institutions.** [39]

Solution Space 10.0

- The Yash Pal Committee Report and Sam Pitroda NKC report, both had suggested the IRAHE or NCHER should be National Commission like the Election Commission.
- The previous attempts at reform have not enjoyed great success in India.
- Pouring good money into a largely dysfunctional system cannot be expected to produce the desired changes.
- The deep-seated organizational culture resistant to reform.
- With years of neglect and under-investment, it is argued, the Indian Government has been too slow to pursue a vigorous program of reform.
- **Need a program and reforms like China and time bound program like Singapore.**

Chapter 11: Solution Space 03: Learn a Lesson from Punjab University

Phil Baty Editor Times Higher Education Rankings, while answering the question "What was the basis of selecting Panjab University as the top Indian university?" stated that "Panjab University has a ***very strong school for research****. It has contributed research papers which have pushed forward the boundaries of knowledge in the field. It is doing research which is influential globally. Its highest score is the citation impact, which is our research influence indicator. It is* ***outstanding in research, which gives it an edge over some of the IITs****. [47]*

There is a need of Education Commission by act of parliament, the programs and reforms like China and Time bound program like Singapore. Then Universities, like PU, can secure the position in top ranking 100 WCU.

Ashok Thakur, secretary of the ministry's department of higher education, said that "Indian institutions must no longer hide behind the "excuse" that the global ranking metrics and indicators were not suited to them. We must play the same game that the rest of the world is playing." [335]

However, despite all odds, the encouraging ranking has generated enthusiasm amongst the students as well as teaching fraternity of Panjab University. It has also given ***some food for thought — and introspection — to the other institutions in the country****. The message is* ***loud and clear*** *— that* ***merely name and brand will not do and you have to deliver in order to be recognized and counted amongst the top institutions****. [336]*

11.1. Times HE BRICS & Emerging Economies Rankings 2014

The Punjab University has again become topmost THE ranking University in India. The Times Higher Education BRICS & Emerging Economies Rankings 2014 powered by Thomson Reuters includes only institutions in countries classified as "emerging economies" by FTSE, including the "BRICS" nations of Brazil, Russia, India, China and South Africa. The top universities ranking uses the same methodology as the Times Higher Education World University Rankings, covering all core missions of a world-class university - teaching, research, knowledge transfer and international outlook – using 13 carefully calibrated performance indicators. [26]

Ranking	University or Higher Education Institute	Points
13	**Punjab University**	**40.2**
30	Indian Institute of Technology, Kharagpur	32.8
34	Indian Institute of Technology, Kanpur	31.9
37	Indian Institute of Technology, Delhi	30.1
37	Indian Institute of Technology, Roorkee	30.1
46	Indian Institute of Technology Guwahati	27.9
47	Indian Institute of Technology Madras	27.6
47	Jadavpur University	27.6
50	Aligarh Muslim University	27.2
57	Jawaharlal Nehru University	25.3

Table 11.1: Position of India: Times HE BRICS & Emerging Economies Rankings 2014 [26]

11.2. Times Higher Education Ranking 2013: Punjab University Analysis

The Punjab University (PU) is India's best University (Ranked 225-231) as per Times Higher Education Ranking 2013-14. The score obtained by PU, IIT-K and IIT-D is as follows:

SN	Criterion	PU	IIT-K	IIT-D
1.	Teaching	25.8	39.3	33.8
2.	International outlook	29.3	14.7	15.3
3.	Industry income	28.4	No Data Supplied	No Data Supplied
4.	Research	14.0	30.0	23.0
5.	Citations	**84.7**	35.3	38.5

Table 11.2: Times Higher Education Ranking 2013-14: Score of PU, IIT-K and IIT-D

Most illustrious alumni of Punjab University are:

- Dr Shankar Dayal Sharma, 9th President of India
- Prime Minister Manmohan Singh
- Inder Kumar Gujaral, Former PM of India
- Kapil Sibal Union Minister
- Pawan Kumar Bansal, Union Minister
- Selja Kumari, MP/Union Minister
- Sushma Swaraj, Leader of Opposition(BJP)

- Astronaut Kalpana Chawla
- Scientist Prof. Yash Pal
- Bhai Mohan Singh (Padam Shri), Chairman & M.D. Ranbaxy Labs. Ltd.
- Dr Abdus Salam, physicist, first Pakistani Nobel Laureate
- Dr. Hargobind Khorana, Nobel Laureate Biotechnologist
- Kiran Bedi, IPS Officer
- Sukhbir Singh Badal, President of SAD
- Anupam Kher, Renowned Movie Star
- Jagjit Singh, Ghazal Maestro
- Jaspal Bhatti, Comedian
- Kirron Kher, Actress [256]

The institutions which do not meet certain parameters are excluded from consideration. For instance, "Universities are excluded from the Times Higher Education World University Rankings if they **do not teach undergraduates**; if they **teach only a single narrow subject**; or if their **research output amounted to fewer than 1,000 articles between 2007 and 2011 (200 a year)**. In some exceptional cases, institutions that are below the 200-paper threshold are included if they have a particular focus on disciplines with generally low publication volumes, such as engineering or the arts and humanities…. Panjab University needs to push its **research credentials** by way of increasing research income and **teaching credentials** by way of improving the staff-to-student ratio…. In any case, the top ranking achieved by Panjab University is an **eye-opener for the "branded" institutes** which only thrive on the brand-names but lose away in delivering. It would be interesting to **compare the funding input received by the "branded" institutes in comparison to Panjab University** and the other universities which have not been able to find a place in the top 10 Indian institutes of higher learning." [336]

All these years, political masters have underrated and mistreated Panjab University. Newer institutions like Central Universities, IISERs, IITs were set up in the region and projected as superior to this old university with rich academic traditions. So much so, that Panjab University was **denied the status of a Central University** for reasons best known to the Central and state authorities. No doubt the newer institutions in and around Chandigarh are also performing well, but there is a **feeling of discriminatory attitude against Panjab University**. However, despite all odds, the encouraging ranking has generated enthusiasm amongst the students as well as teaching fraternity of Panjab University. It has also given some food for thought — and introspection — to the other institutions in the country. The message is loud and clear — that merely name and brand will not do and you have to deliver in order to be recognized and counted amongst the top institutions. [336]

11.2.1. Citation Factor Dominated Ranking

PU had a citation score of 84.7 while IIT-Kharagpur scored just 35.3, IIT-Kanpur 41.8, IIT-Delhi 38.5 and IIT-Roorkee 53.6. PU also did much better than the IITs on the 'international outlook' parameter, scoring 29.3 while the IITs had scores between 14.7 and 15.6.

11.2.2. Importance of Research in Science Faculty

The physics department, which has **140 research scholars**, has contributed in a big way to the Times ranking. Four members of the physics faculty and 12-14 research scholars have been part of the research that led to the discovery of **Higgs Boson, or God particle**, which has earned Briton Peter Higgs and Belgian Francois Englert the 2013 Nobel Prize.

That apart, the university's score on the citation of studies conducted by its researchers was the main reason it surged ahead of the Indian Institutes of Technology in the rankings. The university scored 84.7 per cent in citation -- higher even than the University of Tokyo which was ranked first in Asia. **All the papers produced at Europe's CERN, the lab which discovered the 'God particle', gave credit to the researchers from the university. That helped the ranking**.

11.2.3. Got the Success without Special Status like Premier Institutes

Dr. Grover, VC of PU said that students enrolling for research programmes have no access to grants. "The grants from the centre are limited. Students have to depend on these. **Eighty-seven percent of our funds go to salaries**. Due to this, we cannot give research fellowships," he said. [257] [258] [259] [260]

11.2.4. Citation Analysis

The citation figures a little closer, using the same database used by THE Ranking. The data looks like this

Name of the university	2007	2008	2009	2010	2011	2012	Total	Avg. Citation	h-index
Tokyo Metropolitan University	684	603	594	582	610	707	3780	16.82	63
Punjab University	417	456	457	540	568	654	3092	**10.18**	64
Indian Institute of Technology, Kanpur	708	783	733	693	748	744	4409	6.73	49
Indian Institute of Science	1285	1374	1571	1627	1750	1982	9589	7.41	73

Table 11.3: Citation Analysis [22]

University/Institute	Pub.2000-2011 (10 years)	Avg. Annual output
Indian Institute of Science (IISc), Bangalore	15,638	1422
IIT Kharagpur	9739	885
All India Institute of Medical Sciences, New Delhi	9244	840
University of Delhi	8439	767
IIT Delhi	8383	762
Banaras Hindu University (BHU), Varanasi	7382	671
IIT Madras	7366	670
IIT Bombay	7214	656
IIT Kanpur	7202	655
Tata Institute of Fundamental Research (TIFR), Mumbai	6140	558

Jadavpur University, Kolkata	5805	528
Postgraduate Institute of Medical Education & Research Chandigarh	5561	506
Panjab University, Chandigarh	**4801**	**436**
Anna University, Chennai	4353	396
Madras University, Chennai	4250	386
Calcutta University, Kolkata	4010	365
IIT Roorkee	3894	354
Aligarh Muslim University (AMU), Aligarh	3694	336
University of Hyderabad, Hyderabad	3692	336
Annamalai University, Annamalainagar	3139	285
Jawahar Lal Nehru Centre for Advanced Scientific Research, Bangalore	2727	248
Jawaharlal Nehru University (JNU), New Delhi	2720	247
Indian Agricultural Research Institute, Pusa, New Delhi	2589	235
Rajasthan University, Jaipur	2546	231
University of Mysore, Mysore	2536	231

Table 11.4: Ten years publications and average [22]

Panjab University has not only improved its publication count substantially over the last five years, it has also produced better-cited papers. But other universities are not very far behind. For example Indian Institute of Science, **if it has participated** would come close to Panjab University. We looked at top publishing universities in the country. **We discovered that if we go by the primary criterion of at least 200 publications a year for inclusion in THE rankings at least 25 Indian institutions could become eligible.** [22]

11.3. Surprisingly the IITs couldn't Share the Data

That IIT-Kharagpur and IIT-Delhi **did not share their data on 'industry outcome'** also hit their rankings. On teaching though, the three IITs in Delhi, Kharagpur and Kanpur did better than PU.

On the other hand, the IITs were surprised. "We have to see on what basis the ranking has been done and analyze it. It also shows how complex the process of ranking is," said Prof Gautam Barua, till recently the director of IIT Guwahati.

IIT Kanpur director Indranil Manna said, "Where are they getting the data from? We are open to scrutiny but there should be guidelines from ranking agencies."

"It is welcome news but at the same time, all parameters should be known. Also, there should be transparency in the availability of data," said former IIT Kanpur director Dr. Sanjay Dhande.

Rejecting talk of problems with the data collection process, Baty denied the information was taken off the internet. "We directly approach the universities for data." [257] [258] [259] [260]

11.4. Hon. President of India and MHRD Initiative

Indian universities and institutes of higher education are now being coached on how to pitch for a place in the global top ranking lists. Following concerns expressed repeatedly by President Pranab Mukherjee over the conspicuous absence of India from the ranking lists, the Union Ministry of

Human Resource Development has instructed universities and institutes of higher learning to seek expert advice in filling out details about their research and teaching achievements that are prerequisites for being ranked.

The HRD Ministry recently organized workshops to brainstorm on how India can secure a place in the ranking lists. "During the workshops we learnt that a lot of universities and higher education institutes are not aware of how to fill the forms listing out their achievements, some of them do not understand what needs to be highlighted. For instance the research work that is carried out at the Indian Institute of Technology is not reported well, so it has been decided that these universities can rely on the know-how of ranking majors like Times Higher Education and Quacquarelli Symonds (Q5)," said Ashok Thakur, Secretary, Department of Higher Education, HRD Ministry.

India's poor show in the global ranking lists has been flagged by President Mukherjee since assuming office. In February this year, he became the first President to address the Vice-Chancellors of 40 Central Universities in his capacity as Visitor and in November he will meet the heads of NITs, again a first of its kind meeting, to discuss the overall pedagogy of these learning centres. The President has asked the universities to establish at least one centre of excellence each and to enhance collaboration with specialists from India and abroad and compete to find a place in the global top 100. [257] [258] [259] [260]

Solution Space 11.0

In spite of all the difficulties like other universities in India and without any special privilege like premier institutes of India, the Punjab University could become top ranking university in India. The reasons are

- Develop appropriate research environment
- Focused on global research
- Given stress on research Publications in high impact factor journals and produced better-cited papers
- It is one of the oldest university and are having good alumni network, which they have used effectively for building "international reputation" and "International Outlook".
- Timely shared the data with ranking agencies
- Maintained good teaching quality
- Enhance the industrial income

In short they have used the resources effectively and set an example in front of all the universities and higher education institutes in India. One must learn a lesson from them.

To secure the position in top 200 ranking WCU, like China, the Indian government should provide special status to such type of universities and must remove maximum hurdles. This kind of support is beyond the scope and jurisdiction of Regulatory bodies. There is a need of

- Education Commission by act of parliament
- Need a program and reforms like China and
- Time bound program like Singapore.

Chapter 12: Solution Space 04: Learn a Lesson from B-School ISB

The ISB is an unusual example of creating world class institute within a decade. They have proved that a quality institute with strong industry acceptance does not require the stamp of affiliation of regulatory bodies. Credit goes to their sincere efforts and dedication. They have set an example in front of private players.

12.1. Success Story of Indian School of Business (ISB)

IDFC-SSKI report stated that "However, **an Higher Education Institutes (HEI) can do without recognition from these bodies – as long as they are a quality institute with acceptance from the industry**. **A case in point is ISB** (Indian School of Business, Hyderabad – a premiere business school), **which has proved that a quality institute with strong industry acceptance does not require the stamp of affiliation with these bodies."** [13]

Indian School of Business (ISB) is out of the jurisdiction of any government regulatory mechanism like UGC, ACITE etc. ISB is not entitled for government grants or any financial support. Let's analyze its spectacular performance.

Indian School of Business (ISB) is a private business school in India with campuses at Hyderabad and Mohali. ISB is a **not-for-profit** organization funded entirely by corporates, foundations and individuals from around the world. The school was founded by two senior executives of McKinsey & Company and is governed by a board comprising both Indian and non-Indian businessmen. ISB is among the best business schools in India. [156]

SN	University/Institutes	Global Employability Ranking 2013
1.	Indian Institute of Science (IIS)	35
2.	**Indian School of Business**	**148**

Table 12.1: Indian University's Global Standing 2013 [261] [262] [263]

This is the fourth successive year that the ISB has featured in the top 20, reinforcing its reputation as a world class institution. During this four year period, the ISB's PGP class size grew by over 35 per cent to a current size of 570 students reflecting the institution's commitment to world-class quality and scale. [262] [263]

Year	ISB	IIM-Ahmadabad
2008	**20**	Nil
2009	**15**	Nil
2010	**12**	Nil
2011	**13**	**11**
2012	**20**	**11**
2013	**34**	**26**

Table 12.2: Global Top MBA rankings by Financial Times, London [264]

ISB is the **first business school in South Asia** to be accredited by the Association to Advance Collegiate Schools of Business (AACSB).

12.2. Industry Acceptance: Beyond Regulatory Mechanism

IDFC-SSKI Report stated that "Issues related to trust formation, regulatory ambiguity and vested political interest are the key barriers to capital commitment from for-profit organizations. It is possible to set up an HEI **outside the purview of UGC regulations**. The products of these institutes (students passing out) do not have to conform to acceptance standards of the education system **but of the industry**. As long as industry quarters perceive the products to be of **superior quality**, the HEI can do **without these cumbersome affiliations**. **For example, ISB** (Indian School of Business, Hyderabad) is a venerated name in the industry corridors despite **it not being affiliated to any regulatory board**. The diploma offered by ISB **holds as much (arguably more) value as any UGC-accredited certification**. But importantly, this status requires maintenance of **world-class quality and strong industry support**. Thus, it cannot be superimposed on the entire segment." [13]

Professor Claudia Zeisberger stated that "The not-for-profit diktat associated with private investment wherein no dividends can be paid to the investor has traditionally discouraged private funds from flowing into the educational sector. The sector is overregulated and sees rampant corruption as a large majority of private institutions are owned by politicians making it more unattractive for the corporate or private investor. **Privately run HEIs can choose not to affiliate to the system and effectively escape the over-regulation but then have to overcome the burden of getting industry acceptance as there are no regulations in place to recognize such HEIs that have no accreditation**." [169]

12.3. Secret behind Success

Indian School of Business (ISB), in Hyderabad, is one of top-ranked business schools of India. Indian School of Business, Hyderabad, has academic association with three of the world's leading business schools - **Kellogg** School of Management, The **Wharton** School and **London Business School**. ISB admits students from diverse backgrounds, from all over the world.

12.3.1. Overview

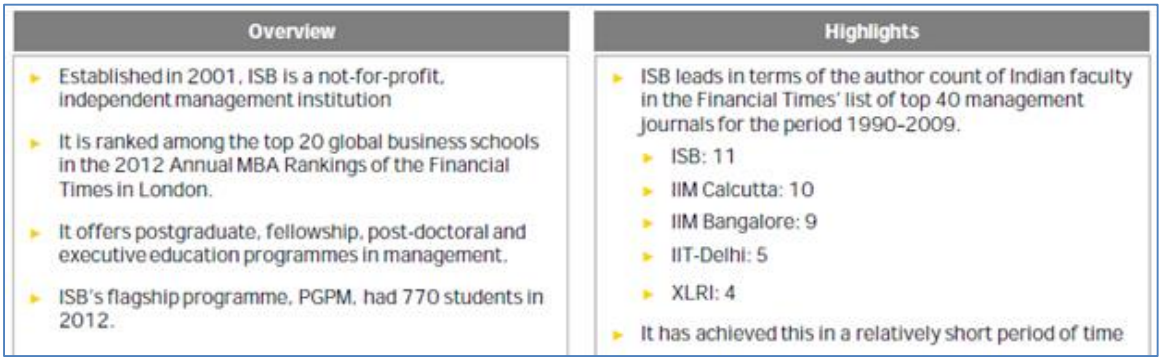


Fig. 12.1: EY-FICCI Higher Education Report 2012: Research Performance of ISB [6]

12.3.2. Governance

Administration at the Indian School of Business (ISB) broadly consists of the Dean's Council, as well as the Executive and Governing Boards. The **Governing Board** comprises heads of **Fortune 500 companies**, noted entrepreneurs and leading academics, **who have devoted time, thought, and resources towards establishing the School**. [265]

12.3.3. Top Notch Faculty

The ISB faculty (across both the campuses) is truly world class. In addition to the highly accomplished resident faculty, ISB has visiting faculty from the likes of Kellogg, Wharton, Yale, Harvard Law School, NYU Stern among others. Out of ISB's 150+ faculty, 100 are visiting faculty from reputed international institutions. All faculty members have doctoral degrees and actively participate in research. The faculty plays a key role in making learning at ISB a truly global experience. They connect the concepts laid out by the curriculum with the current global events and with the latest academic research findings. The faculty's own research makes the concepts much more engaging and palatable.

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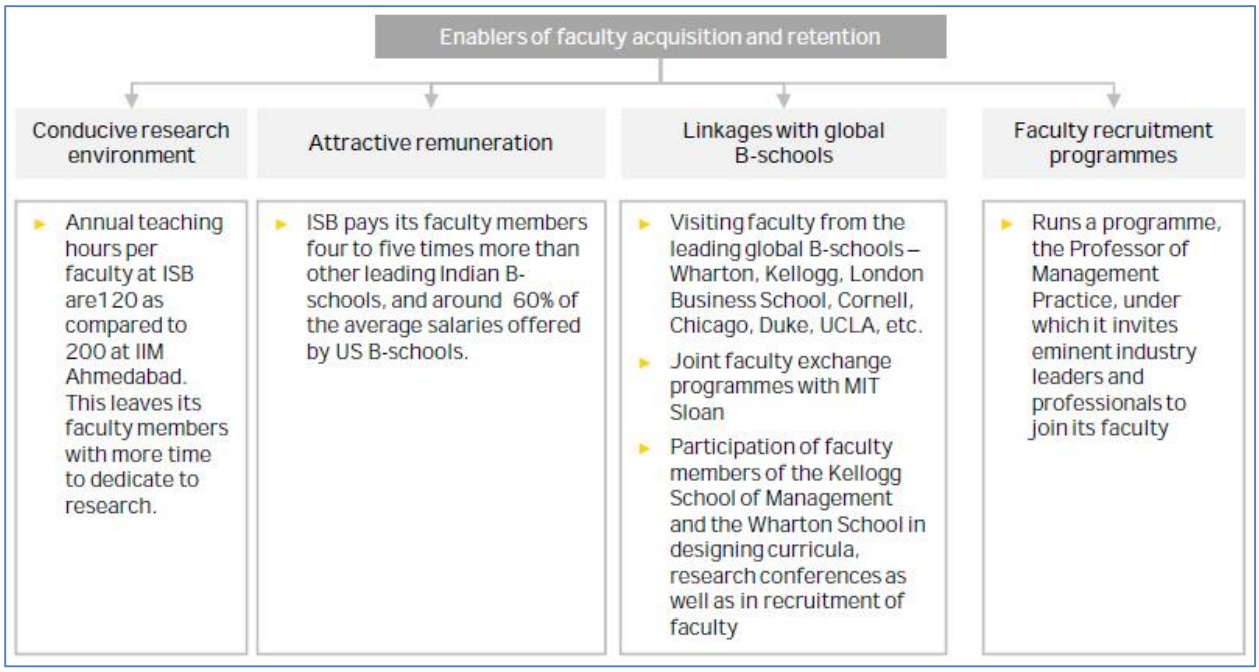

Fig.12.2: EY-FICCI Higher Education Report 2012: ISB: Faculty [6]

12.3.4. International Exposure

The ISB website highlighted that "The faculty at ISB has experience with some of the leading business schools or corporations. As the School has gained international recognition, research scholars from around the world visit ISB on long-term sabbaticals. We also have **visiting faculty from Wharton, Kellogg, London Business School, Cornell, Chicago, Duke, and UCLA**

teaching at the ISB. A large percentage of our students come with international graduate degrees in various fields and/or global work experience, bringing a unique flavor to the campus. Our programmes, such as the International Student Exchange Programme for PGP students, give an opportunity to **study for two terms at other leading business schools**. The **ISB has partnerships with 42 leading schools** from the USA, France, South Africa, Israel, Germany, China, Pakistan and the UK for exchange programmes. Visiting students add to the diversity and peer learning experience on campus. Our Executive programmes are delivered by global business leaders and some programmes are held in association with our partner schools. The international conferences and workshops draw thought leaders from the global business community, policy makers and academia." [265]

12.3.5. International Accreditation

The Indian School of Business is the first business school in South Asia to be recognized by the **Association to Advance Collegiate Schools of Business (AACSB).** The AACSB accreditation has been earned by **less than 5% of the world's business schools**. The accreditation reflects ISB's position as a pivotal player which will shape tomorrow's global management education landscape.

12.3.6. Research

The Indian School of Business (ISB) has a strong research focus, with emphasis on developing the emerging economies. It is one of the only institutions in the world to have a **dedicated Centre of Excellence for issues pertaining to the Emerging Markets** – the Centre for Emerging Markets Solutions (CEMS), which focuses on areas such as **affordable housing, energy and healthcare which are crucial for the developing economies**. These Centres of Excellence provide a forum where knowledge and understanding of business is fostered between the academic and the corporate worlds. **At the core of ISB's strengths, is a strong pool of research-oriented resident faculty and visiting faculty from top management institutions worldwide**. The resident faculty members are highly-acclaimed in their respective domains of expertise and are regularly published in top-tier journals. A rich and vibrant research environment is fostered by research seminars, frequent lectures and workshops that draw thought leaders from the global business community, the Government and academia. It is ISB's strength in research that has allowed the School to focus on issues pertinent not just to India and Asia, but also those related to developing the emerging markets. [265]

The ISB has set up five research centres in the areas of Entrepreneurship, Finance, Logistics & Manufacturing, Information Technology and Leadership. All these centres are working with several companies, industry associations, government and NGO's on various projects. As the global interest in India grows, these CoE's are growing to become hubs for the global academic community to connect with the Indian industry.

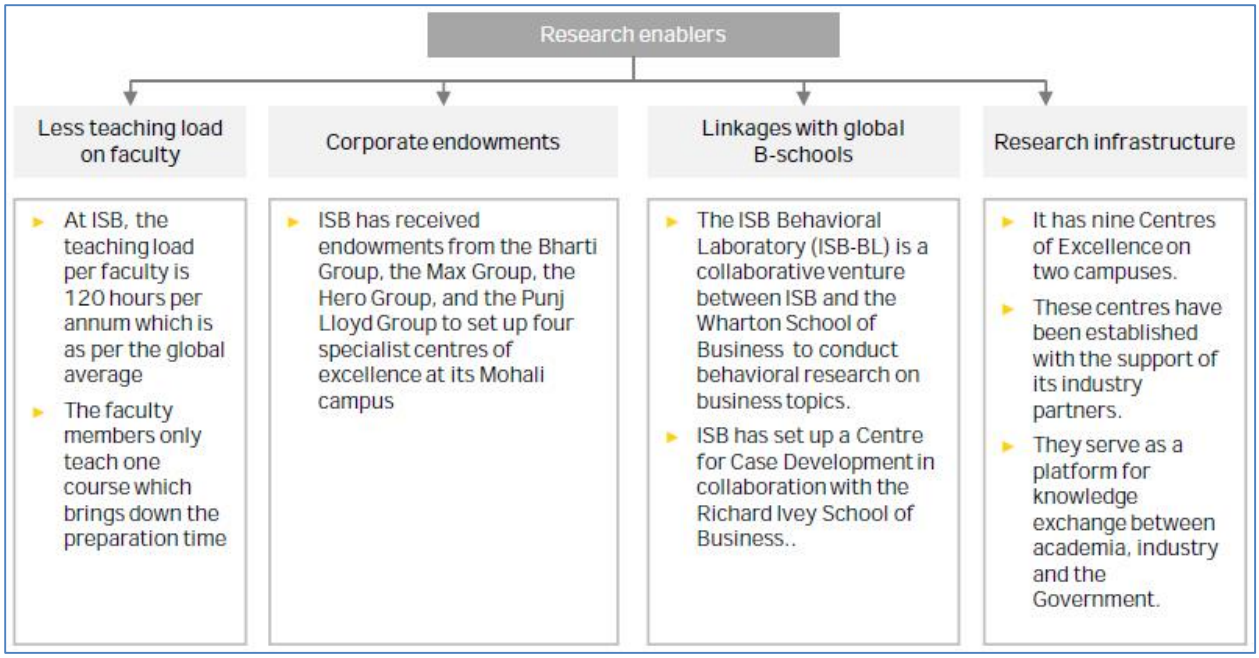

Fig. 12.3: EY-FICCI Higher Education Report 2012: Research Enablers of ISB Hyderabad (without any government support) [6]

Publications	Core faculty	International Journal	Ratio	National Journal	Ratio	Student: Faculty ratio	Average Salary levels (in Rs lakhs)	Fees (in Rs lakhs)	ROI (Flagship programme)
Indian School of Business	40	34	0.85	41	1.03	14	15.4	20.05	0.78
Indian Institute of Management Ahmedabad	95	23	0.24	52	0.55	6.8	13.9	11	1.02
Indian Institute of Management Bangalore	89	17	0.19	28	0.31	6.20	13.6	9.5	1.02
Indian Institute of Management Calcutta	90	20	0.22	38	0.42	6.8	12.7	9.5	1.02
Indian Institute of Management Indore	40	4	0.1	11	0.28	10.5	10.29	9.5	1.02
Indian Institute of Management Kozhikode	35	6	0.17	29	0.83	14			

Fig. 12.4: Research of top B-schools [266]

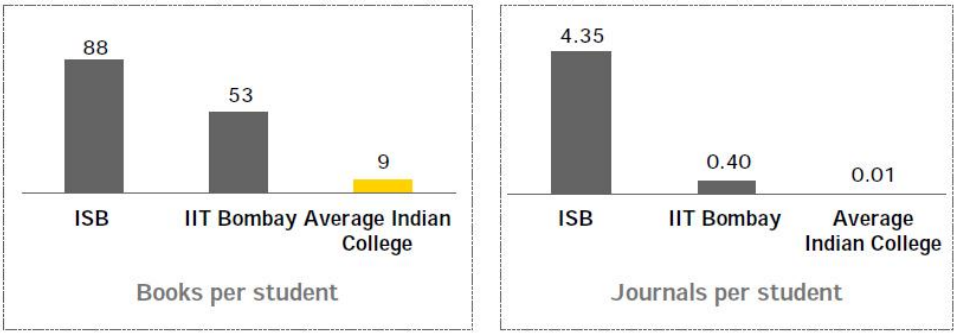

Fig. 12.5: FICCI Summit 2009: Comparison of books and journal facility of IIT-B and ISB Hyderabad [62]

12.3.7. Other Factors

- **The diverse peer group**: The peer network that ISB offers you is remarkable. Both the campuses have a rich and equally diverse pool of students.
- **The strong Alumni community**: As current students we have never been at a loss when we needed advice as ISB's 5200 plus alumni community has been very helpful. No matter how busy they may be the Alums make time to guide the current students on matters that only a former student can comment on! Alums share their experiences and expertise with the current class during the numerous "Gyan sessions" on electives, industry trends and career opportunities, CV review sessions etc.
- **The emerging markets focus**: This manifests itself in several ways.
    - The curriculum has been tailored to be extremely relevant in today's day and age, especially in the context of emerging economies.
    - The professional clubs on campus organize study/industry treks to south-east Asian countries,
    - the Center for Emerging Markets Solutions (CEMS) and the Bharti Institute of Public policy (BIPP) provide research and tools to help prepare leaders for the challenges and opportunities of the emerging economies enabling students to position themselves for the emerging markets.
    - This ideation extends beyond the school premises through events such as iDiya which is a social venture competition that aims to develop high-impact, self-sustaining social businesses in emerging economies like India.
- **Exchange options**: The School has links with some of the most renowned global B-schools: London business school, Tuck school of business, NUS, Wharton, Kellogg , Fuqua, CEIBS to name a few. Inter-campus exchange is also extremely popular among the students who use it to make the most of the cross-learning facility that the school offers.
- **Rich academic options**: In addition to the exhaustive list of electives that the School offers, ISB offers an attractive set of practicum courses. If you want to work a real-world business problem ISB offers the experiential learning program, if you have a research topic in mind you can pursue the Faculty initiated research program, if you have an entrepreneurial venture that you want to bring to life try the Planning an Entrepreneurial Venture program. Depending on your professional aspirations, at ISB one can tailor their academic experience to get the maximum out of this one year.
- **Return on investment**: The opportunity cost at a one year program like offered by the ISB is considerably lower. Also in comparison to other global business schools with a one year program, the MBA education (which is at par) is much more affordable. With average work-experience ranging between 4 to 5 years, the average salaries are superior to most other Indian b-schools. The return on investment among other things is quite high. [267]

Solution Space 12.0

The ISB is accepted by Global Industry but not regulated by any regulatory body like UGC or AICTE. The secret behind this miracle is

- Professional Governance
- World class faculty
- Most Successful International Tie-ups
- International exposure
- International Accreditation
- Research publication and citation
- Diverse peer group of students
- Eleven year old institute thus they have small alumni but developed and used this network very effectively.
- Focused on emerging market and research

This is an unusual example of creating world class institute within a decade. Credit goes to their sincere efforts and dedication. They have set an example in front of private players.

Chapter 13: Solution Space 05: Comprehensive Input, Process and Output Ranking Mechanism

There is a need of strong and transparent national ranking mechanism to create healthy competition among the education institutes. This will trigger the effective utilization of resources, search for innovative mechanisms to develop the institute, and boost the involvement of all the stakeholders. This unique technique can change the higher education scenario of India within 3 years.

I would like to quote one interesting incident about healthy competition for increasing productivity of the industrial unit. One of my friends joined as a Manager in one of the famous industrial unit, which produces 450 articles per day in 3 shifts. On very first day he observed that in 8 hours shift the workers are actually working only for 4 hours in a shift of 8 hours and produces around 150 articles in each shift. To increase the productivity he had used very innovative technique, which had created healthy competition among the workers. He had purchased a blackboard and displayed the information of current production of each 8 hours shift. The workers observed the comparative production figures displayed on the blackboard every day. Nothing had happened in next 3 days. On 4th day, the second shift workers, just for a fun, produced 10 more articles i.e. 160 goods. The manager immediately displayed this information at blackboard. This acts as a trigger for healthy competition. The third shift workers had noticed it. To show the superiority the third shift workers had produced 20 more articles than second shift. Next day, the first shift workers produced 30 more articles. Within a week the production rate had raised exponentially and in one month the workers consumed all the raw material which had procured for 3 months. The entire management was shocked. My friend got jumping promotions and today is CEO of the company.

Presently in India, the planning and funding is through Center and State agencies. The implementation is through State Agencies. The Accreditation is optional and there is no robust Feedback and Benchmarking mechanism. Reliable National Ranking mechanism is missing. The monitoring process is not efficient. On the top of that system is not at all transparent. All these processes should be effective, efficient and work in a synchronize way to get the optimum results. If the systems are implemented, monitored, Accredited, Benchmarked properly and results are provided to all the stakeholders through the transparent mechanisms then healthy competition can be created at regional, national and international level. There is a need of strong and transparent national ranking mechanism to create healthy competition among the education institutes. This will trigger the effective utilization of resources, search for innovative mechanisms to develop the institute, and boost the involvement of all the stakeholders.

India's top ranking Punjab University (Times Higher Education World Ranking 225-250) could emerge at International level without any special help. Simply they have used the "**Principle of Optimum and Effective Utilization of Existing Resources**".

Proposed All India Comprehensive Input, Process and Output Ranking Mechanism

Any institute can be evaluated on the basis of three grounds

- What are the basic facilities and infrastructure provided to all the stakeholders?
- Whether the processes for providing the services are effective and efficient?
- What are the outcomes?

To measure these I would like to introduce 3 ranking bodies

- Input 5 star ranking
- Process 5 star ranking
- Output 5 star ranking

Each body will evaluate the system as per data displayed on the ranking websites by the institute.

The steps are:

- On specific date, as per detailed plan, every institute will have to update self-evaluation report on the ranking body's website, which will be public document.
- Each ranking body will inspect the institute as per data available on website and submit the report to the respective ranking body.
- **Ranking First Outcome**: The outcome of this ranking will be like 3-4-2 i.e. 3 star in Input Ranking, 4 star in Process Ranking and 2 star in Output Ranking. This will act as check on ranking mechanism. For example if the outcome is 1-2-4 then it clearly indicates that something is wrong in the evaluation process. It is impossible to design good processes and get good output if the inputs are poor.
- **Ranking Second Outcome**: In addition to this, the ranking website can display total marks obtained in all three evaluations.
- **Ranking Third Outcome**: Ranking will display for each discipline (like engineering, medical, management etc.)
    - District ranking
    - Regional ranking
    - National ranking

In this ranking mechanism, all the stakeholders will know the exact status of the institute. For example if the ranking is 3-4-2 then it means

- Moderate investment and infrastructure
- Good Governance and processes
- Average overall results

The management of the institute can get exact idea of the lacunas of the system and they can rectify it, to stand in the competition.

In addition to this the district, regional and national ranking will display the exact status and position of the institute for each discipline. The fees fixation committee can use this data to fix appropriate fees for the institute. The client can choose the suitable institute according to their budget and liking.

I am sure this ranking mechanism can create very healthy competition and keep the system totally transparent. It can change the education atmosphere of the entire nation within 3 years.

I have given list of thousands of input, process and output parameters in the book "Strategy to Develop World Class University". These parameters can be categories for respective ranking.
Input Parameter Categories for "Input 5 Star Ranking"

1. Faculty, Staff, Teaching and Service Conditions
2. Research Facilities
3. Infrastructure, Library, Laboratories, Sports facilities and Support Systems
4. Funding
5. Governance

Process Parameter Categories for "Process 5 Star Ranking"

1. Faculty, Teaching, Training Student Centric Activities, Curriculum Design, Feedback, Examination and continuous evaluation process

2. Research
3. Industry Interface and Collaborative processes
4. Governance Mechanism, Revenue Generation processes, Financial strategies and management
5. Internationalization processes

Output Parameter Categories for "Output 5 Star Ranking"

1. Faculty, Teaching-Learning Standard and Examination outcome
2. Research Outcome
3. Industry Interface results
4. Global employability and Campus Placement
5. International Reputation and Internationalization Metrics

Solution Space 13.0

This ranking mechanism can help a lot to improve the education standards and quality like

- Creating healthy and tough competition among the educational institutes
- The competition can help to development research culture, teaching, innovation, internationalization as well as infrastructure etc.
- To stand in the competition the Institute will try to use various Technologies for effective teaching-learning processes as well as for efficient governance.
- To stand in the competition every stakeholder will try for better funding options.
- The competition will force the Board of Governance to provide appropriate infrastructure and facilities to the students, faculties and all the stakeholders
- The institute will know the exact lacuna of the system and can pay attention to it.
- Students, Parents, Vendor, Regulatory bodies, Employers will know the exact status of the institute
- Students and parents can choose suitable institute
- Help to increase the employability of the genuine institutes
- It will stop the false marketing strategies of the institutes.
- The discipline wise ranking can cover each and every higher education institute including public or private, standalone or university, domestic or foreign etc.

Chapter 14: Solution Space 06: Establish International Education Hubs at India

*The Education Hub of Singapore "Global Schoolhouse, (GS)" has attracted over **86,000 international students** and has advanced innovation by promoting faculty collaboration with **over 7,000 MNCs** and **100,000 SMEs** in Singapore. In 2009 it was home to 12 foreign branch campuses and in 2010 approximately 1,120 cross border education program arrangements were operational. It has become home to over **1,200 private education organizations**, **44 pre-tertiary schools** and **16 leading foreign tertiary institutions**. The education sector contributes about **3% of Singapore's GDP** and provides jobs for more than 57,000 workers. Its **GDP contribution is projected to reach 5%** and employment in the sector to exceed 70,000 by 2015. [268] [272] [338]*

14.1. Introduction

Jane Knight, University of Toronto, defined an Education Hub as follows "**An education hub is a planned effort to build a critical mass of local and international actors strategically engaged in education, training, knowledge production, and innovation initiatives.**"

Education Hub can be defined as "A designated region intended to attract foreign investment, retain local students, build a regional reputation by providing access to high-quality education and training for both international and domestic student, and **create a knowledge-based economy**. An education hub can include **different combinations** of domestic/international institutions, branch campuses, and foreign partnerships, within the designated region. Education hubs represent the **third generation of cross border activities** emerging onto the landscape of our more globalized world." [269]

To become more competitive in the international higher education market, several Asian countries are establishing themselves as **education hubs**. From **Singapore to South Korea, Hong Kong to Malaysia,** and elsewhere in the region, higher education hubs are emerging across Asia. Driven to become more international in their policies and practices, many countries are seizing on higher education as a way to do it, and **are moving aggressively**, if not always successfully, to make it work. Even Western countries, which have long led the way with higher education internationalism, are looking to learn new strategies and tactics from a model that views higher education as "**a product that can be marketed like any other**" to provide "**a focus of national development harnessing the international mobility of students and globalized credentialism**," Richards asserts." [271]

In 2010, there are only **six countries around the world** which are seriously trying to position themselves as an education hub and there are others who may be just using the term hub as a branding label. There is no single model or one size fits all approach for establishing an education hub. Each country has its own set of drivers, approaches, and expectations. It is worth noting that to date, all education hub countries are relatively small and **share an interest in shifting from a natural resources or manufacturing economy to one that places more emphasis on knowledge and service industries**. [269]

Jason E. Lane, State University of New York (SUNY) Albany stated that "the surge of recent hub development is all about economic competitiveness and international reputation…..when you look at where plans for these **hubs** are coming from, it's **from economic development agencies**, **not education agencies**. They want to **foster their own workforce development**. They have seen the United States, United Kingdom, and Australia build themselves up by importing the best and brightest from foreign countries, and now they are working **to reverse that trend.**" [270]

Fig. 14.1: New Education Hubs or Zones or Knowledge Cities of the World [271]

It is understood that countries have **different objectives, priorities, and take different approaches** to developing themselves as a reputed center for higher education excellence, expertise, and economy. However, given higher education's current preoccupation with competitiveness, global branding, and rankings, one is not sure whether a country's plan to develop itself as an education hub is a fad, the latest branding strategy, or in fact, an innovation worthy of investment and serious attention. [269]

A clear message from this overview is that the hubs are at **different stages of development**, have **different rationales**, **different priorities**, **different strategies**, **different sponsors**, and **different expectations**. One model does not fit all, but for a country a clear set of rationales, objectives, strategies and identified outcomes is important. Positioning a country as an education hub is not an ad hoc or single activity enterprise. An education hub is more than an international student marketing campaign or an internationalization strategy. It involves a **strategic approach to developing a critical mass of international and local actors who are engaged in cross border education, training or knowledge/innovation activities**. [272]

Two Approaches

Different education hub models exist but **two approaches are more prevalent**. The **first is developing a number of different initiatives to develop the country as an education hub**. This can include elements such as

- International student national level strategy and human capital development strategy;

- Built zones to co-locate a number of local and foreign HEIs as well as private training and R&D companies;
- New immigration and work visa/permit regulations;
- Promotion of international collaborative program development between local and international HEIs for education and research purposes; and
- Attraction of foreign branch campuses.

This requires an explicit and well-coordinated strategy involving several sectors/government departments. This approach is common for countries who wish to go beyond the purposes of a student hub and work towards development of a 'talent' or skilled work force hub so as to diversify the economy. Both financial and regulatory incentives are common. A national level hub strategy of this kind helps to gain support, commitment and funding from public and private investors. [272]

The **second approach** is not as comprehensive and can involve only one or two specific initiatives such as an international student recruitment campaign and attraction of foreign education and training providers to a designated education city/zone. This approach is often driven by the Ministry of Education and does not involve such a diversified number of actors. This may **eliminate layers of bureaucracy and complexity**. [272]

All approaches to education hub development, regardless of the type of hub, **require policy development or reform**. For the recruitment of international students this can include setting **admission standards, granting scholarships, quotas, visas and work permits**. For foreign providers and programs the areas they will wish to see clarified are quality assurance, a national qualifications framework, partnership requirements, financial arrangements and student selection criteria. Investors in knowledge/ innovation production will be interested in policies involving international patents, trade law, foreign investment etc. [272]

Attention needs to be given to the selection of education programs offered. This is to ensure alignment with identified labor needs, prevent significant duplication of programs, and avoid unnecessary competition between and among local and foreign providers. [272]

The in-depth case studies show that "one size does not fit all". A variety of factors drive countries to prepare and position themselves as an education hub. They include

- Income generation,
- Soft power,
- Modernization of domestic tertiary education sector,
- Economic competitiveness,
- Need for trained work force, and
- Most importantly a desire to move towards a knowledge or service based economy.

In response to these different motivations, three different types of education hubs are being developed:

- **Student hub**: Some countries see hubs as a means to build a critical mass of foreign students and providers to generate income as well as modernize and internationalize their domestic higher education institutes.

- **Skilled Workforce hub**: Others want to be a hub to train foreign and local students and employees as part of a skilled labor force
- **Knowledge / Innovation hub**: Other countries focus on attracting foreign students, institutions, and companies to build a vibrant research, knowledge, and innovation sector to lead them into the knowledge economy. [269]

14.2. Singapore: Global Schoolhouse

Singapore has been one of the most successful nations (it is a city-state) at creating a truly successful knowledge and education hub. Its Global Schoolhouse Initiative (GS) has become the model for many other education hubs in the area and around the world. The GS launched in 2002 as a means to enrich education in Singapore by "introducing a diverse mix of top tertiary institutions and programs that complement EDB's industry development efforts." Currently, the GS offers programs from (hosting or collaborating with) Johns Hopkins University, MIT, Georgia Institute of Technology, University of Pennsylvania, INSEAD, University of Chicago, Technische Universiteit Eindhoven, Technische Universität München, Carnegie Mellon University, Stanford University, Cornell University, Duke University, Karolinska Institutet, University of New South Wales (RIP, 2007), ESSEC, University of Nevada, Las Vegas, IIM Bangalore, SP Jain Centre of Management, New York University, DigiPen Institute of Technology, Queen Margaret University. [269] [271] [273]

It has become home to over **1,200 private education organizations**, **44 pre-tertiary schools** and **16 leading foreign tertiary institutions**, offering international curriculum. The aim of the Global Schoolhouse is to "develop a vibrant community of tertiary, pre-tertiary and corporate training institutions to make the city-state a global talent hub." By broadening its educational offerings, GS has attracted over **86,000 international students** and has advanced innovation by promoting faculty collaboration with **over 7,000 MNCs** and **100,000 SMEs** in Singapore. In 2009 it was home to 12 foreign branch campuses and in 2010 approximately 1,120 cross border education program arrangements were operational. [268] [272]

The Global Schoolhouse is Singapore's multifaceted and ambitious initiative to establish itself as an education hub. The three major objectives driving this project include

- Recruitment of "foreign talent,"
- Economic development through foreign investment, and
- Attracting research and development firms as well as multinational companies specializing in the knowledge economy and service industries. [269]

The education sector contributes about **3% of Singapore's GDP** and provides jobs for more than 57,000 workers. Its **GDP contribution is projected to reach 5%** and employment in the sector to exceed 70,000 by 2015. [338]

14.3. Dubai: Knowledge Village, International Academic City, Financial City, Health Care City and Silicon Oasis

Dubai Knowledge Village (DKV)

The DKV has attracted 15 international universities from Australia, India, Pakistan, Iran, Russia, Belgium, UK, Ireland, and Canada. DKV is hosting Boston University, Harvard University, London School of Business & Finance, Michigan State University, Rochester Institute of Technology. It is also home to approximately 150 training institutes and learning centers, HR development centers, professional training institutes, R&D organizations, and e-Learning companies. [268] [269] [273]

Dubai International Academic City (DIAC).

Dubai International Academic City (DIAC) is the world's only Free Zone dedicated to Higher Education. DIAC aims to develop the region's talent pool and establish the UAE as a knowledge-based economy. DIAC is the premier destination for Higher Education in the region, located on a fully-appointed 18 million sq ft. campus with state-of-the-art modern facilities. DIAC currently has 21 of the UAE's 37 International Branch Campuses (IBC's), from 10 different nationalities, which is the largest number in any one location in the world. DIAC is host to a community of over 20,000 students from 125 nationalities and have access to over 400 Higher Education programmes.

Dubai International Financial City

Dubai International Financial city has been one of the fastest growing financial hubs in the Middle East and one of the largest importers of foreign academic programs. To help achieve its mission, the DIFC created the DIFC Center of Excellence with purpose of becoming "hub for excellence and professional development and education." To achieve this goal, the Center has partnered with several leading business schools to offer a variety of MBA degree programs. Programs have their own offices and offer their own degrees, but share academic space. [268]

In addition to this they have established Dubai Health Care City and Dubai Silicon Oasis.

14.4. Malaysia: Educity and KLEC

The Malaysian Ministry of Education's mission is "to transform Malaysia as an international hub of higher education excellence by 2020", and indeed, "Intensifying internationalization" is one of the seven "strategic thrusts" to make this vision a reality. Currently, the nation is working with not one but two educational hubs, EduCity at Iskandar and Kuala Lumpur Education City. Malaysia already acts as a magnet for cross border education activities as in 2008 there were **70,423 foreign students** and **3,218 incoming programs** and five branch campuses. [271] [272]

Educity in Iskandar Malaysia: The purpose of Educity is to provide high quality education and produce a skilled workforce to support foreign companies located in commercial zones of Iskandar in the State of Johor, Malaysia. Educity is planning to house 8 international branch campuses which will offer full degree programs in selected fields such as business/financial studies, creative multimedia, engineering, logistics, hospitality and medicine. It has just completed new facilities for the UK's University of Newcastle School of Medicine and the University of Southampton will follow suit in 2012. [272]

Kuala Lumpur Education City Malaysia: To respond to the pressing need for more human capital necessary for the knowledge economy, the plan is to gain greater access to the regional education market especially India, China, and Indonesia. Secondly, the strategy includes the development of the necessary research infrastructure to position Malaysia as a regional centre of excellence and the central node for an international network of academic institutions, companies and services. The hub will offer education from Cambridge Business School, Epsom College, and Universiti Sains Malaysia to those in the region with an expected student population of nearly **30,000.** Malaysian education hubs are drawing in thousands of students, so many that the nation is struggling to keep up with demand, but that hasn't slowed **plans to draw in 200,000 international students by 2020**. [271] [272]

14.5. Other Educational Hubs

14.5.1. Qatar: Education City

The hub offers courses at nearly all levels of education, from elementary school (through Qatar Academy and The Learning Center) all the way up to doctoral programs, in an attempt to instruct students in fields of critical importance to this Gulf country's economic well-being. Currently Qatar Education City is hosting Carnegie Mellon University, Georgetown University, Northwestern University, Texas A&M University, Virginia Commonwealth University, Weill Cornell Medical College etc. [269] [271] [273]

14.5.2. Jeju, South Korea

South Korea is on a mission to become an education destination not only from South Asia but also for the world. They're off to a good start with a new project called Jeju Global Education City that began construction in 2009. Part of the development plan for the Incheon Free Zone in South Korea is to attract international branch campuses in the Songdo Global University Campus. In 2009, it was reported that 15 foreign universities were exploring establishing a branch campus. All of the 15 but the University of Pavia (Italy) are based in the United States. The institutions reported to have been interested in opening a campus include Duke University, Columbia University, Boston University, George Mason University, Stony Brook University (State University of New York), the University of Illinois at Urbana-Champaign, Carnegie Mellon University and the University of California-San Diego. [268] [271]

14.5.3. Panama: City of Knowledge

Founded in 1998, the educational hub brings together universities, technology, and businesses, with the idea that the facility would help bring more economic prosperity and high-tech projects to the Latin American region as a whole. The country has offered a number of fiscal incentives to top universities to encourage them to bring branch campuses there, and now several schools offer degrees through the city, including McGill, U Penn, Florida State, Saint Louis University, Iowa State, and the School for International Training. [271]

14.5.4. Manama, Bahrain

In 2007, Bahrain announced plans to develop itself as an education hub, hoping to establish itself as the premier destination for higher education in the region. The country already has relationships with McMaster University, American University of Beirut, Hanover University, and the University of Westminster, with the construction of new facilities, more international schools are soon to join. [271]

14.5.5. Colombo, Sri Lanka

Sri Lanka isn't an education hub just yet, but the nation has made that goal one of the most important to its national development plans. The Ministry of Higher Education in Sri Lanka announced that it wants to construct the most cost effective education hub in Asia, establishing itself as a regional knowledge and education hub in the region by 2015. [271]

14.5.6. Botswana

An interesting feature of the Botswana situation is that the education hub plan is one of six so called economic diversification hubs: the other five are Health, Innovation, Agriculture, Diamonds and Transport. They differ in size, complexity and scope. For example the Innovation Hub is essentially a cluster of technology firms and knowledge-based institutions located in Gabarone, the capital city, while the Education Hub is more of a national strategy to make the whole of Botswana a regional centre recognized internationally as a preferred destination for international students, scholars and trainees. [272]

14.6. International Education Hub at India

Opening the doors of Indian higher education to foreign universities may help raise the awareness of the subsidies needed for quality education, and how its delivery might be organized on a sustainable financial basis. **Opening the door for foreign goods and manufacturers in the recent decades helped to change the thinking of business in India, and to improve their management, quality, and prices for the benefit of their customers.** Perhaps it is reasonable to assume that only reputable universities will be allowed entry into India. It is

unlikely that such universities will subsidize education in India by transferring financial resources from abroad. Even if their Indian operations break even financially, **they will have to charge full cost—which means high prices**—to deliver quality education and protect their reputation. If these prices are beyond the means of all but the high-income families, these universities will come under pressure to make their education more accessible. It is difficult to see what could be the source of subsidies to support wider access, except private philanthropy from wealthy Indians. If this happens, foreign universities will have led the way toward reinvigorating an earlier era's approach to the financing of higher education. [19]

Solution Space 14.0

To overcome hundreds of problems and difficulties is not an easy task for India. It's a gradual process. I feel that, the Education Hub can be an attractive and feasible solution for Indian scenario. Every Metro can have one **International Education Hub**. Such **International Special Economic Free Zone for Education** can give real boost to Indian Higher Education sector. The World Class Global players can establish campuses at this zone without any unnecessary restrictions. They can be regulated through single window regulatory mechanism with globally attractive professional approach. The laws can be relaxed only for this special economic zone, which is not difficult and problematic for government machinery. Entire nation can be benefited through this education hub. The benefits can be

- Attract foreign investment and players because of clear signal and attractive offers
- Retain local students
- Build a regional reputation by providing access to high-quality education
- International Training for both international and domestic students
- Attract huge global talent
- Economic growth
- New research dimension
- Boost Innovation
- Creation of Knowledge
- Skilled workers
- Facilitate Knowledge Based Economy
- Help to modernize domestic institutes

Chapter 15: Final Word

KPMG 2011 report stated that "Thanks to the country's growing economy, India now needs a wide reservoir of educated and skilled workforce more than ever. But ***the country's education sector has failed to keep pace with changing times****—both in terms of* ***volume and quality****…..A complex regulatory structure and the challenges in higher education such as lack of faculty, ineffective accreditation system and low employability of graduates could prove* ***detrimental*** *to the aspirations of foreign varsities hoping to establish themselves in India." [105]*

History will not forgive us *if we do not set right the structure, procedural obstacles and political apathy that keeps our youth away from acquiring the right Knowledge & Skills leading to the right career.* ***Time to act is now****. [75]*

Prof. Ved Prakash, Chairman UGC stated that "It is time to review our achievements and failures in translating the reform agenda initiated in the 11th FYP period into action. It will not only inform us as to what worked and what did not, but will also provide critical feedback for setting the reform agenda for the 12th FYP." [211]

15.1. Small Countries are having WCU, Why not India?

The Netherlands (Dutch) is a relatively small country with population of just 1.6 crore and **all 13 of its research universities** feature in the top 200 Times Higher Education World University Rankings 2012-13 as well as in 2013-14. The Nanyang Technological University (NTU) Singapore can become WCU in just 20 years after it was established, that **certainly means Indian institutes or universities can and do the same**. [339] [340] [341] [342]

SN	Country	Population in Millions	Area of the country (square km)	GDP (PPP) World Economy Ranking $bn	Top 200 WCU Times HE Ranking 2012	Top 200 WCU Times HE Ranking 2013
1.	Netherland	16 Millions	41,526	710 (23rd Rank)	12	12
2.	Switzerland	8 Millions	41,285	362 (35th Rank)	7	7
3.	Honk Kong	7 Millions	1104	364	4	3
4.	Israel	7.7 Millions	20,770	248 (49th Rank)	3	2
5.	Singapore	5.1 Millions	700	327 (38th Rank)	2	2
6.	India	1241 Millions	3,287,263	4711 (3rd Rank)	Not in top 200	Not in top 200

Table 15.1: Small countries are having number of WCU, Why not India?

15.2. Need to Follow the Path of Singapore

The history shows that "to buildup traditional WCU needs average 179 years". Surprisingly, the universities at Singapore and Hong Kong proved that "it can be built within 10 to 15 years".

Fig. 15.1: At least 50 years to Develop WCU [93]

The small countries like Singapore, Malaysia, Korea and Hong Kong are **having WCU in less than 30 years of establishment** and the **NTU Singapore got the 47th WCU rank in less than 20 years of establishment.** Every Indian feels that, if NTU can do it then it is not impossible for the country like India, which is ahead of the race on many fronts like 3rd largest economy, fastest growing economy, 19th largest exporter, 10th largest importer, fastest growing retail market, largest education system, largest producer of many agricultural products, 3rd largest technical manpower, most advanced country for nuclear technology, fourth largest producer of electricity and oil products, highest space technology and missile ranking countries, spectacular growth in IT, Supercomputing. Automobile, Oceanography, Communication and Railway Network. [275] [276] [277] [278] [279] [280] [281] [282]

John D. Rockefeller once asked Charles W. Eliot, president of Harvard University for almost forty years in the late nineteenth century, what it would take to create the equivalent of a world-class university. Eliot responded that **it would require $50 million and two hundred years**. He was wrong. At the beginning of the twentieth century, the University of **Chicago became a world-class institution in two decades for slightly more than $50 million—donated by Rockefeller himself**. Now, it might take more than $500 million along with clever leadership and much good luck. [4]

At "One Globe 2013: Uniting knowledge communities", a conference at Delhi, focusing on global higher education in South Asia, the panel of experts stated that "India can learn much from countries such as **China**, **Japan** and the **United States** in order to create and run world-class universities…A **global outlook**, **strong university administration** and catering to the diverse needs of youth were highlighted as key areas for Indian universities aiming to achieve excellence." [153]

15.3. Analysis of Present Situation in India

The Indian higher education system doesn't have Academic Powerhouse. There is no point in simply debating on the issues of reforms for years together; we must conclude it by introducing series of reforms. It is possible, only if social, political, economic and legal forces work together for interest of nation.

India needs reforms like China and time bound program like Singapore and Hong Kong. After decades of neglect and under-investment, it is not easy for Indian Government to pursue the reforms with expected speed like China and Singapore. Pouring good money into a largely dysfunctional system cannot be expected to produce the desired changes. Within short period say 2 to 3 years, it is difficult to put the higher education system on right track through any existing technique, considering present political, social and economic scenario of India.

- The previous attempts at reform have not enjoyed great success in India. The deep-seated organizational culture, political system, legislative framework, bureaucracy, social and economic forces resistant to reform. To change the existing culture and way of working of the university, government machinery and administrative system are not an easy task.

- There are legislative hurdles for pending education bills, which can again provide partial solutions to wide range of problems of higher education sector of India.
- It is very difficult to setup institute like ISB and government can't encourage such type of institutes officially. The Punjab University can act as a role model but it is difficult to follow their path in most of the Indian universities.
- The one lakh crore plan RUSA is spread over two five year plan. Its success depends upon active support from all state governments. There are many synchronization and implementation problems. The Extended RUSA can be a solution. Minimum two to three decades are required to get success through this Extended RUSA route. It requires another few lakh crore, which is impossible to allocate for any government. Under present circumstances the new regulatory body is not the solution. Super regulatory body can address only 50% problems mentioned in this book. In the higher education system the factors are interdependent. The system can improve only if you are ready to improve all the factors. It is impossible to bring full-fledged higher education reforms to resolve all the difficulties. Even it is not possible in near future.
- The Yash Pal Committee Report and Sam Pitroda NKC report, both had suggested the IRAHE or NCHER should be National Commission like the Election Commission by an act of Parliament. There are legislative hurdles for Education Commission. The legislative reform is a very lengthy process and depends upon political scenario of the country and support of social, economic bureaucratic forces. Thus as per recommendation of the Yash Pal Committee Report and Sam Pitroda NKC report the legislative solution is impossible in near future.
- The Ranking mechanism can build the required culture but unable to address the many deep routed problems.
- The WCU needs huge funding. It is difficult to raise it through existing routes. The full-fledged reforms are not possible in near future. Private investors wouldn't come forward without ROI and comprehensive reforms. Thus it is impossible to arrange huge funds in near future.

Thus, I feel that, the **International Education Hubs** can be an attractive, feasible and immediate solution for Indian scenario. Entire nation can be benefited through this move.

15.4. Education Hub: Various Initiatives

Actually altogether new approach is required to develop international education hub with the strong legal, political and government support. Certainly, this venture can be very useful to establish WCU in India.

Since 2010, the movement of Education Hub had been started in India but couldn't pick up because of existing regularity framework and legal complexities. These efforts are not backed by national policy or central government support. For example

- Mukesh Ambani all set to use **Navi Mumbai SEZ** land for Special Education Zone. A world-class education hub with state-of-the-art facilities is on the cards in Navi Mumbai. Industrialist Mukesh Ambani has decided to develop the campus on a plot measuring over 400 acres at

Ulwe, according to sources at Reliance Industries. The education hub will have a tie-up with world-renowned universities like Cambridge, Oxford and Harvard. [283] [284]

- A small village located in a valley near **Pune** is fast developing as a Special Education Zone. A large number of educational institutions are setting up huge premises inside this valley located in the ridges of the Western Ghat, around 10 kilometers away from Pune. Names like Symbiosis International University, Bharati Vidyapeeth and the newly-established Foundation for Liberal and Management Education already have their presence in this valley, which is building its brand as the country's largest education hub. [285]
- The **Gujarat** government is planning to create Special Knowledge Zones (SKZ) where industries would be encouraged to set up institutes for technical education and institutions of higher learning. The first knowledge zones of the state are likely to be created near the four major cities of the state — Ahmedabad, Surat, Vadodara and Rajkot. Unlike the policy in Special Economic Zones (SEZ), industries will be given land and facilities at subsidized rates in the knowledge zones to encourage them to set up colleges and other educational institutions. [286]
- **Tripura**'s Chief Minister Manik Sarkar said that the state is all set to become an 'educational hub' for the northeastern states and neighboring countries, including Bangladesh. The state government is working on to set-up several technical, medical and educational institutions. [287]

15.5. Unique Solution: "International Education Hub" at New SEZ

Under present circumstances, which are described in this book, to develop the WCU in India, the only solution is to establish "**International Education Hub**" at Special Economic Zone (SEZ) with facilities like

- Minimum regulatory control
- Restricted "For-Profit" policy with proper care for return on investment
- Relaxation in Reservation Policy
- Attractive economical benefits like Tax Benefits
- Full government support with professional style of governance
- New immigration and work visa/permit regulations
- Full autonomy like US Universities
- Instant help for supporting facilities like electricity, internet bandwidth, land acquisition, security etc.

The **Education Liberalization Reforms** can be **confined and limited** to the International Education Hub at Special Economic Zone and thus **wouldn't affect directly the domestic higher education sector**. The separate regulatory body under the control of central government can look after the development of these international education hubs.

These international education hubs can instantly attract top 500 foreign universities to establish the world class campuses in India. There are enormous benefits of this scheme like

- This step **wouldn't modify existing higher education system of India** and thus there will be **less resistance** from all corners and thus the scheme can be easily implemented.

- **No indigenous funding is required** to develop these international education hubs. Only initially we will have to provide the essential facilities and about five thousand Acer land to accommodate say 25 universities at each international education hub. The cost of land and facilities can be recovered from foreign universities.
- These world class campuses **can act as roll model** for Indian universities and help to change the entire higher education environment of the country. It will help to modernize domestic institutes. The Indian higher education sector will get a chance to learn hundreds of new professional tactics and economical training from global players.
- It can **help to change the mindset** of Indian higher education sector. It will drastically change the prevailing non-professional education culture at all levels. Once the mindset is changed the rest of process of reforms will be improved automatically.
- Industry chamber has recently reported that 450,000 Indian students spend over **USD 13 billion** each year in acquiring higher education overseas. This Brain Drain can be reduced up to 60%. [5] [14]
- It will attract foreign investment and players because of clear signal and attractive offers
- Helps to build International Reputation of domestics higher education institutes and build a regional reputation by providing access to high-quality education
- International Training for both international and domestic student
- Attract huge global talent
- Add new research dimensions
- It can Boost Innovation and Creation of Knowledge. It can help to form high-tech Knowledge and Innovation Clusters
- Develop skilled workers for domestic Industry
- Can attract global business around such international education hubs
- Facilitate Knowledge Based Economy
- Facilitate new international collaboration possibilities to domestic higher education institutes and universities. The University of Cambridge, for example, has more than 2,400 international collaborations in 140 countries. Such collaborations may be informal such as sharing data or equipment (enabling access to the latest developments), or more formal collaborations such as joint research, visiting lecture or professorships, and student exchanges (which benefit undergraduates and postgraduates alike). These relationships are also often the catalyst for larger, more formal collaborations between institutions or groups of institutions around the world. It can open the ways towards partnerships for giant research projects.
- To keep the regional balance, five different international education hubs can be opened near international airports of Metro cities. It can attract minimum 100 global WCU without disturbing existing higher education system. Even existing foreign university bill can't provide this kind of solution.
- The Indian players can join this venture along with foreign partners.
- The entries of world class research universities can solve faculty shortage problem up to certain extend.
- It will partially help to achieve the goal of 30% GER without much investment.
- It wouldn't change the present R&D and S&T Ecosystem policy of India. In fact, it will help to grow both the ecosystems.
- Huge economic impact on national economy. We can reasonably expect international education hub can contribute about 2% GDP of India

  - The WCU contributes 2.3 per cent of UK GDP in 2009 (see figure 1.16).
  - The education sector (all levels) contributed about 3% of Singapore's GDP and this is forecasted to reach 5% by 2015. [269] [42] [338]
- Job creation by overseas researchers / entrepreneurs
- Enhance Business: This will bring new knowledge and new perspectives to university-business partnerships, helping businesses to innovate. This will shape the development of new products and services within industry, and help to improve businesses' strategy, management, and productivity.
- Boost Multidisciplinary Research
- Create Intellectual Property
- Boost Technology Transfer activities
- Within 10 years the Indian higher education system will become globally competent.

As educational hubs emerge in Singapore, Dubai, and China, **India will slowly lose** its competitive edge. The immediate steps are required in this direction.

15.6. Expert's Opinions

Prof KB Powar, Chancellor, DY Patil University, at the conference organized by the Educational Promotion Society for India, said that "We need **educational hubs** to attract foreign students. We need it because we could use more capital and know-how. Educational hubs will **enrich the higher education system** because the **government is not doing much in that end**. There are cities such as **Bangalore, Hyderabad and Pune** that have a large concentration of universities and institutes. They are metro cities and can be developed into hubs. Especially as Bangalore also has a number of research institutes, it can also become a research hub for the country… Educational hubs could be developed **along the lines of** what is found in countries like **Malaysia and Singapore.** In Malaysia, specific cities have a number of universities and institutes. In the same way, **Qatar and Dubai** has a strong concentration of institutes. These hubs are financed by private players but need the government to develop the right strategies….**We can't ask international institutes to come to India and not provide them with incentives**. We need to **remove the number of restrictions** that have been put on these institutes. They can bring in the know-how and we can develop the infrastructure locally. The strict provisions that are present in the Foreign Education Providers Bill should be relaxed" [288]

Prof MS Thimmappa, former VC, Bangalore University welcomes the idea of Bangalore being converted into an educational hub saying that the city is ideal for the setting. [288]

The article published in University World News stated that "With Singapore, South Korea, Malaysia and, more recently, Sri Lanka and Bhutan aspiring to become global education hubs in Asia, **India's potential to host several hubs** – and the challenges it would face in doing this – has become a point of recent debate….But **lack of a comprehensive national policy, bureaucratic red tape and the slow pace of higher education reform** may prevent India from achieving this…

India has several cities that have been tagged as **potential higher education hubs**, including Bangalore, Pune, Noida and Chandigarh – not because of planned expansion but by default, as they are locations of higher education and research institutions. [343]

Vidya Yeravdekar, executive director of Symbiosis Centre for International Education, said that "There are many individual initiatives taken by the respective institutions like the government of Karnataka allotted 5,666 hectares (14,000 acres) of land in Chitradurga district, 200 kilometers north of Bangalore, to the country's four leading R&D institutions: the IISc, Indian Space Research Organization, Bhabha Atomic Research Centre and Defense Research Development Organization." Referring to Professor Jane Knight's discourse on education hubs, Yeravdekar said the purpose of setting up education hubs should be defined clearly. "**India needs a national vision and a strategy that will enable it to become an education hub**. What should be **the purpose of an education hub**? Is it to build an international profile and increase global competitiveness, attract foreign investment or educate and train our workforce?" she asked. Yeravdekar said **India was the natural choice for students** from South and South East Asia, the Middle East and African countries since it had the potential to provide quality education at comparatively low cost. [343]

RCM Reddy, managing director of IL&FS Education and Technology Services Ltd, said that "Setting up education hubs **could not take off without active involvement of the government, both at the centre and in states**.... Identifying suitable locations across the country and partnering with the government to develop these into education hubs around themes such as skill development, or research hubs or teaching hubs, could be a way forward." [343]

Philip G Altbach, Monan University Professor and director of the Center for International Higher Education at Boston College has been a critic of India's plan to open doors for higher education. He said that "The legislation seems to say that foreign institutions have to invest $11 million and that is not viable for most institutions. A number of the prospective institutions will be scared off, including some good ones, by this proposal. They may be interested in the market but may not be interested in investing that much money. Experiences in other parts of the world, in the Gulf countries, for example, shows that **most of these branches of foreign universities have received huge subsidies**. This is true even in **Singapore which has done a very good job of becoming a hub (for higher education)**. In Singapore it is by invitation only (that foreign universities can set up shop). You only get at the door only if they ask you. And they are providing direct subsidies by way of facilities and rent discounts and all. **If India is going in the opposite direction, where you come to the door without being invited but you have got to pay to enter, I think that is problematic as a strategy**. [344]

Philip G Altbach stated that "Nowhere in the world foreign institutions that come to education hubs, focus on research. They focus on teaching because that is where money is to be made, and frankly that is where the need is in the country." [344]

Jamil Salmi, the author of the World Bank Report "Challenge of Establishing World Class Universities" stated that "**There is no universal recipe or magic formula for "making" a world-class university.** National contexts and institutional models vary widely. Therefore, each country must choose, from among the various possible pathways, a strategy that plays to its strengths and resources. International experience provides a few lessons regarding the key features of such

universities—high concentrations of talent, abundance of resources, and flexible governance arrangements—and successful approaches to move in that direction, from upgrading or merging existing institutions to creating new institutions altogether." [1]

The former UGC Chairman Yaspal Sharma said that "Harvard is an atmosphere created by people who want to do things that have never been done before. This attitude has to be **developed from within and not imposed from outside**. We have to remind ourselves that there was a time when the US did not have any great universities. **They would have liked to import Cambridge and Oxford and other European universities**. They could not and did not. Instead they imported many first rate people from Europe and set up their own distinctly different and great universities. That is what we ought to do. Get good people, Indians and foreigners, and let them slowly created something. A great university grows like a tree – slowly, with love and care. The common notion of world-class is that the faculty gets paid handsome salaries, have plush houses with swimming pools with kids going to fancy schools on campus. That is ridiculous. **World-class universities are not pieces of furniture that you can buy and put in an empty room. It is a place where all kinds of crazy teachers and crazy graduate students and teaching assistants get together and explore**." [345]

15.7. It's a Pathway and Not the Magic Formula

International Education Hub can be a Win-Win solution for India and foreign players. It can bring the revolution in Indian higher education sector and can remove many bottlenecks, barriers, hindrances, obstacles & hurdles to develop the WCU in India. Under the present circumstances, for developing WCU in India, it would be the most effective, unique, cost effective, feasible and practical solution.

Ultimately, these are the pathways, which may help for developing World Class Universities and culture. One can't import or buy WCU, we will have to develop it.

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