



FACTORS AFFECTING COMPETENCY IN HIGHER EDUCATION: AN INDIAN PERSPECTIVE

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ABSTRACT

Higher education is the most fundamental constituent, and it requires careful attention and evaluation to foresee prospective outcomes in a given country. It is indeed a reward for citizens, gives knowledge and respect, makes an individual self-assured and provides a career. For human capital theory, higher education is an effective tool to develop science and technological capabilities that are required for a standard of living in a global knowledge economy.

The Present study is an attempt to analyze the Global Competency of Indian education system. This paper is divided into three sections. Section -1 gives macro view of Indian Higher Education in context of global scenario. Section 2 is a factorial analysis of some attributes which affects the educational policy and scenario in India .Section-3 highlights the Road Ahead as challenges, policy implications and ways out.

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INTRODUCTION

Backdrop

Higher education is the most fundamental constituent, and it requires careful attention and evaluation to foresee prospective outcomes in a given country. It is indeed a reward for citizens, gives knowledge and respect, makes an individual self-assured and provides a career. For human capital theory, higher education is an effective tool to develop science and technological capabilities that are required for a standard of living in a global knowledge economy. Encouraging entrepreneurs to start new businesses is a priority for any government and is only increasing in importance as nations look to grow, become self-reliant, and overcome economic uncertainty. These are multi-dimensional objectives that can be fulfilled by promoting entrepreneurship in any economy, but in India, they take on added significance because of the size and age of the population. India's total population of 1.3 billion people ranks second only to China, and with 28% of those people aged 10 to 24 (28%), the country has 367 million young people that are either at the start of their careers or soon will be (UNFPA, 2015). Hence, it is the national interest to provide education, support, and facilities that can help guide this large and young segment of the population towards careers in entrepreneurship and to help them build and grow their businesses.

Scope of the Present Study

The main goal of this paper is to discuss the progress of higher education in comparison to international scenario,

identification of factors influencing education policy and educational scenario in India based on the feedback given by respondents pursuing higher education and the road ahead for higher education

Limitation and Scope for further Research

Small size of respondents can be taken as limitation of the study .Study leaves further scope of research for carrier oriented and research oriented institutes in context of regulatory norms.

Section: 1

An overview of higher education system in India

Indian higher education is the third-largest educational system in the world after the United States and China, and has a great potential to compete with global universities (Rienda *et al.*, 2011; Times of India, 2014). Main participants in the system include Institutes of National Importance, central universities, state universities, deemed-to-be universities, private universities, autonomous institutes, and supporting institutes. According to MHRD -

India is the **single largest provider** of global talent, with one in four graduates in the world being a product of the Indian system

- India is one of the **top 5 countries globally** in cited research output, its research capabilities boosted by annual R&D spends totaling over US\$140 billion
- India is in the **fourth cycle of its research excellence framework**, with at least a 100 of Indian universities competing with the global best

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- **23 Indian universities** comes in the list of **global top 200**, going from none two decades ago.
- In the last 20 years' time period, **6 Indian intellectuals** have been awarded the **Nobel Prize** across various categories
- India is a **regional hub for higher education**, attracting global learners from all over the world
- The country has augmented its **GER to approx 30%** while also reducing disparity in GER across states to 5 percentage points
- The Indian higher education system is **needs-based**, with all eligible students receiving financial aid. **Two-thirds of all government spending** towards higher education is spent on individuals, including faculty and students
- India's massive open online courses, started by several elite research universities, collectively enroll **60% of the world's entire student population**
- Indian higher education institutions are **governed by the highest standards**.

Interpretation: There has been a significant rise in Indian universities and number of colleges which was 799 universities and 39,071 colleges in 2015-16. In 2014-15 number of universities were 760 and colleges were 38,498 respectively.

Table no 2 given below shows the number of recognized educational institutions in India---

Table 2 Number of recognized educational institutions (2015-16)

Year	Colleges	Universities
1950-51	578	27
1960-61	1819	45
1970-71	3277	82
1980-81	6963	110
1990-91	5748	184
2000-01	10152	254
2005-06	16982	350
2006-07	19812	371
2007-08	23099	406
2008-09	27882	440
2009-10	25938	436
2010-11	32974	621
2011-12	34852	642
2012-13	35829	665
2013-14	36671	712
2014-15	38498	760
2015-16	39071	799

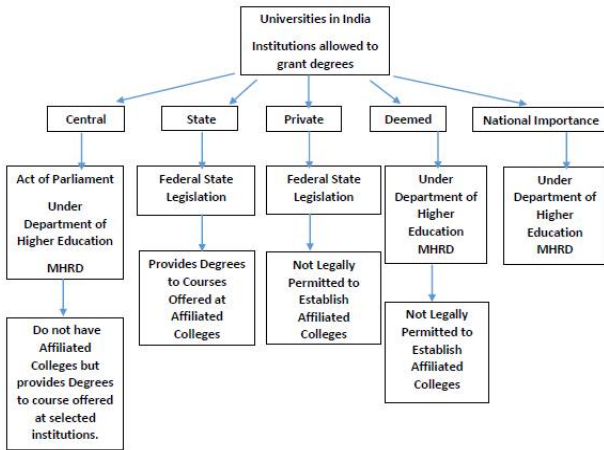


Figure 1 given below shows Universe of Higher Education in India--

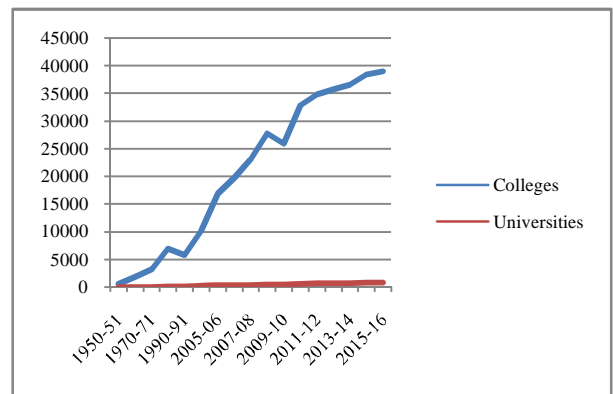


Figure -2

Interpretation: There has been a considerable increase in number of colleges and universities from 1950-51 to 2015-16.

Table 1 shows the related statistics on Indian higher education

Table 1 Related statistics on Indian Higher Education (2015-2016)

I. Number of institutions by category	
Number of universities	799
Central university	51
State public university	358
Deemed university	123
State private university	252
Central open university	1
State open university	14
Number of colleges	39,071

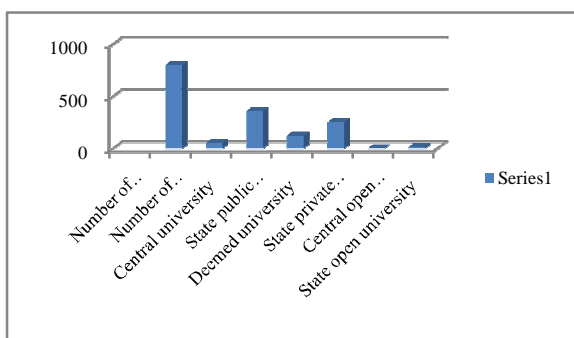


Figure 1

(Source: https://en.wikipedia.org/wiki/List_of_universities_in_India)

Table 3 Level-wise enrolment of students in Higher Education (2015-16)

Year	Higher education (millions)
1950-51	0.4
1960-61	1
1970-71	3.3
1980-81	4.8
1990-91	4.9
2000-01	8.6
2005-06	14.3
2006-07	15.6
2007-08	17.2
2008-09	18.5
2009-10	20.7
2010-11	27.5
2011-12	29.2
2012-13	29.6
2013-14	30.1
2014-15	32.3
2015-16	33.3

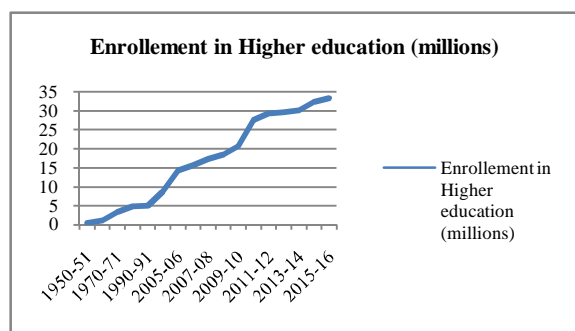


Figure -3

Interpretation: There has been a considerable increase in number of enrolments in Higher Education among male and female but it needs improvement. The table 4 given below shows the gross enrollment ratio in higher education---

Table 4 Gross Enrolment Ratio (GER) in Higher Education (2015-16)

Year	GER
2003-04	9.2
2004-05	10
2005-06	11.6
2006-07	12.4
2007-08	13.1
2008-09	13.7
2009-10	15
2010-11	19.4
2011-12	20.8
2012-13	21.1
2013-14	23
2014-15	24.3
2015-16	24.5

Compiled from Educational Statistics at a Glance, Bureau of Planning, Monitoring & Statistics, Ministry of Human Resource Development, New Delhi, Government of India, 2014

(http://mhrd.gov.in/sites/upload_files/mhrd/files/statistics/EA_G2014.pdf).

Interpretation: There has been a considerable increase in GER in Higher Education from 2001-02 to 2015-16.

Table -5 highlights the public expenditure on all educational segment as percentage of GDP in India

Table 5 Public Expenditure on all Educational Segments

Year	Expenditure Rs. Crore	Expenditure as % of GDP
1951-52	64.46	0.64
1960-61	239.56	1.48
1970-71	892.36	2.11
1980-81	3884.20	2.98
1990-91	19615.85	3.84
2000-01	82486.48	4.28
2005-06	113228.70	3.34
2006-07	137384.00	3.48
2007-08	155797.30	3.40
2008-09	189068.80	3.56
2009-10	241256.00	3.95
2010-11	293478.20	4.05
2011-12	351145.80	4.18
2012-13	403236.50	4.29

Interpretation: There has been an increase in expenditure on all educational segment as a % of GDP over the years.

Publishing Research: country-based metrics

Table no 6, 7 & 8 given below compares the India among top 20 countries for publishing research metrics-

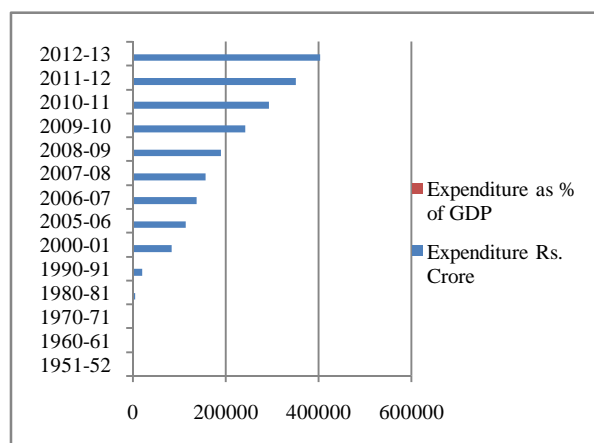


Figure 4

Table 6 Publishing Research Metrics of Top 20 countries - All Subjects (1996-2015)

Rank	Country	Documents	Citable documents	Citations	Self-citations	Citations per document	H index
1	United States	9360233	8456050	202750565	94596521	21.66	1783
2	China	4076414	4017123	24175067	13297607	5.93	563
3	United Kingdom	2624530	2272675	50790508	11763338	19.35	1099
4	Germany	2365108	2207765	40951616	10294248	17.31	961
5	Japan	2212636	2133326	30436114	8352578	13.76	797
6	France	1684479	1582197	28329815	6194966	16.82	878
7	Canada	1339471	1227622	25677205	4699514	19.17	862
8	Italy	1318466	1217804	20893655	4825002	15.85	766
9	India	1140717	1072927	8458373	2906102	7.41	426
10	Spain	1045796	966710	14811902	3510196	14.16	648
11	Australia	995114	894315	16321650	3464749	16.4	709
12	South Korea	824839	801077	8482515	1801111	10.28	476
13	Russian Federation	770491	755186	4907109	1474887	6.37	421
14	Netherlands	746289	682627	16594528	2639487	22.24	752
15	Brazil	669280	639527	5998898	2007696	8.96	412
16	Switzerland	541846	501917	12592003	1652258	23.24	744
17	Taiwan	532534	516171	5622744	1208385	10.56	363
18	Sweden	503889	471036	10832336	1631188	21.5	666
19	Poland	475693	460979	4083631	1044070	8.58	401
20	Turkey	434806	407064	3509424	854126	8.07	296

(Sources:<http://www.scimagojr.com/countryrank.php>)

Table 7 Business, Management and Accounting (1996-2015)

Rank	Country	Documents	Citable documents	Citations	Self-citations	Citations per document	H index
1	United States	203383	188916	3609052	1495875	17.75	485
2	United Kingdom	63678	59627	914765	253740	14.37	237
3	China	47246	46641	142786	51006	3.02	110
4	Germany	31533	30026	229068	47952	7.26	152
5	Australia	28709	27570	325647	68785	11.34	160
6	Canada	24529	23271	410995	54042	16.76	204
7	India	18736	18383	71279	20261	3.8	84
8	France	17396	16578	175615	24018	10.1	147
9	Netherlands	15799	15168	287397	43977	18.19	182
10	Spain	15486	15006	149460	32604	9.65	121
11	Taiwan	13597	13365	133215	30365	9.8	116
12	Italy	12783	12326	129186	27071	10.11	114
13	Hong Kong	10372	10101	197886	22077	19.08	157
14	Japan	9623	9446	59738	11168	6.21	81
15	Sweden	8802	8518	125483	19959	14.26	127
16	South Korea	8789	8605	108291	12006	12.32	117
17	Malaysia	7640	7559	25419	7841	3.33	58
18	Brazil	7115	7000	28056	6881	3.94	59
19	Switzerland	7081	6705	86278	7544	12.18	111
20	Finland	6990	6793	82478	13824	11.8	102

(Sources:<http://www.scimagojr.com/countryrank.php>)

Challenges and policy implications of Higher education in India

Figure-5 given below highlights the several challenges in Indian higher education, including the gross enrolment ratio, university education and infrastructure, job market placement,

industry-oriented research and innovation, quality and assessment of practices, inadequate financial support, and political interference.

Table 8 Economics, Econometrics and Finance (1996-2015)

Rank	Country	Documents	Citable documents	Citations	Self-citations	Citations per document	H index
1	United States	146539	139259	2869830	1273949	19.58	430
2	United Kingdom	46838	44470	689879	175073	14.73	224
3	Germany	26696	25604	251135	60031	9.41	137
4	France	20647	19860	168437	30009	8.16	127
5	Canada	19347	18531	261080	38422	13.49	162
6	Australia	18761	18104	129880	42718	9.83	127
7	China	15464	15011	100809	41690	6.52	99
8	Italy	14612	14127	138335	29966	9.47	117
9	Spain	14483	14076	129880	27534	8.97	111
10	Netherlands	13204	12673	208423	31890	15.78	148
11	India	9556	8703	40784	10590	4.27	73
12	Japan	9100	8763	56146	13007	6.17	73
13	Taiwan	7036	6886	55328	11644	7.86	83
14	Switzerland	7027	6639	97772	10031	13.91	113
15	Belgium	6397	6118	79852	10007	12.48	101
16	Sweden	6391	6191	97071	13701	15.19	117
17	South Korea	5767	5622	51023	5825	8.85	84
18	Hong Kong	5312	5150	96823	9994	18.23	118
19	South Africa	4967	4891	16555	6111	3.33	47
20	Malaysia	4857	4796	12371	4085	2.55	44

(Source: <http://www.scimagojr.com/countryrank.php?area=2000>)

Table 9 given below conclude that none of any Indian institutions or university finds place in top 10 universities in the world ---

Table -9 Top 10 universities in the world, 2015-2016 and 2016-17

2016-17	2015-16	Institutions	Country
1	2	University of Oxford	United Kingdom
2	1	California Institute of Technology, USA	United States
3	3	Stanford University	United States
4	4	University of Cambridge	United Kingdom
5	5	Massachusetts Institute of Technology, USA	United States
6	6	Harvard University	United States
7	7	Princeton University	United States
8	8	Imperial College London	United Kingdom
9	9	ETH Zurich - Swiss Federal Institute of Technology	Switzerland
10	10	University of California, Berkeley	United States
10	10	University of Chicago	United States

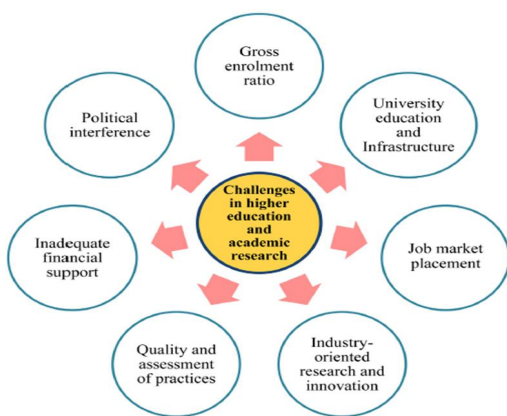


Figure 5

Section 2

Factors Influencing Education Policy and Educational Scenario in India:

An attempt has been made to discuss some factors which influence the Education policy in India in this paper. For this 100 numbers of participants who took training in NIFM, Faridabad during the period 2016-17 were given a questionnaire consisting of 13 questions consisting of 13 attributes. These respondents were asked to rank these factors on the likert scale of 1 to 5 (1=Least influence, 5= most influence)

Output of the SPSS of Factor Analysis is as follow ----

Table 10 Descriptive Statistics

	Mean	Std. Deviation	Analysis N
Supply-demand gap	2.0500	.86894	100
Limited collaboration with industry:	2.2400	.87755	100
Largest tertiary-age population of India	2.1000	.73168	100
Constraints on research capacity	2.0800	.90654	100
Weak ecosystem for innovation,	1.9200	.66180	100
Quality of teaching and learning	2.0200	.66636	100
Uneven growth and access to opportunity	1.9600	.70953	100
Changing politics of education	2.1900	.70632	100
Lack of freedom to private sector under affiliation system	1.9800	.68135	100
Centralization in decision-making	2.2600	.71943	100
Lack in international collaboration in the arts, humanities social sciences, technology	2.1600	.83750	100
Shortage of funding	2.0700	.70000	100
Outdated and rigid curricula and pedagogy	1.7900	.60794	100

Scree plot

The scree plot is a graph of the eigenvalues against all the factors. The graph is useful for determining how many factors to retain. The point of interest is where the curve starts to flatten. It can be seen that the curve begins to flatten between factors 4 and 5. Note also that factor 4 onwards have an eigenvalue of less than 1, so only three factors have been retained

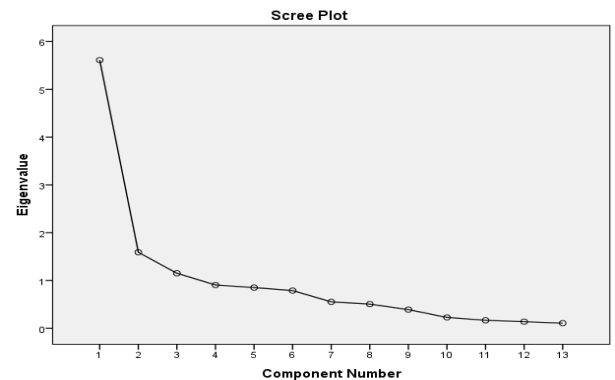


Figure 6

Table 11 Total Variance Explained

Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
5.610	43.157	43.157	3.614	27.801	27.801
1.592	12.243	55.400	2.409	18.531	46.332
1.152	8.864	64.264	2.331	17.932	64.264

Extraction Method: Principal Component Analysis.

This table-11 shows us the actual factors that were extracted. If we look at the section labelled "Rotation Sums of Squared Loadings," it shows us only those factors that met our cut-off criterion (extraction method). In this case, there were three factors with eigen values greater than 1. SPSS always extracts

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as many factors initially as there are variables in the dataset, but the rest of these didn't make the grade.

The “% of variance” column tells us how much of the total variability (in all of the variables together) can be accounted for by each of these summary scales or factors. Factor 1 accounts for 27.801%, factor 2 accounts 46.33 % and factor 3 accounts 64.26 % of the variability in all 13 variable.

Table -12 given below gives the summary of the exploratory factorial analysis of factors influencing education policy and educational scenario in India--

Table No 12 Summary of the Exploratory Factorial Analysis of factors influencing education policy and educational scenario in India

Items /Attributes	Rotated Factor Loading		
	Institutional Engagement	Equity of educational opportunities	Enhancement of the quality of teaching and research
Supply-demand gap	.901	.032	.143
Limited collaboration with industry	.768	.225	.070
Largest tertiary-age population of India	.504	.388	.442
Constraints on research capacity	.163	-.037	.758
Weak ecosystem for innovation,	.168	.338	.524
Quality of teaching and learning	.173	.204	.806
Uneven growth and access to opportunity	.018	.783	.183
Changing politics of education:	.039	.785	-.032
Lack of freedom to private sector under affiliation system	.613	.581	.142
Centralization in decision-making	.411	.446	.242
Lack in international collaboration in the arts	.799	.108	.255
humanities social sciences ,technology	.739	-.079	.510
Shortage of funding	.377	.515	.414
Outdated and rigid curricula and pedagogy	5.610	1.592	1.152
Eigen Value	43.157	12.243	8.864
% of Variation	43.157	55.400	64.264
Cumulative % of Variation			

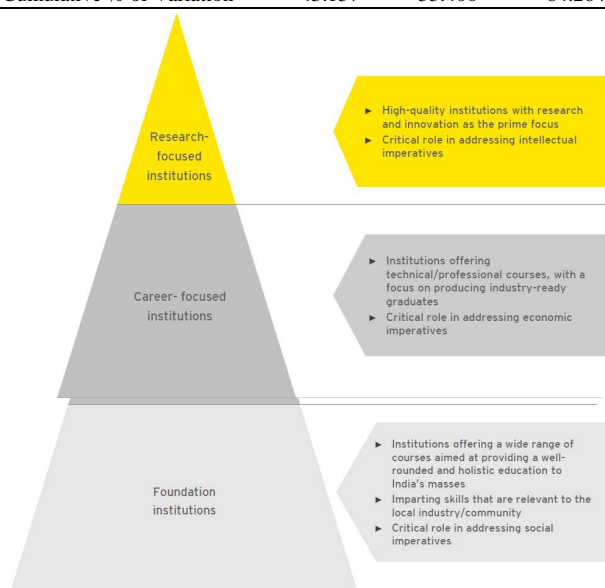


Figure 7

Section – 3

The Road Ahead: A differentiated system of institutions with differing objectives

In order to uplift the higher education in India, equally applicable to other developing countries, also, is to have a differentiated system of institutions with differing objectives and focus areas. The FICCI Higher Education Committee has endeavored to create the 'Vision 2030' for Higher Education in India

These different types of institutions would require fundamentally different architectural and foundation elements as follow ----

Table 13 Characteristics and outcomes of differentiated Institutions

	Research-focused institutions	Career-focused institutions	Foundation institutions
Characteristics	Research based curriculum, alliances with research institutions, research infrastructure, International composition of students and faculty	Re-evaluation of course mix, curriculum and pedagogy with the evolving needs of the economy to stay relevant, develop entrepreneurial skills, work on soft skills, skill related training.	Offer wide variety of programs and courses, application oriented teaching, outreach to large population, vocational training
Outcomes		Development of future generation industry professionals, professional development of alumni, white collar jobs	Holistic Education to large number of students, continuing education to mature students, technical and soft skills training
Student And Alumni	Knowledge creators, Academic leaders, International recognition		Easily accessible, large pool of productive and aware workforce to support strong and inclusive growth
Industry	Intellectual Property, Innovations, Applied Research in Indian companies	Benefit to India's growing knowledge economy by producing industry-ready talent with the necessary skills	
Government	Research relating to Public Policy and governance, Long-term strategic interests of the country, Ranking among Top 10 countries in terms of Ph.D. degree holders	Reduction in unemployment as a result of delivering industry-oriented education to a large section of the 18-23 year old population	Increased overall GER in higher education (50% by 2030)
Indian Society	Research specific to Indian society	Increase employability will lead to productivity and income levels leading to standard of living	Increased access to employment, Improved social indicators
International Community	Contribution towards global knowledge pool, Ranking among Top 10 in terms of research papers and citations, 5-6 Nobel Laureates in different categories	Supply of highly employable talent to the international markets, which are expected to face acute shortage of workforce by 2030	Serve as an example of the largest, high-quality education system for the rest of the emerging world by 2030

Characteristics and outcomes of differentiated Institutions

The table no 13 given below explains the characteristics and outcome of differentiated system of institutions with different objective---

The building blocks for differentiated Institutions can be explained as follow with the help of table no 14 ---

Table 14 The building blocks for differentiated Institutions

	Research-focused institutions	Career-focused institutions	Foundation institutions
Foundation	Self-enforced regulations, Governing body comprising a mix of academics and administrators, Autonomous and conducive to academic freedom,	Self-enforced regulation, Autonomy in content design and faculty recruitment, Private philanthropic endowments,	Substantial government funding for infrastructure and scholarships, Mix of academics and administrators, Independent with autonomy in development and assessment of courses.
Architecture	Financial support from Government for research	Government aid for scholarships	

Table 14 The building blocks for differentiated Institutions

			Eligible and deserving students with significant regional and linguistic diversity and a balanced gender profile, Account for 50%-60% of the total higher education enrolment.
Students	Talented and research-oriented individuals, Increased proportion of postgraduate/doctoral, international diversity, Top 10% of total enrolment	Focus on enrolling students with a strong aptitude in their chosen fields, Higher proportion of undergraduate enrolment	
Curricula	Integrated research activity and curriculum, Multi disciplinary course structure, Content and curriculum that can be accessed through Massive Open Online Courses (MOOCs)	Mandatory internship before the final year, Pedagogy that focuses on developing critical thinking, problem solving and communication skills, "Liberal arts approach" to education to create well-rounded individuals	Provide entrepreneurship-related courses/ training to build future leaders, Focus on languages, social sciences, health, sanitation.
Faculty	High proportion of full time faculty (75%-80%), 90%-100% of faculty with PhD degrees, Faculty students ratio of 1:10, Stellar, highly qualified faculty	80% faculty with industry experience, Average industry experience of 7-10 years, Faculty student ratio - 1: 15	10-20% faculty with PhDs; 80-90% faculty with a Masters degree, Faculty student ratio - 1:15-20
Infrastructure	Campus spread over large land parcel with state-of-the-art infrastructure for teaching and research, Labs and other facilities to support cutting edge research activity	Technology-intensive infrastructure, Use of ICT tools in pedagogy, Mix of face-to-face and online delivery of content	Peer-to-peer learning technology, Mix of online and face-to-face delivery of content, Adequate number of books, journals and computers.
Research Focus	Ranking among the top 200 universities in terms of global rankings, High involvement of both students and faculty in research activity, Ranking among the top 200 universities in terms of global rankings	Mainly applied/industry-oriented research ,Adapt content from industry ,Live projects funded, supported and mentored by the industry	Focus on basic community /development based research customized to the needs and requirements of the local communities
Partnerships	Collaborations with global institutions, industry-relevant research, goals of relevance to humanity.	Partnerships with Tier-1 and 2 international institutions to provide global exposure	Partnerships with leading Indian institutions for distance learning programs and content, Partnerships with industry for industry visits, conferences, and guest lecture

CONCLUSION

To Sum up, it can be said that to achieve the global competency in higher education in India, the policy makers should focus on three aspects , (i) The transition of modern higher education system to a learner-centered paradigm of education (ii) intensive use of technology in higher education and (iii) Reforms in governance .

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