

Strategy for Economic Feasibility and Vision Plan of Higher Education in Jharkhand, India

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Abstract

The somewhat neglect of the higher education sector and also of its impoverished population by the planners may also be attributed to the unplanned population growth. But presently the emphasis on physical infrastructure development, especially in the areas of roads and highways and better connectivity, and also some positive initiatives in the power sector, may witness transformation of the investment especially 18 to 23 years age of population which could help reduce population growth and this all can be done because of application of efficient management system in higher education. In recent years, Jharkhand has undertaken massive structural and systemic changes that have started to yield encouraging results. Increasing urbanization & income levels and rapid industrialization would require a gross incremental workforce of 05 million by 2030. The State is doing all its efforts with significant factors of growth that will help in envision the dream of 2030 in higher education of Jharkhand.

Key words: Education; University; Gross Enrolment Ratio (GER); Digital Technology; Management; Development.

Introduction

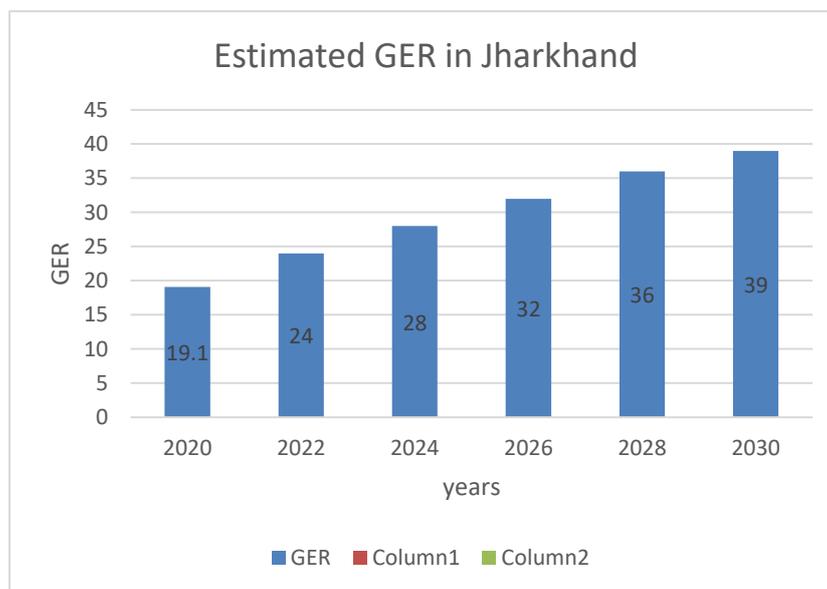
Jharkhand's Higher Education sector has witnessed a tremendous increase in the number of Universities/University level Institutions & Colleges since its inception in 2000 it has been increased from 111 to 313 (All over India it is 39,931) (AISHE report 2018-2019). In the prestigious Quacquarelli Symonds (QS) World University Rankings 2020, only three Indian Universities- IIT-Bombay, IIT-Delhi and IISc (Bangalore) have been included in the top 200 institutes. No Jharkhand University is in this list. To implement the principles of access and inclusion in the higher education several initiatives have to be taken towards enhancing quality, putting a premium on excellence, and providing a major thrust to enhancing employability. Higher education has a primary role to play in building a knowledge-based economy, providing sustainable employment opportunities, and ensuring a better standard of living to the existing and upcoming generations. Shifts in policy priorities in the sector are linked and attributed to a

constantly evolving ecosystem demanding targeted interventions at different points in time. While numerous vertical programs have advanced progress in the sector, a broad-based yet targeted and action-oriented intervention is imperative to prepare the higher education system to cater to demands for quality and accessible education, and the demand for employability arising out of the current dynamism in the Industry and Economy.

Objectives

There is a need of ushering transformations in Jharkhand's higher education system by implementing strategic interventions in the sector over ten years (2020 – 2030). It encompassing ten critical areas of higher education. The following objectives to be achieved in a period of next 10 years:

- Double the Gross Enrolment Ratio (GER) in higher education i.e., 39 till 2030 and resolve the geographically and socially skewed access to higher education institutions in Jharkhand.



Estimated Gross Enrolment Ratio (GER) in Jharkhand for 2030

- Upgrade the quality of education to global standards
- Position at least 10 institutions of Jharkhand among the top-1000 global universities
- Introduce governance reforms in higher education

- Accreditation of all institutions as an assurance of quality
- Promote Research & Innovation ecosystems
- Double the employability of the students passing out of higher education
- Harness education technology for expanding the reach.
- Promote Jharkhand as a study destination
- Achieve a quantum increase in investment in higher education

Research Questions

1. Is enrolment enough to explain the simple extrapolation of trends for higher education in Jharkhand?
2. Is aggregate model of demand is the real indicator of growth for higher education in Jharkhand.
3. Are the vision plan for ten years not directly dependent on the duration of study programmes in Jharkhand.

Review of Literature

The literature on demand for higher education began with Campbell and Siegel's (1967) study of tertiary education enrolments in the United States (US). Afterwards Galper and Dunn, 1969; Corazzini, Dugan and Grabowski, 1972; McPherson and Schapiro, 1991, Australia (Nicholls, 1984), Greece (Psacharopoulos and Soumelis, 1979), Belgium (Duchesne and Nonneman, 1998), or Canada (Christofides, Hoy and Yang, 2008). US, Hoenack and Weiller 1979; DesJardins, Dundar, and Hendel, 1999; and Buss, Parker and Rivenburg, 2004 assessed demand for a particular institution, investigating the useful tools for institutional strategic planning. Freeman, 1971 identified demand for a specific scientific area either to adjust supply or to induce demand towards key strategic areas. US, McPherson and Schapiro (1991) and Buss, Parker and Rivenburg (2004) analysed some aspects of potential economic discrimination, such as household income, student aid, tuition and other costs. Hoy and Yang (2010) studied social discrimination, either in class, gender or ethnicity. Thus many work has been done in the field of higher education. But specifically the Jharkhand word is missing where the regional, geographical, social, economica and structural difference is prominent. Therefore in this study we identify all the aspects and the challenges related to Jharkhand region of India.

Vision

1. To make higher education the potent medium of growth by creating knowledge.
2. To provide easily accessible and convenient opportunities for value-based quality higher education to youth, educationally deprived, and employed persons.
3. To motivate for lifelong learning for ensuring the proficiency in different skills, securing self-employment and employment with the motto of appropriate services to the State, Nation and Humanity.
4. Restructuring Universities for premier Status for global competitiveness.
5. To realize human resource potential of the State with Higher & Technical Education sector with equity and excellence.

Vision 2030

By 2030, Jharkhand will have 50 lakh people in the college-going age group (18-23) (AISHE-2018-2019 current population is 38, 69,791). To achieve the envisioned state in 2030, transformational and innovative interventions would be required across all levels of the higher education system. In India Higher Education architecture require –

1. Curricula and Pedagogy
2. Faculty
3. Research
4. Partnerships
5. Infrastructure
6. Funding
7. Good Governance/ Leadership

Mission

1. To establish new professional institutions and strengthen the existing ones.
2. To roll out policies and programmes for encouraging and innovating Government and private Higher Education Institutions, academic reforms and improvement of infrastructure.
3. To make the preferred destination of learners seeking flexible, affordable, and high quality university education
4. Cater to the educational needs of the target groups through the open systems of learning.

5. Create skilled and knowledge based human resource for speedy up-liftment and development of the State in particular.
6. Provide easy access to education to different sections of society, especially to those with seemingly geographical isolation and difficulty.
7. Promote national integration and integrated development of human personality.
8. Impart knowledge for awareness and skill development.
9. Promote research orientation in the present scenario of technology and development. and disseminate knowledge through an innovative multi-media teaching-learning system.
10. Promote dissemination of learning and knowledge through distance education systems including the use of any communication technology to provide opportunities for higher education to a large segment of the population and shall in organizing its activities.

Higher Education Data:-

1) (A) Total Educational institutions

No. of Institutions	Session 2011-12	Session 2018-19
Colleges	234	313
Universities	09	15
Private Universities	03	15

(Sources: AISHE & Department)

(B) Total enrollment

Institutions	Session 2011-12	Session 2018-19
Total Enrollment	3,55,942	7,39,484
SC	24658	73037
ST	52011	136384

(Sources:-AISHE)

(C) Increment in the No of students in higher educational institutions —

According to the report of AISHE (2019) during 2011-12, the total number of students in different courses likes PhD, M.Phil. PG Courses was 30,211, which increased to 61,792 for the year 2018-19.

(D)Gross Enrollment Ratio -

Particulars	2011-12	2018-19 (Published)
GER (Age-18-23)	9.9	19.7

(Sources: - AISHE)

2) Budget provision:

Particulars	2014-15	2017-18	2018-19
Budget Amount	98.00 Cr.	364.50 Cr.	523.00 Cr.

3) (A)Quality in Education (NAAC)

University wise NAAC Status of Constituent and Affiliated Colleges in Jharkhand:

Sl. No.	Name of University in Jharkhand	CONSTITUENT COLLEGES			AFFILIATED COLLEGES		
		Total No. of colleges	NAAC done	NAAC due	Total No. of colleges	NAAC done	NAAC due
1.	Binod Bihari Mahto Koylanchal University (BBMKU), Dhanbad	10	08	02	17	09	08
2.	Kolhan University, Chaibasa	13	12	01	05	01	04
3.	Nilambar Pitambar University, Medininagar	04	01	03	07	04	03
4.	Ranchi University, Ranchi	14	09	05	12	04	08
5.	Sido Kanhu Murmu University, Dumka	13	09	04	11	05	06
6.	Vinoba Bhave University, Hazaribag	09	08	01	14	12	02

Total	63	47	16	66	35	31
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Particulars	2011-12	2018-19
University	00	04
B.Ed College	01	03

Sources: NAAC, 2020

Issues and Challenges in Jharkhand's Higher Education Sector

- 1) Enrolment: The Gross Enrolment Ratio (GER) of Jharkhand in higher education is only 19.1 which is quite low as compared to National GER i.e. 26.3 (AISHE report 2018-2019).
- 2) Equity: Gender Parity Index of Jharkhand is 1.05 (India 0.92). There is no equity in GER among different sections of society. GER for males is 19.5, females 18.7, SC 15.9 and ST 13.7 (AISHE report 2018-2019).
- 3) There are regional variations too. While some states have high GER some are far behind the national figures.
- 4) The college density (number of colleges per lakh eligible population) is 8 in Jharkhand while it is 50 in Telangana as compared to All India average of 28 (AISHE report 2018-2019).
- 5) Most of premier universities and colleges are centred in a metropolitan and urban city, thereby leading to the regional disparity in access to higher education.
- 6) Quality: Higher Education in Jharkhand is plagued with rote learning, lack of employability and skill development due to the low quality of education.
- 7) Infrastructure: Poor infrastructure is another challenge to higher education in Jharkhand. Due to the budget deficit, corruption and lobbying by the vested interest group (Education Mafias), public sector universities in Jharkhand lack the necessary infrastructure. Even the Private sector is not up-to the mark as per the global standard.
- 8) Faculty: The Pupil-teacher ratio is 59 in Jharkhand though it is 26:1 in the country. Faculty shortages and the inability of the state educational system to attract and retain well-qualified teachers have been posing challenges to quality education for many years. Shortage of faculty leads to contractual appointment even in the premier institutions.

- 9) **Outdated Curriculum:** Outdated, irrelevant curriculum that is dominantly theoretical in nature and has a low scope for creativity. There is a wide gap between industry requirements and universities' curriculum that is the main reason for the low employability of graduates in Jharkhand.
- 10) **Accreditation:** As per the data provided by the NAAC, as of May 2020, there are.... Educational institutions who are NAAC accredited. And among those accredited, only 3 educational institutions are found to be of quality to be ranked at 'A' level.
- 11) **Regulatory issues:** Management of the educational institutions faces challenges of over-centralization, bureaucratic structures and lack of accountability, transparency, and professionalism. As a result of the increase in a number of affiliated colleges and students, the burden of administrative functions of universities has significantly increased and the core focus on academics and research is diluted.
- 12) **Research:** Poor fund allocation in research, Low levels of PhD enrolment, fewer opportunities for interdisciplinary and multidisciplinary research, Low levels of industry engagement, Low quality of research work, etc. are some of the factors affecting the research ecosystem in Jharkhand. Jharkhand's investment in R&D is negligible of Jharkhand's GDP in comparison to other States.
- 13) **Disparities in access to higher education and lack of adequate academic support to vulnerable student communities:** Empirical evidence points towards the persistence of economic, social, locational, and regional disparities in access to higher education. The higher education system and institutions have to recognise and adapt to meet the demands from diverse communities of students.
- 14) **The inability of students to achieve desired learning outcomes and incapacity of teachers to deliver on credible teaching outcomes:** Deficiency of prerequisites amongst students to take up programs and the subsequent failure to achieve desired outcomes is much prevalent. Limited opportunities for induction and training of teacher render them incapable of delivering on desired teaching outcomes.
- 15) **Lack of global standards of excellence in the higher education Institutions:** This has a direct impact on Jharkhand's capacity to reap its demographic dividend and acts as an impediment for HEIs to feature in top global rankings of institutions.
- 16) **Inadequate compliance by higher education institutions and stakeholders in implementing reforms and regulations to ensure efficiency and transparency:** A stark manifestation of this is the lack of autonomy of high performing institutions to

independently tread the path of quality and the opaque mechanism adopted by Universities in selecting Deans/FO/Other Officers.

- 17) Lack of adequate capacity of existing accreditation bodies to ensure participation of all higher education institutions in the accreditation process: NAAC and NBA are currently reeling under the issue of inadequate capacity to bring all HEIs into the accreditation framework.
- 18) Absence of overarching funding body including private sectors to promote research and innovation: This has led to a lack of adequate funding in research and innovation, and a low quantity of quality research output.
- 19) Absence of convergence between higher education and the skill ecosystem: Higher education contributes only 4% in offering skill training while JSMD contributes 58%. The JSMD hasn't been involved in the higher education system either.
- 20) Lack of quality and practical learning through MOOCs: Learning through MOOCs is currently a unilateral process whereby the learning is dependent entirely on the quality of time and effort invested by an individual learner during a MOOC. There are also issues of building the components of skills and practice through MOOCs.
- 21) Limited initiatives were undertaken to attract students from other State and abroad by HEIs of Jharkhand.
- 22) Inadequate investments in higher education as a proportion to the GDP: Government's expenditure on higher education is a mere 2.7% of the GDP.

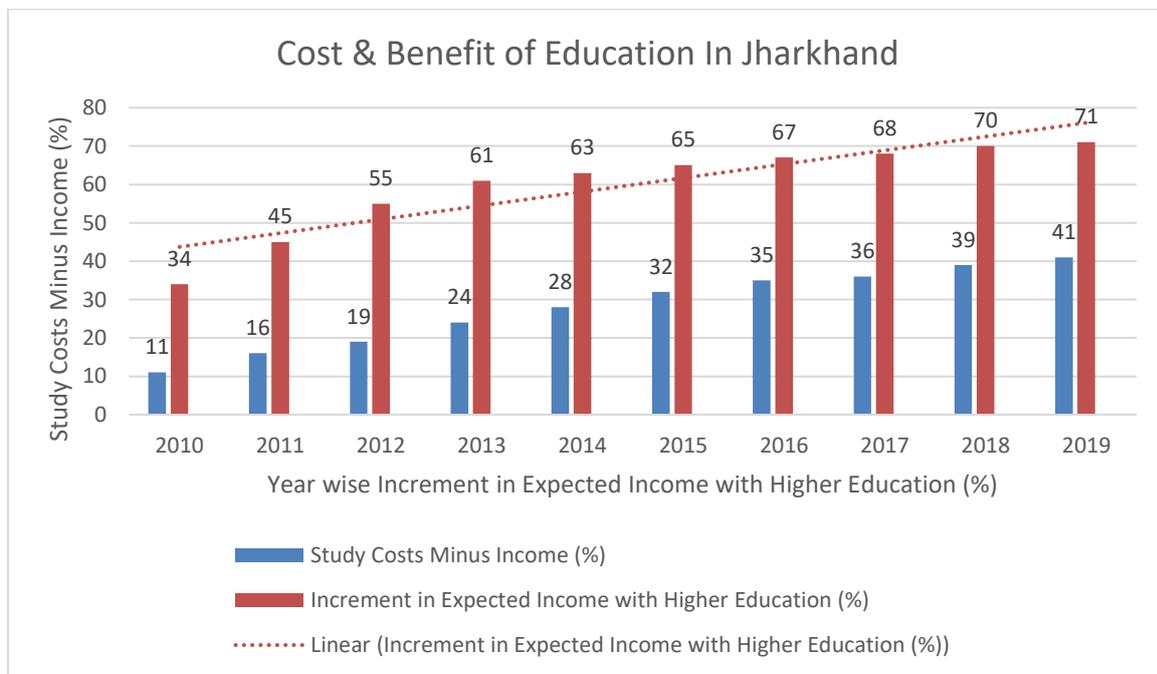
Recent Initiatives Taken by the Government

1. Chancellor Portal has been launched for enrolment, admission and registration of students.
2. Jharkhand Education grid is in pipeline.
3. The number of educational institutions has been opened to increase the Gross Enrolment Ratio (GER) in higher education and resolve the geographically and socially skewed access to higher education institutions in Jharkhand.
4. ...Institutions are NAAC accredited in Jharkhand.
5. Manifold increment in infrastructure fund by Government.
6. Workshop/Conference/Seminar on research and academic areas has been done to upgrade the standards in higher education areas.
7. Private investment has been promoted through Global summit.

8. Employment drive has been done with the help of universities.
9. High budget allocation in Higher Education.
10. UGC's CBCS system has been adopted.
11. Eminent Guest Lecture Series programme seeks to invite distinguished academicians, entrepreneurs, scientists, experts from premier institutions from across the India, to teach in the higher educational institutions in Jharkhand.
12. Every institutions in Jharkhand has uploaded the data in All India Survey on Higher Education (AISHE): The main objectives of the survey are to- identify & capture all the institutions of higher learning in the country; and collect the data from all the higher education institutions on various aspects of higher education.
13. State Government has identified 11 Colleges to develop them as Premier College.
14. Special Scheme for Research Scholar -Chief Minister Fellowship Scheme has launched for the students of graduate, post-graduate and PhD students. To cover this scheme 162 top educational institutions are selected to provide this fellowship. Rs. 05 cr. has sanctioned in the financial year 2018-19 under this scheme.
15. Women's Bus Service Scheme-This scheme has started for the girls of remote areas. Rs. 08 cr. has kept as budget allocation in this scheme.
16. State Government has opened 68 new colleges in different parts of Jharkhand.
17. Second shift class - State Government has facilitated for second shift class in all the Universities and Colleges of the State.
18. Language Labs - A total of 06-language labs has been set-up in different Colleges of State for the soft skill development among youths. They are Chatra Colleges Chatra, Gopi Nath Singh Women's College, Garwah, YSNM College, Daltonganj, Ghatshila College, Ghatshila, Santhal Academy and Tribal Development Department in SKMU, Dumka.
19. Virtual Classroom- 16 virtual classrooms has established in different Colleges to get the lectures from top most teachers of top class educational institutions of the country through video conferencing.
20. For quality education, the State Government has allotted a large sum of money for the development of modernization of library, up-gradation of laboratory, establishment of computer centers, digital libraries, skill development centers, wi-fi enabled campuses., etc. At first stage Ranchi University, Ranchi and Vinoba Bhawe University, Hazaribagh's campus is wi-fied.
21. Anti Ragging Apps- To safe guard from ragging of fresher's from senior students the anti-ragging apps has been launched on 19.04.2018.

22. State Government has funded to educational institute of Jharkhand to develop their selves so that they can come to National Institutional Ranking Framework. The rankings are published annually since 2016. It outlines a methodology to rank educational institutions across the country based on five broad parameters:

- Teaching, learning and resources;
- Research and professional practice;
- Graduation outcomes;
- Outreach and inclusivity; and
- Perception.



Sources: Primary Data

In this table, the expected benefits of education for employment and the expected incomes with and without education after graduation in Jharkhand is given. There are types of two costs of the investment in education: the fees and other costs of study. A necessary condition for a person to choose education as an investment good is that the net present value of the benefits is not less than the net present value of the costs (where net present value is a standard technique used by economists to compare costs and benefits that occur at different times) (Based on the model of Jane Higgins, Karen Vaughan Hazel Phillips Paul Dalziel (2008)). Prof. Yang, (Estimating the Demand for Higher Education in the United States,

1965-1995) also used a model based on return on education. Paulsen M.B., Toutkoushian R.K. (2008) described the human capital theory as the most widely-used theoretical framework in economics of education and a model of the market for investment in higher education are applied to analyze higher education policies regarding student access. Carlos Vieira, Isabel Vieira formulates a model of demand for higher education in Portugal considering a wide range of demographic, economic, social and institutional explanatory variables. The estimation results suggest that the number of applicants reacts positively to demographic trends, graduation rates at secondary education, female participation, compulsory schooling and the recent Bologna process. Demand reacts negatively to the existence of tuition fees and to unemployment rates. Within an adverse demographic and economic context, forecasts of demand for the next two decades suggest the need to increase participation rates, to avoid funding problems in the higher education system and increase long-term economic development prospects.

Road Map to Progress: 2020 to 2030

In recent years, Jharkhand has undertaken massive structural and systemic changes that have started to yield encouraging results. Increasing urbanization & income levels and rapid industrialization would require a gross incremental workforce of 05 million by 2030. The State has been touted to have the best-in-class post-secondary education system at present. Some of the significant factors that have contributed to this growth and can help envision the 2030 dream includes:

1. Expansion of a differentiated university system on the basis of locality and demand.
2. Transition to a learner-centered paradigm of education
3. Intensive use of technology and R&D
4. Regulatory and governance reforms.
5. Amend JSU Act, 2000 to give legislative backing to regulatory structure.
6. Allow others State institutions to operate joint degree programmes with the institutions of Jharkhand.
7. Link University grants to performance.
8. Creating 'world-class universities': 05 each from the public and private sector – are being selected as 'Institutions of Eminence', to help them attain world-class standards of teaching and research. A graded mechanism to ensure

additional funds flow to top public universities should be developed, as in China & Singapore.

9. Implementation of the Draft National Education Policy, 2019 that recommends Restructuring of the higher education system into Tier 1, Tier 2 and Tier 3. Tier 1 includes research universities focusing equally on research and teaching, Tier 2 includes teaching universities focusing primarily on teaching; and Tier 3 includes colleges focusing only on teaching at undergraduate levels. All such institutions will gradually move towards full autonomy - academic, administrative, and financial. The idea is to spread 'research culture' at the undergraduate level.
10. Increased focus on vocational and professional led education: Include vocational subjects in mainstream universities to allow for greater acceptance and utility for vocational learning.
11. Accreditation Framework: All higher education institutions must be accredited compulsorily & regularly, by agencies, empanelled through a transparent, high-quality process.
12. Performance-linked funding and incentives: All State universities should develop strategic plans for getting into the top 500 global universities rankings in the next 10 years. Funding to these institutions should be linked to performance and outcomes.
13. Distance and online education: Broaden the scope of Massive Open Online Course (MOOCs) and Open and Distance Learning (ODL) to provide access to quality education beyond geographical boundaries.

Trends of Higher Education in USA:

According to Janeb13 via Pixabay By Ben Unglesbee Published Jan. 7, 2019, The Office of Planning & Budgeting (OPB) & The Brookings Institution and The Chronicle of Higher Education and Eric Spear, CEO says that in 2019, higher education grappled with declining enrollments, financial uncertainties and unique localized challenges. In western country the pressures on colleges are numerous. They include a) historically low state financing b) competition over shrinking pools of potential students (c) slowed growth in international student enrollment d) a push from nearly all stakeholders for proof of return on their investments and d) often workforce-ready graduates. These challenges could bring

financial struggles for many colleges while also inspiring experiments, innovation, and new ventures and partnerships always changing, and often challenging, playing field. But the year is over and as we look at trends in higher education for 2020, it helps to remember a quote from Charles Darwin: “The species that survives is the one that is able best to adapt and adjust to the changing environment in which it finds itself.” They identified the different types of trends in USA and western countries. Which are as follows:

1. **Capital campaigns will get more ambitious**

Colleges have been turning ever more to private donors because of declining state funding and market limits on tuition hikes.

2. **Many of those big gifts will come strings**

While some donations can be used at a university's discretion, many are given as part of an agreed-to plan.

3. **Colleges will feel pressure to prove graduates are job-ready**

According to some projections, emerging technologies will displace 30% of workers over the next decade. As workers face the lifelong demand for new skills, more colleges are looking at offering shorter-term credentials, either in place of or embedded in traditional degree programs. Others are partnering directly with industry to design career-specific programming for their students.

4. **The college presidency will be a revolving door**

College presidents are spending less time in office due to financial impropriety, fissures with governing boards, political controversy and dissatisfaction.

5. **New credentials will flood the market**

There are roughly 650,000 credentials — including traditional degrees, certificates and other programs — currently on offer in the U.S., In many cases students don't always know whether employers will accept a given credential or which programs lead to better outcomes.

6. **For-profits will seek new business models**

December showed the for-profit sector's troubles are not over. Education Corporation of America (ECA) became the latest major for-profit operator to close abruptly, leaving 20,000 students scrambling to find transfer options or discharge debt. Less than two weeks later, Missouri-based Vatterott Educational Centers (whose deal to sell itself to ECA fell through earlier last year) followed suit. These events happened

under an Education Department whose deregulatory agenda is explicitly more sympathetic to for-profits' business models.

7. OPMs will play a big role as colleges expand online

In July, The Economist warned traditional universities may have survived the rise of massive open online courses (MOOCs) but "risk being outwitted by OPMs." Online program managers (OPMs) are not doing it by beating colleges at their own game — namely, educating students — but instead by getting colleges to pay-to-play in the digital space. Indeed, more colleges are turning to for-profit OPMs for help launching degree and other learning programs. In those arrangements, colleges avoid massive investments in upfront infrastructure but OPMs typically charge fees or take a cut of tuition revenue.

8. Colleges use the data to improve outcomes

Colleges are using data and analysis in more ways as they modernize and manage imperatives to show returns on student and state investments. But it's no simple matter for a university to collect and analyze information and act on the results.

9. AR and VR experiments will continue, but scale will remain elusive

Virtual and augmented reality that is AR and VR tools can provide students with experiences that would be otherwise too expensive or even impossible to replicate in the real world.

10. Alternate Funding Options Will Be Needed

With declining enrollments all across the country, many states are implementing budget cuts for public colleges and universities, which means colleges everywhere will need to explore new financing avenues. One option is to expand faculty research programs.

11. Fundraising Campaigns Will Be Reassessed

There's good news and bad news. Inside Higher Ed reports that donation amounts from alumni are reaching record highs, but the number of donors are on a straight decline.

12. A Healthy Economy Will Affect Enrollments

In US many community colleges (and even universities) saw a decline in enrollments. While the state of the economy is outside the control of college leadership, following market trends and institutional patterns can help avoid any surprises.

13. Competency-Based Education Will Continue Slow & Steady Growth

Technology is changing the ways and rates in which people learn. With that, there is continued interest from colleges to implement competency-based education programs.

14. Online Education Will Keep Thriving

Arguably the biggest improvement to higher education, online learning has transformed the way we think of going to school. In fact, 1/3 of higher education students now take at least one class online.

15. Changing Student Profiles

According to the Lumina Foundation, 38 percent of all undergraduates are older than 25. Traditional college students – 18- to 21-year-olds who attend college full-time – now only make up about a third of the college population. Students are also increasingly taking on additional responsibilities while in college. According to HBSC, 85 percent of students are working in paid employment while studying. Lumina also reports that students work, on average, 19 hours per week.

16. Changes in Admissions

Last year, the University of Chicago announced that it would no longer require applicants to submit SAT or ACT scores, the most-selective institution ever to adopt a test-optional policy. Today, more than 1000 U.S. colleges and universities have adopted similar policies.

17. Open-Access Research

Global advocates are calling for publicly funded research to be available through open-access sites, rather than behind paywalls of subscription-based journals.

18. Transnational Students

According to Study portals, the number of American students enrolling at foreign colleges is expected to grow from 2.3 million student in 2015 to 6.9 million in 2030. This trend is attributed to multiple causes, including “higher ambitions and investments for world-class universities” and “accelerated growth of global, multi-national networks.”

19. Online Enrollment

Online courses continue to become more popular in the United States. In 2016-17, overall postsecondary enrollment dropped by almost half a percent, while the number of students who took at least some of their courses online grew by 5.7 percent.

20. Online Program Managers

As online enrollments rise, online program managers (OPMs) are working with colleges and universities to provide online options for students.

21. Online education has become an increasingly accepted option, especially when “stackable” into degrees.**22. Competency-based education (CBE) lowers costs and reduces completion time for students.**

There is an increase in CBE, which allows students to apply their work and life experience to their education. These degree programs tend to be less expensive, self-paced, and more career-oriented.

23. Income Share Agreements (ISAs) help students reduce the risk associated with student loans.

In the U.S., the private sector is improving the student loan dilemma for students with ISAs.

24. Enterprise training companies are filling the skills gap by working directly with employers.

Given the massive mismatch in employer needs and worker skills, there are many companies working with corporations to ensure employees are rightfully skilled. Trilogy Education not only partners with universities, as mentioned above, but also leverages its network of partners and its platform to help Companies Bridge their own tech-talent gaps in both hiring and training. One of the more successful models has been Pluralsight, which is an online platform for IT and software developer training. Its focused, industry-updated content, and close ties to employers are key success factors. A unique model to address this mismatch is Revature’s platform, which utilizes university partnerships and close collaboration with employers to deliver a program where students pay their tuition over a two-year period after they are employed.

According to the concept of mathematical modelling cycle of STEM, “With the rapidly developing technology, the labor force of the society has changed direction, and in the age of informatics, creative engineering applications have come to the forefront. Accordingly, the education levels of the labor force were also changed. The science, technology, engineering, and mathematics (STEM) education model in most countries aims to teach science, mathematics, technology, and engineering in relation

to primary, secondary, high school, and higher education. STEM education, which has an impact in our country in recent years, has an important role in acquiring new skills, supporting creativity, innovation, and entrepreneurship, gaining the ability to transition between professions and adapting to new occupations. Nowadays, technology is expected to have different skills from individuals who will work in different fields with rapid development. Also, different teaching strategies play a major role in STEM integration and training. One of them, mathematical modelling, is the process of analyzing real-life or realistic situation using mathematical methods in the most general sense. The idea that mathematical modelling cycles should be used in STEM education at all levels from primary to tertiary education has gained importance in recent years, since it increases the students' motivation towards the lesson and they learn better by concentrating their attention.”

Applicability of the trends in India?

Higher education continues to adapt to new technologies and a changing global environment. The above facts represents just some of the most recent changes, and there are many other challenges and opportunities for American and Western countries' colleges and universities. As institutions seek to balance the status quo with contemporary shifts, their flexibility to adapt to changing circumstances will be a key element in determining their future success.

By analysing the above facts of higher education in USA and western Countries, now the question of its implications in India arises. Is these trends will apply to India also? or is this the future of higher Education in India? And how the Government of Jharkhand will face the challenges of higher education in near future. In India the situation of higher education is different from USA and western countries. It is structural rather than financial. Therefore it is essential to prepare the strategies to meet the challenges of higher education in the light of problems faced by the US and Western countries.

Data Analysis & Interpretation

This study estimates a model of aggregate demand for higher education in Jharkhand, with the objective of identifying demand's main determinants and producing forecasts for the next ten years. The results of the econometric estimation suggest that, from 2010 to 2020, demand was positively influenced by the enrollment. Unemployment and the existence of tuition fees have both have a negative impact upon aggregate demand for education. Unemployment, which decreases the opportunity cost of education and therefore could be expected to be positively related to aggregate demand, came out as a negative determinant. And small changes in income may not affect decisions enrollment to a higher education institutions. The forecasts produced with actual data on the number of enrollment and assuming more or less favourable scenarios. The demand scenarios presented in this study are useful to guide Government of Jharkhand and higher education institutions in their budget planning, enrolments and staff management, tuition setting and other resource allocation decisions. The forecasts may also substantiate the adoption of public policies aimed at improving the participation rate, to prevent major financial disruption in institutions left with too many vacant seats and, above all, to boost domestic economic competitiveness perspectives in global and highly competitive labour markets.

Strategies and Initiatives

The following strategies and initiatives have to be adopted to meet the challenges of Higher Education in Jharkhand:

1. Strategies for Expanding Access

- A) **Enhance access to vulnerable communities (SC/ST)**-Setting up of Samras Hostels in underserved areas: 200 Samras hostels (in Build Own-Operate model) would be set up to accommodate 2 lakh students from vulnerable socio-economic backgrounds with no access to higher education institutions in their vicinity to continue education. Scholarships for 2 lakh students to meet hostel expense will act as a support mechanism for students.
- B) **Fee reimbursements for SC/ST students**- 50% fee waivers for ST/SC students pursuing education through ODL and disbursement of balance in the event of successful completion of the respective academic year.
- C) **Finishing School/Bridge Course to impart employable skills**: Model degree colleges and new colleges set up in backward areas to have the provision of a bridge course (on the same pattern as finishing school) in the first year of the degree to impart mathematical and soft skills to them to enhance employability.

2. Expand access to cater to geographically underserved areas

1. **Enhance learnability and employability through vocationalisation**: Upgrade 10- degree colleges in backward blocks to vocational degree college (VCD) by integrating a vocational stream to start B.Voc programs
2. **Broadening opportunities for access to higher education through MOOCs**: Develop quality blended MOOCs to overcome the challenge of faculty deficit in institutions and to facilitate blended learning in vocational courses (with 300 additional blended MOOCs).

3. Improve the Gross Enrolment Ratio (GER) through Open and Distance Learning (ODL):

- A. **Establish the Open University and its study centre throughout Jharkhand**
- B. **Huge investment in ICT infrastructure**
- C. **Offer Courses through multiple languages**: State Open Universities and its regional centres located in the different parts of the State can facilitate the conversion of study materials into local languages.

4. Enhance overall access to higher education:

- A. **Offer incentives to students for pursuing higher education:** Students need to be incentivized with opportunities to earn while studying for higher education to appeal to them. Local colleges can act as extension centres for specialized technical/vocational services, and the students could get avenues to earn in these centres
- B. **Offer courses in a dual mode in universities:** Universities may be encouraged to offer courses in dual modes and the examinations held for both Distance and Regular modes should be conducted as the same.

5. Towards Global Best Teaching/Learning Processes establishment of mechanisms for revision/renewal of curriculum, and the introduction of effective pedagogies and assessment practices:

- A. **Formulate State Higher Education Qualifications Framework (SHEQF)** and revise Learning Outcome-based Curriculum Framework (LOCF) in 20 courses
- B. **Introduce new programs with effective pedagogies:** Introduce flexible Bachelor's Degree programs with multiple exit and re-entry, Bachelors Liberal Arts education and Multi & Cross-disciplinary departments in HEIs to cover 25 Universities and 313 colleges. Introduce Student Induction Program and Bridge Courses in all Under Graduate Programs of 2/4 credits (in 313 institutions)
- C. **Formulate guidelines for renewal/revision of curriculum:** Create institutional mechanisms for periodic review/revision of curricula by formulating guidelines for implementation of the revised curriculum, integral to accreditation and ranking, to cover 25 Universities and 313 colleges during 2020-2030. Prepare guidelines for a mandatory four months internship and community engagement and roll it out in all UG programs

6. Capacity Building and continuous professional development of faculty

- A. **Support in filling up of vacancies:** Universities should encourage to for filling up vacancies of full-time faculty in year basis.

- B. **Faculty Induction Program:** Organise Faculty Induction Programs for newly recruited Assistant Professors (in the last 5-6 years) in HRDC identified institutions under UGC & MHRD.
 - C. **Develop a strategy for continuous capacity development of faculty:** Organise refresher training programs for continuous professional development of faculty and leadership development programs on the lines of Leadership for Academicians Program (LEAP). Develop professional standards for faculty in HEIs covering at least 05 disciplines @ Rs.10 lakh per discipline and revise existing career path with tenure track leading up to leadership roles. Creating a Pool of 100 Pedagogic Experts with three weeks of foreign training @ 20 lakh per faculty.
 - D. **Infuse professionalism and enable faculty to develop and utilize multiple pedagogical and assessment approaches:** Establish 10 new Centres of Excellence/Teaching-Learning Centres under State Mission on Teachers & Teaching and a National Academy.
 - E. **Student Satisfaction Survey:** Undertaking periodical student satisfaction survey by NAAC Accredited 2.0 and above Institutions.
 - F. Introduce a State Tutor's & Tutorial Program.
7. **Upgrade academic infrastructure and cultivate technology-enabled learning ecosystems**
- A. **Assess the adequacy of infrastructure and academic facilities:** Obtain and collate information from to assess the adequacy of infrastructure and academic facilities available in HEIs.
 - B. **Provide Support with a One-time Catch-up Grants to facilitate infrastructural up gradation:** Fund 05 universities in State with Low GER (less than the national average) with a one-time grant of Rs. 50 Crores per University and Rs 10 Crore per college. And develop them as Premier College.
 - C. **Mentorship of neighbouring HEIs:** Identify Mentor institutions and implement mentoring activities
8. **Periodic Monitoring and Evaluation:** Set up a task force to monitor implementation of initiatives over the period of ten years, conduct yearly Joint Review Missions,

organise yearly review meetings involving all University level stakeholders, develop a portal for dynamic review, etc.

9. Towards Excellence

- A. The State Government will assist to 10 HEIs to reach top 1000 of world rankings
- B. Set global standards to ensure quality: This applies to infrastructure, academics, research, amenities, industry connect, and innovation & entrepreneurship.
- C. Ensure International Quality Outcomes: This is to be accomplished by initiating global Collaborations, Programs and Projects, making an Off-shore Footprint, fostering Innovation and Industry
- D. Amend regulations for greater autonomy: Enable institutions through Modification of Rules and Regulations for more autonomy and flexibility
- E. Build a Circular Ecosystem for Promotion of Excellence: This is to be achieved through new Instruments and incentives
- F. Management through the definition of metrics, indices, payback along with national and global mentoring /facilitation schemes for achieving goals
- G. Expand the catchment area of receiving funds: Enhance funding and incentives to enable achievement of targets and widen the catchment area of funding beyond the government sources.
- H. Enhance the national reputation of institutions: This is to be achieved about stakeholders, by enhancing visibility with Students, and by enabling Global Collaborations
- I. Delineate a Target Group: Special autonomy would be offered to a catchment of 4-5 institutions to drive institutional excellence of global standards.
- J. Top 500 Global Ranking Institutions: HEIs which are in top 500 of any of the three world rankings (QS, THE, Shanghai) are proposed to be a part of this catchment.
- K. Institutions in NIRF, NAAC and University with Potential for Excellence: Institutions that figure in any two of the lists of top 40 of overall NIRF Rankings, has a NAAC accreditation score of 3.51 and above and appear in the UPE list of UGC shall be considered part of this catchment.

10. **Governance Reforms:** Improve sectoral governance by the Government and the Regulatory Bodies like:

- A. **Model State Public University Act:** A model State Public University Act may be developed, which may not be made mandatory but serve as a model for the State Governments to emulate. It may contain the greater participation of Jharkhand State Higher Education Council (JSHEC) in managing State Universities, define roles and the constitution of various bodies along with the qualification and process of selection of Vice Chancellors, faculty and administrators, etc. States will adopt the act if its implementation is linked to funds.
- B. **Affiliation norms:** The number of affiliated colleges with the University shall be a maximum of 100, and the existing universities with a higher number of affiliated colleges shall be divided into several universities to ensure that the number of colleges with each university does not exceed 100. The other option is to have a separate vertical in the University, headed by the Pro Vice-Chancellor to deal with the University and affiliated colleges.
- C. **Revisiting the affiliation system:** The affiliation system may be revisited whereby it shall be ensured that within two years of granting affiliation by a University, the college must be included under Section 2 (f) of the UGC Act. The affiliation by the University after seven years shall continue only if an accreditation agency notified by UGC accredits the college.
- D. **Establishment of new Universities:** New universities should be established only when it felt needs.
- E. **Increasing the pool of autonomous colleges:** The College shall be encouraged to become autonomous colleges and the JSU Act, 2000 may be amended to give degree awarding powers to good autonomous colleges.
- F. **Mentoring of Colleges:** Autonomous Colleges to mentor potential colleges to move towards autonomy. Mentoring by NAAC high rating universities and NAAC high rating colleges or universities and colleges which are not yet accredited by NAAC may be undertaken at the earliest to ensure quality.
- G. **Greater Participation of SHECs in managing HEIs:** The role of Jharkhand State Higher Education Council (JSHEC) shall be enhanced, and they should

act as a buffer institution between the State Government - State Universities – Colleges in the State.

11. Improve Internal Governance in institutions

- A. **Developing an ERP for greater transparency:** A generic ERP may be developed for State Public Universities for smooth flow of information amongst the university administration, student staff, and public at large leading to enhanced quality of internal functioning.
- B. **Establishment of Human Resource Management Cell:** Every university to begin with and every college at a later stage shall establish a Human Resource Management Cell for recruitment retention and development of academic as well as non-academic staff, a process which is common in all foreign universities
- C. **Standard Operating Procedure for State Universities:** Standard Operating Procedures shall be notified for transparent functioning of universities.
- D. **Transparent Selection of Administrators:** The appointment of Vice-Chancellors/Deans/Registrars/FOs shall be done in a merit-driven and transparent manner.
- E. **Continuous capacity development of HE administrators:** Continuous Leadership Development Programs may be arranged for Vice-Chancellors, along with for Registrars, FOs and Controller of Examination. Non-academic staff to be trained to improve professional management of higher education.
- F. **Formulation of Grievance Redressal System:** The UGC has formulated regulation for Grievance Redressal of students. On the same pattern, the regulations for Redressal of Grievance for faculty and non-teaching staff may also be formulated.

12. Assessment, Accreditation and Ranking Systems

- A. **Broaden the accreditation framework:** Widen the accreditation network and acknowledge the diversity of standards during the assessment. To ensure 80% of HEIs are brought into the net of quality assurance by 2030

- B. **Categorize institution into different levels of quality:** Identify and certify institutions at Different Levels of Quality and bring them into the fold of the accreditation framework.

13. Establish a Mentoring System for Non-accredited HEIs

- A. Institutions at the top levels are expected to self-mentor and continuously improve their standards. Those at lower levels would require support to lift themselves. A Model for moving up the value chain is to be designed. HEIs identified at levels A should be initiated into Mentoring Programs designed for them.
- B. Set up a State Mission on Mentoring in partnership with all accreditation agencies, top institutions in A categories, and a network of eminent retired Professors, Scientists, and Industry experts. It should closely coordinate with the National and Regional Benchmarking Agencies (NBA and RBA)
- C. Top institutions should be encouraged and empowered (with funding) to create internal mentoring divisions to enable motivated faculty members to participate.

14. Benchmarking based on qualifiers

- A. Benchmarking to identify institutions/programs based on basic pointers (also called qualifiers). Pointers like those used in NIRF: FSR, Student Enrolment Ratio, the Success rate of students in exams, Quality of faculty, etc.
- B. Every non-accredited institution must submit its data for such benchmarking to an identified agency periodically and discern its level.

15. Develop the State capacities of accreditation bodies

- A. Like NAAC, State should develop JSAAC (Jharkhand State Assessment and Accreditation Council) in the public domain for accreditation and benchmarking to maintain the quality standards and an international image.
- B. State agencies should issue lists of all levels after successful accreditation and Benchmarking.

16. **Generate Market usefulness of accreditation:** This can act as an incentive for institutions to opt for quality and accreditation.
17. **Accreditation criteria should be outcome-oriented:** The criteria should focus on outcomes at all levels, especially student learning outcomes for every program of an institution
18. **Make participation in NIRF rankings mandatory and set up NIRF as an independent organization:**
 - A. All publicly funded institutions should be mandated to participate in NIRF Rankings
 - B. Expand the scope of NIRF to include rankings in popular branches of study and enable a larger number of institutions to become visible in the ranking lists.
 - C. Set up NIRF as an independent organization to widen the scope of its activities
19. **Promotion of Research and Innovation:** Set up a research funding body at the State level: The State Research Foundation
 - A. **The State Research Foundation (SRF):** SRF will be a Commission by an Act of Assembly and will aim at achieving excellence in knowledge creation, people, and R&I infrastructure.
 - B. **Structure of SRF:** SRF Operations will follow a Hub and Spoke model with the Central Office of SRF as the Hub and a network of Centre of Excellence (CoE), located in institutions of high repute, will be the Spokes
 - C. **Functions of SRF:**
 - a. SRF will fund research projects through grants.
 - b. It will establish high-intensity thematic research labs in areas of science such as oceanography, nanotechnology, Information & Communication technology, Artificial Intelligence with an additional focus on areas from Social Sciences.
 - c. It will establish and support research centres to be set up in the existing higher education institutions.
 - d. Support and fund Post-Doctoral students.

- e. Provide necessary research facilities to facilitate the creation of knowledge, innovation, and development in all fields of science and technology, and humanities.
- f. Develop an Innovation Cell in each University funded by the State and Private investment.

20. Build a robust ecosystem of research networks by reaching out to local higher

education institutions: The Centre of Excellence (CoEs) will aggressively engage with local HEIs to establish a network of Sub-spokes called the Institution's Innovation and Research Councils (IIRC) which will engage in outcome-based innovation activities and bring out quality research outputs

21. Employability and Entrepreneurship: Establish Regulatory reforms for Vocational Education:

- A. Introduction of Vocational Education: A formal vocational education structure should be incorporated into the college system with a credit structure that applies to both vocational and non-vocational education
- B. Setting up of screening tests for categorizing students: An intensive precounselling session and screening test needs to be introduced to categorize students into the general and vocational stream. This needs to be done immediately after schooling.
- C. Re-designing of curriculum: The curriculum for vocational education will need to be revamped by JSHEC to incorporate skill courses with credits, and the curriculum has to be developed keeping in mind the changing needs of the industry.
- D. Establishing a tripartite structure: A tripartite structure needs to be established between the industry, government, and institutions to boost skill development in top institutions
- E. Setting up of new regulations and norms: Separate guidelines need to be formulated for the appointment of teachers in skill universities and colleges. Regulation also needs to be put in place that will posit the industry to employ and recognize vocationally certified workforce.

22. Strategies for immediate implementation

- A. **Implementation of training and counselling sessions:** Counselling and training sessions are required for heads of institutions and faculty members to reorient their thinking and approach towards a vocation inclusive approach to education.
- B. **Creating Internship Opportunities:** Internships should be made compulsory during college education for each stream, and it has to be promoted most conveniently. A State internship platform for students and possible recruiters should also be created.
- C. **Introduction of new courses:** New courses relevant to industry and skill development must be introduced in the curriculum. Machine learning/ data science courses should be made compulsory across the university system.
- D. **Setting up incubation centres in institutions:** The Government may implement an exercise for doubling of High-end incubation centres in top Institutions and the creation of micro- incubation labs in colleges/universities immediately.
- E. **Setting up of centres of Employment & Entrepreneurship:** An exclusive, professionally run Centre for Employment & Entrepreneurship is necessary for every higher education institution for student counselling arrangement, internship sourcing, providing market-based inputs on employment, entrepreneurship/start-up ideas & forward linkage.
- F. **Setting up Placement Cell should be mandatory** in each University and College in the State.

23. **Imparting vocational courses via MOOCs:** Vocational courses should be made available via MOOCs to make these courses more accessible.

24. **Using Technology For Better Reach:** Promoting online education to get the scale for quality education

- A. **Contract with Doordarshan** to develop an education Channel and time slot should make available for each stream, subject and class wise.
- B. **Improving the Quality of SWAYAM courses** - stringent quality control of MOOCs courses, more focus on formal courses, promoting multi-

disciplinary programs, specialized courses in niche areas, selection of courses and course coordinators would be given importance.

- C. **Strengthening and Expansion of Local Chapters** - of at least 313 Institutions in the next ten years the Digital Education Support Centres (DESCs) would be set up in which 80 percent Institutions must be in the underserved regions.

25. Training teachers in the use of technology and associated pedagogy: Promoting education technologies for improving the quality of education

- A. Research in Edu Tech should be promoted significantly by setting up Centres of Excellence (CoE) in premier Institutions along with Incubation support facility for start-ups.
- B. Interested faculty should be offered Fellowships to pursue further studies in Edu Tech area
- C. More PhDs should be offered and supported by State in Edu Tech area
- D. Policy to support Start-ups to promote Innovative work in the Edu Tech area.

26. Operation Digital Board: It aims to introduce digital pedagogy in the classrooms through a blended mode of learning. Every classroom would be supported with a digital board, power, and internet facilities.

27. Promoting various digital initiatives like National Digital Library, Swayam Prabha, eYantra, virtual labs, FOSSE / Spoken Tutorials: Promoting digital initiatives in the unreached areas

- A. Special efforts to promote digital education in the so far unreached areas should be taken up as a targeted Outreach Initiative through DESCs.
- B. The emphasis of this initiative should be more on assured adoption of the digital initiatives, by close handholding and mentoring, rather than just dissemination of information.

28. Public-Private Partnership for implementing digital initiatives: Other promotional interventions such as giving weightage for digital initiatives in the Rankings like NAAC/ NIRF, Internships to faculty and students in premier Institutions.

29. Internationalization of Higher Education: Enhance inward mobility of international students

- A. **Study and take training in abroad:** Granting fund to faculties of HEIs to study and take training in abroad for internationalization of higher education.
- B. **Scholarships & Accommodation Facilities:** Scholarships for international students, digital facility of entrance examinations/tests for the selection/recruitment of international students, improving hostel facilities for international students should be provided.
- C. **Promoting Institutional Mobility:** The students of Jharkhand who want to pursue a PhD at top200 ranked universities in the world, will be supported with scholarships (for up to 5 years), with the condition that the scholar will have to return to India after completion of their PhD and will serve in Jharkhand.
- D. **Expanding academic collaboration with HEIs abroad:** Tie-ups with reputed foreign higher education institutions will be expanded for knowledge sharing and research collaboration
- E. **Distinguished Academician Return:** This scheme aims at facilitating deeper engagement of distinguished global faculty/scientists with Indian institutions – by offering them ‘dual’ appointments at institutions of Jharkhand (along with their foreign appointment), to spend at least three months every year at the State University.
- F. **Research Sabbaticals:** This scheme aims at facilitating temporary migration of global academics on research sabbaticals of up to 3 years, where they spend at least three months every year at the host institution of Jharkhand for at least three years (while remaining employed at foreign university for the period).
- G. **Young Academician Return:** The objective of this scheme will be to facilitate permanent return/ migration to Jharkhand of young Indian scientists under the age of 40.
- H. **Promoting Institutional Mobility:** Specific policy initiatives are taken up for increasing the number of the offshore campus of Jharkhand’s HEIs

abroad and allowing foreign higher education institutions to set up their branch campus within Jharkhand.

30. Financing Higher Education

- A. **Transformation of Governance Structure:** Governance structure of the university system must be transformed drastically into a professional and functionally autonomous one, with an independent regulatory structure. Standalone research institutions must be affiliated to a University to improve their credibility, outreach, and funding.
- B. **New modes of generating funds:** Opening up of sophisticated research equipment by HEIs to industry and other external users to both improve their utilization and also earn revenues through them. Maintenance costs of assets created continuously should also be aligned with the fee structure dynamically. Fee revision to be based on the cost of education and protect the institution from fee subsidy. Typical funding model has to be worked out for State Universities with funding based on performance metrics.

Conclusion:

In recent years, Jharkhand has undertaken massive structural and systemic changes that have started to yield encouraging results. Increasing urbanization & income levels and rapid industrialization would require a gross incremental workforce of 05 million by 2030. The State has been touted to have the best-in-class post-secondary education system at present that are significant factors and contributed to this growth and can help envision the dream of 2030.

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