INNOVATION AS AN ANTECEDENT OF THE UNIVERSITIES OF THE FUTURE

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Nearly half of today's jobs will be redefined within a generation, and nearly two-thirds of CEOs identify technology as their firm's greatest source of future competitive advantage. The future of employment and education demands continuous reskilling and delivering learning for life. Universities will have a central role in supporting an ever–growing population of lifetime learners. To switch over to a flexible lifelong learning is both a challenge and an opportunity for the universities. In the coming years, long standing models of higher education that prefer tradition and stability will be supplemented, if not displaced, by new models that embrace organisational innovation, responsivity, and adaptation. There is a need to move beyond the system of rote learning and facilitate students in choosing their own learning paths. The university of the future would promise to be an exciting place as it will enable the students to study wherever and whenever they like. Each student will be allowed to take charge of his/her own education by choosing one's own modules and mode of learning, whether it is on campus or online.

PRELUDE

India has the demographic edge—a young talent pool that is estimated to become the world's largest by 2030. But, is the higher education sector ready to face the challenge? The higher education sector in India has produced some of the world's best talent. The CEOs of some of the biggest Fortune 500 companies – Microsoft, Google, Mastercard, and Adobe – are products of the Indian higher education system. The landscape has also expanded over the past decade – from 436 universities in 2009-10 to 1040 in 2019-20 and from 26,000 colleges to 39,931. Student enrollment, at 37.4 million, is the third largest in the world, next to China and the United States (Government of India, 2019).

India is already in the middle of the 'demographic dividend' with a surge in its younger and working-age population, which is estimated to become the world's largest by 2030. The country is expected to account for about 20 per cent of the total young talent pool supplied by G-20 countries. Within this scenario, higher education in India will continue to play a critical role in driving the nation's talent competitiveness (Ghosh, 2019).

GLOBAL FORCES OF CHANGE

The rise of Artificial Intelligence (AI), the Industry 4.0, and the future of work are disrupting the ways of learning and working. There is a growing debate about the impact of AI and automation on jobs, shelf-life of skills, and changing learning models in the digital era. Other factors, such as the growing cost of education, funding constraints, and the rise of non-traditional ways of learning, are changing the education sector globally. In addition, the growing challenge of the skills' gap across sectors, has made it crucial to align learning with the industry demands.

The advent of the fourth industrial revolution has ushered in an impending skills gap. Nearly half of today's jobs will be redefined within a generation, and nearly two-thirds of CEOs identify technology as their firm's greatest source of future competitive advantage. No industry can afford to remain immune to the impact of technological change. From Law and Fine Arts, to Fashion and Agriculture, the shift from using technology to being driven by technology is likely to be an irresistible force.

The future of employment and education demands continuous reskilling and delivering learning for life. Universities will have a central role in supporting an ever-growing population of lifetime learners. The essential skills for our future will not be defined by a single period of tertiary education. Individuals will not seek to advance by taking a break from their careers to enter full-time education for extended periods. Rather, every person will prefer to upgrade the skills that can connect across multiple careers and can be integrated into an entire lifetime.

The role of the university must expand from a typical three or four year-degree program with limited industry and employer engagement. Individuals need continuous learning opportunities and support, as well as complete reskilling if possible, throughout their careers. Universities will grow by providing opportunities for learning supported by the best academic and contemporary industrial practices.

Switching over to a true model of flexible lifelong learning is both a challenge and an opportunity for the universities, governments and regulators everywhere. Education and industry need to deepen their partnership and create more permeable borders between them, allowing individuals to apply their knowledge immediately in an industry context while learning full time, and learn new skills although working full time. The Indian higher education sector is at a critical juncture and needs to prepare well for such disruptions.

Key Challenges

While the Indian higher education has grown substantially in terms of enrollment, some areas still need attention. Challenges include gaps between the skills being imparted and the skills needed at the workplace; skill gaps among faculty; paucity of funding agencies; and the amount and quality of research being carried out in these institutions. Some of these are discussed here.

The Growing Divergence between Curricula and Market Demands

In the post-industrial era, the skill sets one obtained in college or university served one for a lifetime: a professional who picked up his skills in college could hope to tap into them throughout his career. However, over time, the shelf-life of skills has receded. Educational institutions, unfortunately, have not conformed with these changes. The absence of an updated curriculum is a challenge for the Indian higher education system (Gupta et al., 2019). The growing gap between curricula and market demands has led to a widening skills' gap in the talent entering the market. For instance, next to China, India is the largest producer of STEM graduates: 2.6 million in 2016 versus China's 4.7 million. However, in India only 47 per cent of the available talent is employable (Wheebox, 2019).

The Quantity and Quality of Research

There is much debate about the quantity and quality of research around the world. One view is that the extensive research published globally is putting tremendous pressure on the peer-review system, which in turn affects quality. Besides, many people question the value of research papers that are not freely available for everyone to read: only 25 per cent of global research is available through open access platforms and without a subscription.

Despite these drawbacks, research – as measured by the number of publications, number of citations, citations per document, and the H index – remains one of the factors that determines the quality of higher education. The importance of research in education, especially higher education, was realised in the 19th century. Humboldtian model of education in Germany, proposed research as a core component of university studies. Since then, the quantity of research has improved.

According to some estimates, more than 30,000 scientific journals publish over two million articles every year globally. The number of publications from India has gradually increased over the years, but it is still lagging behind the leading countries such as the United States, China, United Kingdom, and Germany. The same is true for the H index of faculty and researchers in India.

Faculty Vacancies and Skills' Gap could Dampen the Quality of Education

Faculty vacancies in higher education remain high. The current lot of permanent faculty is inadequate. The skill sets of students as well as faculty are not in line with the needs of the institutions. Lack of quality faculty is the biggest challenge for the Indian higher education sector. Therefore, the faculty needs to up-skill more than once a year to match industry expectations. Otherwise, faculty vacancies pooled with skills' gap could dampen the quality of education.

Lack of Funding Alternatives

The quality of research is also a result of adequate sources of funding. Insufficient funding is another top concern. The decline in public funding, coupled with want of

the corresponding rise in tuition fee, has put pressure on the current education system. The numbers also show that public funding for higher education has stagnated. In 2015, India's expenditure on research stood at 0.62 per cent of GDP versus China's 2.06 per cent. Public funding for education remained at around three per cent of GDP in the past five years against six per cent for other developing nations such as Brazil and South Africa.

Structural and Learning Reforms

The Indian education sector is in the process of transforming into a more targeted and learner-oriented model. During the times to come, it will be crucial to design innovative solutions to accelerate the performance of the higher education to meet market demands, improve access to students, and drive efficient operations.

The most important challenge involves a shift in the way students would undertake higher education. Instead of attending a single institution, students shall receive credits in multiple ways: through early college/dual-degree programs, online providers, and multiple universities. Students shall be adopting online courses by turning to alternate providers. As a result, higher education institutions must become more agile, entrepreneurial, student-focused, and accountable for what students learn. The education shall have to be outcome-based now.

Emergence of MOOCs, new learning styles and rising financial and sustainability pressures are affecting the education sector. Leaders in the higher education sector are developing new strategies to leverage these emerging challenges and opportunities. The common denominator amidst all this change is students. Universities need to evaluate how they offer a student life experience that prepares him/her to be healthy and dynamic in the future. That means universities need to embrace sustainability and wellness as key components of campus life.

In the coming years, long standing models of higher education that prefer tradition and stability will be supplemented, if not displaced, by new models that embrace organisational innovation, responsivity, and adaptation. A dual transformation design strategy has proved especially effective for addressing both legacy and evolving markets. A new white paper on the future of higher education predicts that artificial intelligence, analytics, augmented and virtual reality, robotic telepresence and cyber defense will be driving forces in digital learning at colleges and universities over the next 20 years (Mattis, 2019).

Broader Education Ecosystem

Currently, the various components of higher education – educational institutions, students, alumni, regulatory and accreditation agencies, employers, and governments – operate in silos, resulting in barriers for students. There is a need for a broader education ecosystem; ideally one that goes beyond the university and includes industry, government, regulatory agencies, and think tanks. Partnerships and networking between industry and higher education will emerge as normal practice.

Learning and Job Readiness

People are more concerned with getting a job on the very first day of the placement season, rather than looking at whether the job offered will lead to a sustainable career ahead. A sole focus on employment diminishes the focus on learning. Universities need to strike a balance between learning and employment opportunities. One way to approach this is to integrate some of the key employment skills – such as problem solving, critical thinking, communication, and entrepreneurial abilities – into the curriculum. This will help to shift the focus to practical methods of learning and would also ensure a relatively smoother transition to employment.

Interdisciplinary Learning

Today's learner cannot be confined to a constricted education model as one needs a mix and match of disciplines. The onus of executing this is on the universities. There is a need to move beyond the system of rote learning and facilitate students in choosing their own learning paths. Such interdisciplinary learning can help students broaden their knowledge beyond a single domain.

Online Education

Virtual modes of learning are popular across the world. India's e-learning market is likely to expand to over 9.5 million users by 2021. Building a credit system for such learning will be important to encourage students to draw benefits from these courses as part of their overall education. For instance, SWAYAM by the Ministry of Human Resource Development, offers free online courses, which allow students to continue 'life-long learning' and help them to reskill and upskill.

REIMAGINING UNIVERSITIES IN INDIA

The university of the future would promise to be an exciting place as it will enable students to study wherever and whenever they like, with immersive learning experiences. The universities need to innovate in this rapidly changing world, as the students will be adept in using high-tech software and gadgets at the time of entry. The pace of change at the world's top higher education institutions has to be brisk. The intensity that comes with a physical or virtual learning environment stimulates and accelerates learning in a way that traditional learning methods sometimes can't. Over the last two decades, the reality of academic world filled with rapidly advanced technology is a reality. Such learning environments are transforming higher education today. Some of the models which can be adopted for reimaging the universities are:

Experiential University Model shall facilitate students to alternate between classroom learning and work related to their field of study. It would allow both employers and students to evaluate the level of suitability before committing to a full-time position.

Partnership University Model shall facilitate businesses and other employers, such as the government, research institutions and think tanks, to help the institution in

preparing talent for the knowledge economy. For instance, businesses can provide insights on curricula, financial assistance for equipment, and other essential resources. Institutions can partner with employers to include longterm internships in the curriculum that provide the same number of credits as a course.

Cluster University Model shall facilitate students to have access to the courses across disciplines and campuses. Students will be encouraged to choose their own career paths.

Subscription University Model shall facilitate the institutions to become a platform for continuous learning – both for technical and soft skills – throughout a student's lifetime. Students shall walk in and out of the system to gain and update their knowledge and skills by paying an annual subscription fee.

Sharing University Model shall allow sharing of repetitive activities with other institutions to draw benefits from an individual institution's strengths. Some of the shared services include career services, centralised marketing function, and admissions.

According to the UNESCO Institute for Statistics, an estimated 120 million people will be studying in higher education by 2030, with 2.3 million of those studying overseas. As a result, universities are beginning to offer a wider range of degree programs than they did traditionally, allowing students to study at a time and pace that suits them. This is especially important when it is taken into consideration that how many more students are entering education while balancing a family life, a career or both. Higher education institutions around the world are continuing to establish strong links and official partnerships with other top global universities as a way of encouraging networking between both students and faculty. As a result, the ability to travel overseas for education and work is becoming much easier.

The students have the opportunity to take part in an international exchange program, so whether one takes part in an exchange program, study abroad for a semester, or study one's entire degree in a new country, such experiences allow the student to mix, work, and live alongside a wide range of individuals who are from various backgrounds, cultures, races and faiths. Such global opportunities enrich a student's learning experience and allows him/her to understand and appreciate others' points of view, which can facilitate in preparing the student for a career in a global setting (Lukins, 2019).

CONCLUSION

Rigid traditional teaching methods are no match for state-of-the-art technology and e-learning platforms, as universities will be required to cater to the needs of individual student. The students need not to fit within strict time schedules and inflexible academic boundaries. Perhaps the biggest change one can expect to see is more universities switching the focus from the teacher to the student. Each student will be

allowed to take charge of his/her own education by choosing one's own modules and modes of learning, whether it is on campus or online. By doing this, students shall be active in their own learning and will also be able to foster technical and transferable skills when it comes to taking the responsibility of learning in their own hands.

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