Role of Technological Innovations in Higher Education in Nation Building

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ABSTRACT

The enrollment in higher education has successfully increased over the past decade in India. But now it faces the second generation challenges of providing relevant and good quality technical and vocational innovated strategies to uplift the skill and training opportunities to its youth to prepare them for the changing needs of the present market. Hence, technological innovation in education in India can bridge the gap between traditional education system and changing basic needs in primary, secondary and tertiary sector. Technological innovations in education needs to invest in research and development in syllabus, skill enhancement, training programs, smart teaching, infrastructure, on line sharing of best practices, conferences, Tutor Vista etc. Increasing competition in the market demands more innovation, hence, for technological innovations in education; funds allocation for education has to be increased. In India spending on education was **2.7 percent** of GDP for the financial year 2018, down from **3.1 percent** in FY13. It may seem huge; one has to view it in proportion to the total expenditure and if it is compared to peers, India spends the least on education. In 2010 the United States spent 5.3% of GDP on Education which is higher than the Global Average of 4.7% of GDP.

INTRODUCTION

The business organizations or service providers are analyzing the successful models and trying to follow them with their own visions and strategies in present days, whether it is a case of a company or an education institution. In traditional business or education, a specialized tutoring of children in high school still exists and less importance to practical practices is emphasized. Little has changed in this relationship for decades. This system assumes that one learning from tutoring will suit all the students but in changed model students choose the time and teacher, when he wants to be tutored and prioritizes his needs. Hence, if all the tutors are independent,

well educated men and women will begin the orientation with specific tests to evaluate the students' understanding of the subject and then develop a specific course of study for that student. The students of same stream and clever can be put into one category and lessons can be personalized for them in India. These teachers also have to go through a training program briefing them in effective practices in providing remote personalized education. The trained teachers can take 60 to 100 hours through Tutor Vista and can train 600 teachers on line. These teachers are not clustered at one place but bound by common standards of behavior, ethics and quality imposes by Tutor Vista. At present Tutor Vista currently, has over 10,000 paying students and it is expanding its tutor base of over 5000 tutors to countries outside India including the United States[1]. In initial results of Unites States showed tremendous results in participating in Tutor Vista. Their understanding of subjects improved very significantly and they paid only 99 dollars for it. It means that in populated country like India, it is also essential that in changing scenario, the system knowledge management and knowledge creation can be enhanced to generate the employment opportunity on need based.

However, In India digital library that constitutes an online network of learning environments for resources of science, technology, engineering and mathematics was established from mid to late nineties. The idea behind all this was actually to impart the knowledge and disseminate information, reflecting the underlying distributed nature of the Web for both formal and informal education. The Web technology was persistently improving and changing, hence, efforts were made very open and flexible as much as possible without making a centralized investment which lead everlastingly overall development. It was observed that two "meta-themes" reflected in this collective set of projects are the integration of research and education missions. Hence, many challenges were still remained as how to leverage the advantages of digital technologies for the benefit of culture and society. Almost two decades are passed since the phrase "World Wide Web" and its enabling technology dominating the scene. It is cost effective and environment friendly. In the arena of digital, Make in India is an initiative undertaken by the Government of India. The Prime Minister of India had hinted towards these initiatives on 15 August, 2014 in his Independence Day speech. A workshop was organized by the Department of Industrial Policy and Promotion which was attended by prime minister, his cabinet ministers, chief secretaries of

[1] Prahalad C.K. and Krishan M.S. the new age of Innovation, 2010.

states and various industry leaders on 29 December, 2014. It was launched on 25 September, 2014 in a function at the Vigyan Bhawan by introducing a logo of Lion which means striding Lion made of cogs symbolizing manufacturing strength and national pride. The basic aim behind the initiative is to focus on 25 sectors of the economy for job creation and skill enhancement. Some of these sectors are: automobiles, chemicals, IT, pharmaceuticals, textiles, ports, aviation, leather, tourism and hospitality, wellness, railways, auto components, design manufacturing, renewable energy, mining, bio-technology and electronics. Anyhow, now it is more important, how technological innovations in education sector can be introduced to full fill the need of today's scenario. It may be online lectures, to students or awareness campaign to citizens or stake holders to get the benefits of e-governance, new innovations, skill enhancement etc

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RESEARCH METHODOLOGY

The dismal growth of above factors has exhibited the condition of higher education in rural India, which is not up to the mark. Hence, it is important to improve our education system of India to compete with developed nation. This study intended to examine issues and challenges of higher education in India. Five indicators, growth rate of population, gross domestic product, per capital income, literacy rate and unemployment to total labour of four countries India, Malaysia, China and United States are taken to analyze the need of technological innovation in education sector of India. These parameters of highest populated country China, neighboring country Malaysia and developed country United States are taken to compare the same with India.

The data has been collected from the official website of Human Resource Development Ministry ofIndia,https://data.worldbank.Org/indicator/NY.GNP.PCA.PP.CD?LOCATION=MY for more than seven years. University Grant Commission, economies survey in India and other related

research papers, newspapers, media and published work. The growth rates of selected indicators are calculated and flow charts are figured out to compare them with each other.

Need of the Study

In building capacities for Innovation in an N=1 (New Generation) and R=G word (Varieties of Industries) of completion, managers need to leverage their knowledge, it may be education or industrial sector, agricultural sector, primary or tertiary. The basic truth is to know how to reuse explicit knowledge stored in digital form in the essence of most knowledge management system. Hence, the system must know whom to tap to solve critical problems that are encountered and it must not only focus on archived knowledge edge but also to access experts in the entire ecosystem. It is felt that education system is the back bone of the entire economy, as how to produce, whom to produce, why to produce and how much to produce are the important issues which can be solved through education only through new innovations in education and industrial sectors. What kind of job opportunities can be occurred after twenty years, hence, need based education and training programes should be provided to the coming generation. Online, training programmes to the existing teachers are very much required to meet the present needs, which can only be provided by new innovations in education sectors.

Scope of Study

The increasing population of Indian indicates that quantity and quality of Indian education system is lacking behind as compared to other developed nations. However, it is important to focus on improving the quality of education side by side of the quantity. It is observed that India has one of the lowest higher education enrollment ratios as compared to developed countries. The shortage of teachers is prevalent with even as the IIT's and it is reported a 20 to 30 per cent shortfall in faculty. The studies show that the number of students committing suicide are because of the pressure to perform well in studies and parental expectations, which has a direct relationship with shortfall in faculty position. It is noticed that almost half of the country's population is below 25 years, Almost 10% of them or 12 crore are between the ages of 18 and if they are equipped with both knowledge and skills they could drive India's entrepreneurial and Competitive spirit and make it into global power. It is astonished fact that Indian students spend $7billion to go abroad and study in foreign universities because of the poor quality of education at home where they imbibe foreign ethics and contribute in brain drain to Indian economy.

Factors Responsible for Technological Innovation

The education, training, development and knowledge are four competencies that enables the individual to interact effectively with his or her environment. But for development of all these parameters the country needs adequate finance and developing countries like India has a shortage of it. The population of developing nations is growing faster than the developed countries and resource are not matching accordingly for education sector. The education means mental, physical, moral and ethical development of a human being, but to have quality education to develop a quality human being, finance is the most important issue. However, for a prosperous country the important responsible factors are to have more of the capital, less burden of population, high growth of gross domestic product, per capita income, and high literacy rate as well as less unemployment level.

Objectives

The following objectives are set to study the Indian education system**.**

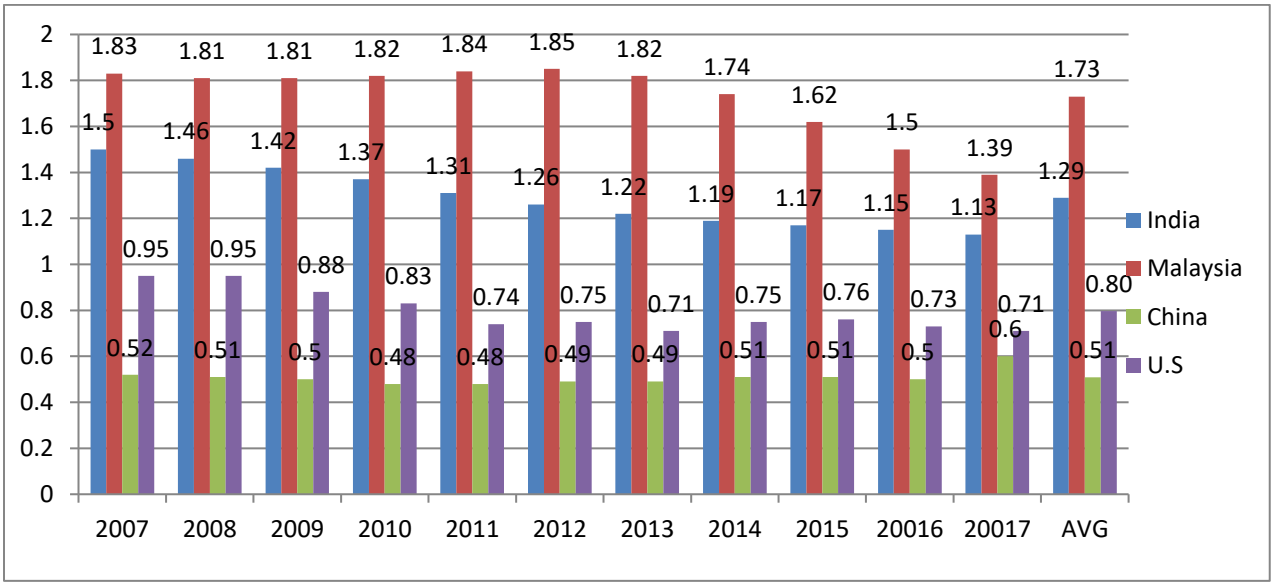
- To study the comparative growth rates of population of four countries
- To analyze the growth of gross domestic product, per capita income, and literacy rate and unemployment level,
- To investigate the technological innovation changes in education system,
- To suggest the road map for a good higher education system in India.

COMPARATIVE STUDY OF FEW FACTORS: Indian educational institutions are classical examples of slow adoption of information technology. The computer based-knowledge education for e-governance is important part of technological innovations in education which has three dimensions e.g. education computer illiterate program, primary-secondary as well as middle level program and continuing educating on computer awareness campaign for highly populated country like India.

- Population Growth: The rate of growth in population and the pace of technological evolution witnessed since mid 1990s, it is observed that new innovations have created a knowledge gap due to shortcomings in education system in India. The Indian economy due to less resources and low capital formation could not bridge up the knowledge gap

till today. It is felt that on the one hand there is not only a gap of knowledge but also deterioration in moral and ethical values are found in new generation. The growth of population is also a one of the major factor responsible for it.

Chart: 1 Population Growth Rate in Percentage[2]



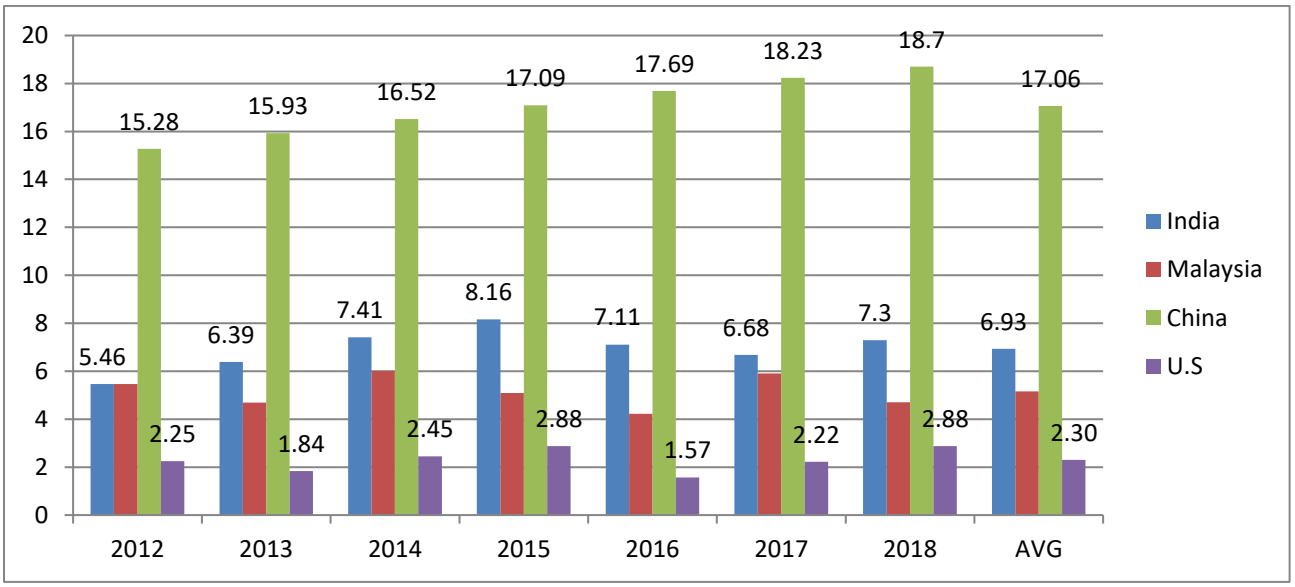
It is depicted in Chart 1 that, on an average, Malaysia, has registered highest rate of growth and India is having second highest rate of growth in population from the year 2007 to 2017. China has controlled its' growth rate as it the highest populated country in the world till 2018. It is very important to India to control the birth rate and migrant population so that more finance can be diverted to technological innovations in education. The growth of population has inverse relationship with availability of funds for technical innovations. It is also further analyzed that the countries who have controlled population have undertaken more technological innovations in education system. The US and China where population growth is under control can afford higher allocation of funds for technological innovation in education sector. The population growth of Malaysia and its relationship with technological innovations in education sector as compared to China, India and US is not realistically comparable as it is very small and manageable country.

- Gross Domestic Product: It is observed in Chart 2 that China, on an average, has registered 17.06 per cent highest rate of growth of Gross Domestic Product and United

[2] https://data.worldbank.Org/indicator/NY.GNP.PCA.PP.CD?LOCATION=MY

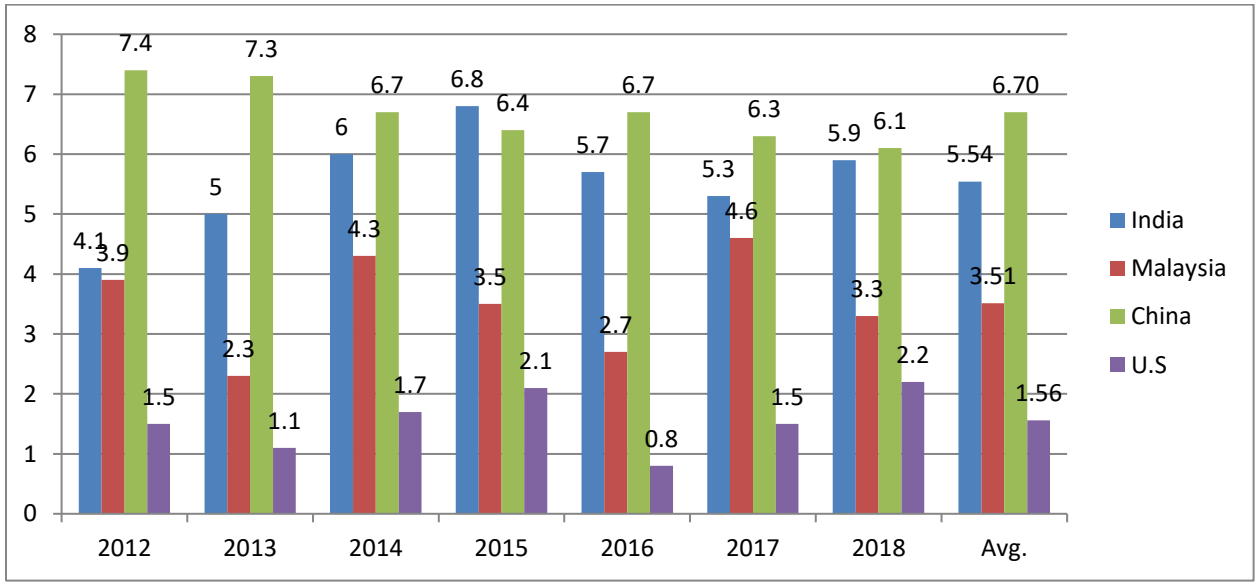
States of America has registered lowest 2.30 per cent rate of growth of gross product from the year 2012 to 2018. The growth of GDP of India, on and average, has registered second highest 6.93 per cent whereas Malaysia has registered 5.15 per cent annually. The country with higher GDP will have more outlay available for technological innovations like china which is manufacturing hub of the world and introducing more technological innovations for skill development and education system for its sustainable future growth. It is also required to invest more in research development sector. The case of India is also similarly situated, keeping Make in India campaign, in view. Hence, India has to introduce new technological innovations in education sector to increase the growth of Gross Domestic Product.

Chart No.: 2 GDP Growth Rate in Percentage



- Per Capita Income: The rate of high growth of income is evident to generate more resources for new innovations and technologies. The Chart 3 shows that China, on an average, has registered highest 6.70 per cent rate of growth in per capita income and United States of America has registered lowest 1.56 but still this country is leading the world in all the sectors. It means it has attained reasonable highest level of growth.

Chart No: 3 Growth rate of Per Capita Income Rate in Percentage[3]

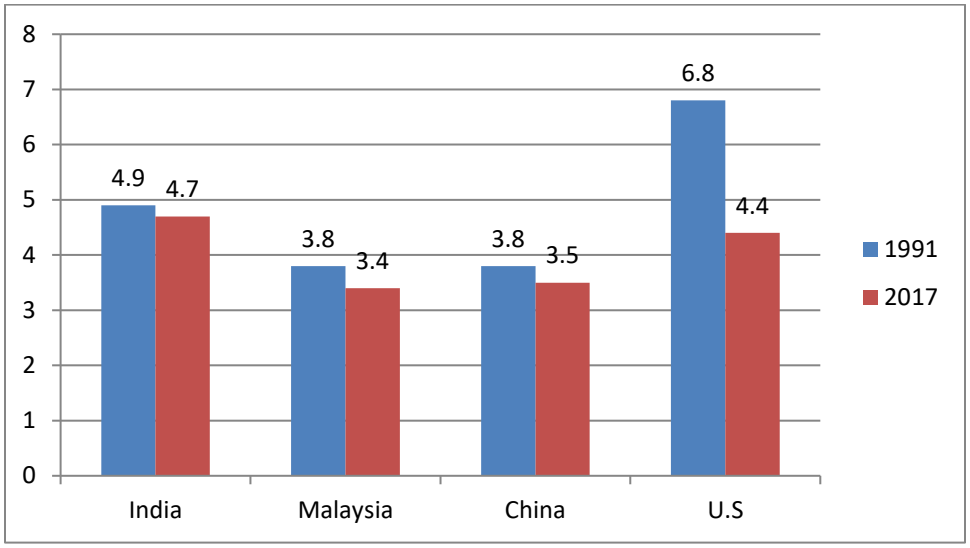


The growth of per capita income of India is second highest but still growth of opportunities of innovations is dismal due to faulty education system. The higher per capital income has a direct relationship with technological innovations and vice-versa at macro level. The higher per capita income will also encourage adoption of education innovation at micro level.

- Unemployment: Because of the high growth of population in India as compared to growth of gross domestic product and per capita income the level of unemployment is very high. Hence, new innovations in education in India are very much required to reduce the unemployment by enhancing skill development. It will also help to reduce the population as more educated couple will have fewer children, on one side, and would also increase skill to bridge the gap of required knowledge in the present scenario. India has, on an average, highest 4.7 per cent unemployment level and Malaysia has lowest 3.4 per cent level of unemployment in the year 2017.

[3] https://data.worldbank.Org/indicator/NY.GNP.PCA.PP.CD?LOCATION=MY

Chart No: 4 Unemployment, Total (% of Total Labor Force) Modeled ILO



The existing technological innovations could not be penetrated to rural areas due to traditional education system which further leads to more unemployment.

- Literacy: In the year 2001, the information and technology minister has declared it the year of e-governance. This initiative demonstrates the commitment of the government to embrace information technology in all the sectors e.g. education, agriculture, industry etc. of Indian economy, but due to low literacy rate or low technological innovations in education system required results could not be attained till 2018.

Table 1 evident that growth of literacy rate of India has registered the lowest rank compared to US, China and Malaysia. Hence, technological innovations for training and teaching are very much required in Indian education system.

Table No: 1

Literacy Rate in Percentage

Country	1981	1991	2001	2011	2015	2016	2017	2018
India	40.76	48.22	61.01	69.3	71.96	72.2	74.04	89.7
Malaysia	87.96	93.12	95.56	98.23	98.4	98.4	98.6	98.42
China	65.51	77.79	90.92	95.12	96.36	NA	NA	NA
U.S	NA	NA	NA	NA	99.0	99.0	99.0	99.0

- Technological Innovation in Educations: There are few issues like education and training, management of change, technology, process of re-engineering, multiple language platform and funding need to be addressed, to design and implement and enduring e-governance policy framework. Primary and secondary education in United States is based on play way method and higher education is very expensive, where as higher education is not based on practical knowledge in India. The most important three stakeholders are common citizens, agriculturists, traders and government employees who do not attain the practical knowledge in the education system. Hence, they do not have professional approach.

A citizen normally interacts with the government agencies for income tax payment, land records, law and order, pension, birth and death certificate, driving license, passport, different bills like water, electricity etc. but these smaller issues are not addressed yet in the education system.

The rural farmers face the problems of land records, market price of the produce, weather forecast, house tax, property tax, etc. A trader has to deal almost daily with GST, sale tax, income tax, duties payment of custom and excise but these issues are not practically taught in the secondary education.

Therefore, these issues should be the basics of education issues. Education, skill, training and development are very important competencies that enable the individual to interact effectively in the modern society. New innovations can be taught through distance education to farmers, rural traders if IT education is imparted at the middle, high and secondary levels. The higher education is very expensive in developed countries but it is not the case in India. It is important to charge the fees in higher education to increase the standard or quality education in government sector.

CONCLUSION

Technological innovations in education system are very important to full fill the gap of knowledge among the rural and urban citizens in any country, these innovations can be attained if resources of the economy are fully exploited by increasing the GDP, Per capita income, literacy and decreasing the level of unemployment as well as over population. The first three indicators, has a positive relationship with technological innovations in education and later two, unemployment and over population has a negative relationship.

Road Map for Technological Innovations in Education: The most important factors of production or for development are land, labor, capital and entrepreneurship. If they are provided enough to the education system then only country can think to introduce technological innovations in education sector.

- Before, opening the education institute adequate land has to be given on Land Grant pattern to Universities in US and under one roof, all the degrees courses should be provided to the students, like all other developed countries. Higher education should be subsidized to low income groups of the society. Only basic education has to be given free of cost. Then only quality of education can be maintained.
- The syllabus of secondary education should emphasize on need based as well as on levels of intelligence. The on line training programmes and further to students on line doubt clearance facilities should be given to improve the quality of teachers.
- Overall, practical education is required rather than theoretical, which required infrastructure. Hence, for technological innovations in education finance has to be increased. In India spending on education was **2.7 percent** of GDP for the financial year 2018, down from **3.1 percent** in FY13. It may seem huge; one has to view it in proportion to the total expenditure and if it is compared to peers, India spends the least on education. In 2010 the United States spent 5.3% of GDP on education which is higher than the Global Average of 4.7% of GDP.
- Part time small jobs like distribution of papers, petrol filling, and receptionist in hotels etc. preference should be given to students of higher education so that they can have experience along with studies and be able to pay the high fee structure.
- The increased finance in education may be spent to new smart room classes, on line lessons from renowned faculty members, infrastructure etc.
- IT based smart teaching; training for teachers, implementation of new technological innovations at grass-root levels, education with working experiences, management education, vocational education etc. are the few examples of new technological innovations in education which can improve the education system of the country.
- The education in skill enhancement and training, quality education with moral and ethical values, dissemination and sharing best practices, self- financing of higher

education with political will and support, vision for future need based education, ECI programmes, same syllabus in all the education institutions etc. with technological innovations can increase the efficiency and productivity of a nation.

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