

Globalization and ICT Innovation Policy: Absorption Capacity in developing Countries

Ayesha SALEEM, kiyohide HIGUCHI

Graduate School of Global Information and Telecommunication Studies, Waseda University, Tokyo, Japan

dua@fuji.waseda.jp, higuchi@waseda.jp

Abstract— This paper is about the new role of academic institutions in the economic development of developing countries. Educational institutes are significant in propelling economic development as they are the powerful drivers, technology centres, developers and investors. Universities can affect the economic growth of developing countries. The study identifies the current technology innovation in the field of education and analyzes the case of Pakistan and developed countries. The purpose of this new role of academic institutions is to touch virtually every aspect of daily lives and the prosperity of the communities live in rural areas. At a larger scale it aims to initiate a process of policy learning, exchange between countries in different stages of economic development and knowledge sharing with their universities research students.

Keywords— ICT, Innovation, Policy, Role of Universities, IC T education, Technology catch-up/transfer

I. INTRODUCTION

Pakistan, officially the Islamic Republic of Pakistan covers an area of 796,096 square kilometres. Pakistan is known as country having a growth rate very high and is the sixth most populous country in the world with an estimated population of 173 million. Almost 70% of the its population i.e. 110 million lives in rural areas. Adult literacy rate (10 year and above) is 57 %, literacy is higher in urban areas (74%) than in rural areas (48%), Public spending on education as percentage of GDP is 2.1 %. According to Labour Force Survey of 2008-9, 45.1 % of the total workforce is employed in agriculture sector, 13.0 % in manufacturing, 6.6% in Construction, 5.2% in Transport, 13.66 % in services and 0.1 % in others. Whatever progress Pakistan has made most of its gain are not shared in the rural area. In rural area structural changes and improvement in factor of production is very low. Human Development Indicators is also low. [1][2]

Most of the rural areas of Pakistan are similar with respect to their infra structure, economy and resources and are diverse in nature at the same time by their socio cultural conditions. Rural areas are generally backward in every aspect. There is a need to educate people, improve their healthcare services and to create job opportunities; there are many fields to work like: A considerable number of developmental project are being implemented by World Bank, ADB and NGOs However all

such project have adopted the progressive approach for development which takes time. If we follow the same pattern who has adopted by the OECD countries then it will take the same time which they took to be in present position. They follow the same traditional pattern. If we will start to educate all the children of village, it will take 30 years for that village when all children will be educated and use their knowledge for the growth of their village. The other point to provide health care services is also a long term affect on the economic development.

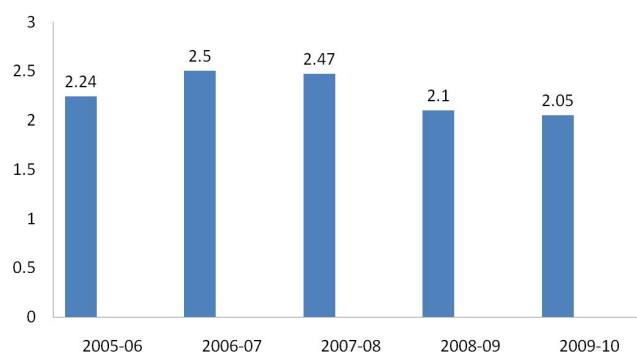


Figure1: Public Expenditure (as %) of GDP [2]

Many Universities of the globe have started comprehensive reviews of the curricula and introduced new strategies to transform the university learning and teaching approach. However, the quality of higher education in Pakistan is way below. Pakistan has 132 Universities including four new universities established in 2009-10. There is a pressing need to re-assess the current curriculum with the hope of adjusting its standard. Many universities have regarded understanding Information Technology (IT) and mastering the basic skills and concepts of IT as part of the core of education, alongside reading, writing and numeracy. In order to enhance the global competence by universities is the latest proposal for the development countries like Pakistan.[3][4]

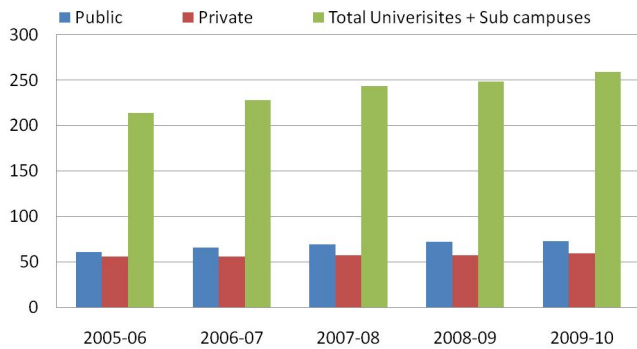


Figure2: Universities/Degree Awarding Institutions in Pakistan [3]

II. LITERATURE REVIEW

Internationalization is not only about learning elsewhere, but it is also about learning to solve local problems or address local issues within an international context; or learning to address international or global issues within a local context. Globalization is constantly changing the employment prospects of our workforce. Universities can do this by providing employers with graduates who are not only technically knowledgeable, but globally competent, as well.

A. Globalization and Change of Technology

The world has changed, it has become flat, more facilities are available, new techniques has developed. Thomas L. Friedmans's in his book discuss with the help of examples that how and why globalization has now shifted into wrap drive [5].

Growth is not the process of simple replication. It reflects a never ending flow of inventions, innovations and technological advancements leading to improvement in the production possibilities. Technology and the process of production have changed, and new products and services has introduced. Innovation has enabled doing things in different yet more efficient and cost effective ways.

Before 20 years, there was no computer, no concept of the internet no search engine, telecommunication was not available. These technologies were not used for the economic development. There are new conditions for future prospects, hyper growth is possible, and mobility of the resources is also possible. Use of new techniques changed the life and sudden change towards modernization can be possible.

The author discuss the entry condition in the world market for catching up has changed and is entirely different from 50 or 100 years ago. He grouped the countries on the basis of the patterns of economic growth as innovator, 19th century followers, 19th century cases of stumbling back, underdeveloped and stay behind, Learner or 20th century followers, 20th century cases of stumbling back. Pakistan is included in Group IV that refers to the country "underdeveloped and staying behind". [6][7]

In the era of global competition it is recognized that changes in technology and competition have diminished many of the traditional roles of location. Yet clusters, or interconnected companies with in the same area, are a striking feature of virtually every national, regional, state, and even metropolitan economy, especially in more advanced nations. The prevalence of clusters shows important insights about the microeconomics of competition and the role of location in competitive advantage. In the globalized world the old purposes for clustering have diminished, it has new impacts of clusters on knowledge-based and dynamic economy. Clusters represent a new way of thinking about national, state, and local economies, and they necessitate new roles for companies, government, and other institutions in enhancing competitiveness [8].

B. Internationalization of Higher Education

"Innovation involves getting new ideas accepted and new technologies adopted and used. The introduction of new technologies, methodologies or content into a university IT course can thus be considered as an example of innovation." [9].

"Internationalization of Higher Education is the process of integrating an international/intercultural dimension into the teaching, research and service functions of the institution" [10]. With the economic rationale as a backdrop to internationalizing the higher education, the term "internationalizing the curriculum" is proposed as a strategy for internationalization. Internationalization has been discussed as the relevance and importance of student outcomes, teaching strategies and knowledge content and inclusive curricula and pedagogy. [11][12][13]

Numerous researchers emphasize the centrality of the curriculum and the internationalization of the curriculum, teaching and learning processes as critical elements of internationalization. Knight describes the curriculum as "the backbone of the internationalization process". Other researchers concur, emphasizing the importance of an internationalized curriculum in providing a student-centered learning experience for all students and in preparing students to be successful in today's increasingly interdependent global society.

III. UNIVERSITIES ROLE

There should be new role of universities. The knowledge sharing by the universities is a way to achieve development, because the World has changed it is not the same as it was 20 years earlier. A strategy should be evolved with collaboration of research universities and stakeholders of rural area.

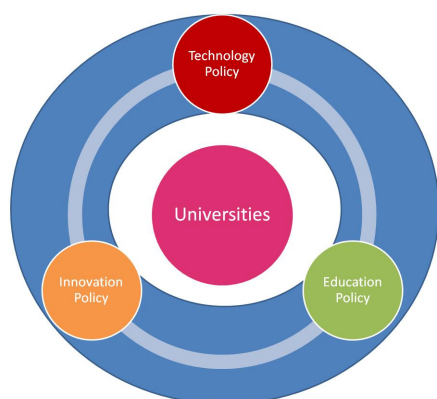


Figure3: Proposed Model

A. Globalized Trend of Internationalization of Higher Education

As espoused in the abovementioned literature, internationalization of higher education curriculum is vital towards economic development of a country to prepare students for careers that are potentially international and contribute to local economic development and competitiveness. Recent years have seen a tremendous expansion of ways in which higher education goes ‘international’. As well, international trends and developments taking place beyond national boundaries impact more easily on higher education policy at institutional and national levels, thus creating additional inter-connections between various changes. Consequently, it is not only difficult to keep track of the various concepts and terms used to describe new processes in the international aspects of higher education, it is also difficult to capture these interconnections. An additional challenge comes from the fact that innovations and changes are on-going and thus the field is evolving constantly.

University curricula in Information Communication Technology (ICT) necessarily require frequent changes, updating and even complete revision due to advancements in technologies and changes in how people and organizations make use of computers. The increased focus on achieving economic benefits and the technological advancement demands higher education policies on internationalization of ICT education. The most important reasons for integrating international topics into the ICT curriculum are:

1. To identify key issues, trends and area of growth and to elaborate policy statement that call for change and improvement.
2. Results in a more global orientation on part of students.
3. Sensitizes students to differentiate between countries in technologies.
4. Results in more interesting class discussions, and
5. Makes students more desirable in the marketplace. [10]

In effect, Pakistan can be able to match other developing countries, such as India, in producing this ‘raw material’ of university-educated professionals in high enough quality and

quantity it can become a ‘Services-export Tiger’ rivaling the growth rates of the fastest growing Asian economies. This, however, should not be seen as a case of ‘picking the latest fad’ but rather an example of one opportunity where investment in higher education could yield very high economic returns.

Acknowledging the growing needs to better prepare students for living and working in an increasingly culturally diverse and socially complex world, Pakistan’s universities should develop new teaching and learning strategies to attain an internationalized curricula. Likewise, there is a need for a customized national curriculum in Pakistan in order to cope with the global world that could ultimately lead to the future production of quality graduates for job opportunities within and outside of the country, and be at par with other universities at least in the South Asian Region.

In essence, this study would not only be significant to the Pakistan ICT curriculum but also to universities in the South Asian Regions and other countries that need to upgrade their ICT curriculum to compete with the globalized world.

B. Model Universities

In this respect the University may introduce an internship program for the students for duration of six months. This should be made as a requirement of their study program. The student will have to spend that time in rural area of Pakistan and then work to solve the rural area problems. They will be working as “Brain Circulation”. That will affect the living status of the village. People of the rural area don’t have facilities so even their own person after getting education don’t want to come back to the place. The highly qualified people from different universities will work there, share their knowledge and will see the real situation to solve their problem. Education should begin from home.

People of the rural area should be provided with free internet and mobile phone. That will not be a high cost. After implementing this strategy the social inclusion, gender equity, reaching remote areas and regional imbalances/disparities will be eliminated. The experiment and prototype manufacturing and the use of that prototype in the live environment will change the economic condition.

In many analyses it proves that universities play an important role for innovation because R & D is the key aspect of the innovation. So doing this initiative it is the knowledge investment in the rural area. Universities, public research institution and Science Park play important role in the innovation. Economic Development of the rural sector is strongly related to technological and scientific specialization and innovation. From the traditional process the developing country has to face painful transition process towards techno economic system.

C. Innovation Universities Examples

An example of how a university can undertake its new role in different ways to enhance innovation explained in RMIT’s

initiatives in the East Gippsland region. In consultation between RMIT and the local community, RMIT questioned the about the issues confronting the region and find out the way how best it might assist. They had a report on degradation of the ecological systems which had identified problems but there had been little follow-up. They recruited nineteen postgraduate students to follow up the initial report and identify solutions. Their research is being conducted in the region, and with those affected by the problems they seek to solve. They will report progressively on their results, reducing the normal dissemination time-cycle. They will have access to local, often informal or undocumented data, available only on the spot. This exemplifies a new way of working in collaboration and partnership with others and identification of research agendas by others.

A research university is one of the necessary conditions for economic restructuring. Research universities play a important role to provide scientific knowledge, technical expertise, and skilled workforce for implementation in the field. While in industrial growth we have successful examples of Silicon Valley in California, Route 128 in Massachusetts, and Research Triangle area in North Carolina are all close to major research universities, and this fact has been perceived as instrumental in positioning these areas on new growth trajectory.

John Hopkins Institute for Policy Studies in Baltimore offers service to the community through graduate and undergraduate student internships, seminars and briefings, and volunteer activities, each year the Institute's first-year students research a policy issue of particular interest to the City of Baltimore, and present their findings and recommendations to city leaders, community activists, local business owners, and concerned citizens, among others.

Massachusetts Institute of Technology (MIT) has a program for International Development "D-Lab". The purpose is to foster the development of appropriate technologies and sustainable solutions within the framework of international development. In India M S Swaminathan Research Foundation (MSSRF) a Centre for Research on Sustainable Agriculture and Rural Development has established to harness the power of ICT in the knowledge, skill, economic and social empowerment of rural families based on the principle of reaching the unreached and voicing the voiceless. The MSSRF has collaboration with the D-Lab program. [11][14][15][16]

D. Initiative in Pakistan

Namal college is the initiative to trigger innovation for the benefit of the society with collaboration of University of Bradford, UK and LUMS, Pakistan. Namal Knowledge City is built in Mianwali a small district of Pakistan. Project building consisting of Computer Science, Software Engineering and Electrical Engineering departments with their laboratories has now been completed.

The development of Namal Knowledge City (NKC) is planned in three phases. The Phase-1 short certificate courses, diploma in higher education programmes and undergraduate degree programmes has established, after that it will offer

postgraduate degree programme in various disciplines. One of the main planned activities of Phase-2 is Namal College staff development and establishment of links with industrial partners to promote knowledge transfer at local and national level. Phase 3 will establish Technology Park, enterprises and commercial. [17]

CONCLUSIONS

In essence, this study is proposing a new role of universities for economic development of the country. It is concluded that to transfer or catch up technology to developing countries, new universities should be established in the rural areas with the Internationalization of ICT curriculum. The highly qualified people from different universities will work there, share their knowledge and will see the real situation to solve their problems.

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