

BRIDGING DIGITAL DIVIDE: A STEP TOWARDS EXCELLENCE IN HIGHER EDUCATION IN PAKISTAN

Muhammad Safdar
PhD Scholar
Department of Education,
International Islamic University, Islamabad.
safdar.phdedu34@iiu.edu.pk

Dr. Irshad Hussain Baloch
Associate Professor
Faculty of Education
Islamia University Bahawalpur
irshad_iu@yahoo.com

Dr. Muhammad Nfees
Sarhad University of Information Technology
Islamabad, PAKISTAN
nfees_san@yahoo.com

ABSTRACT

The study focused upon a sea change of initiatives taken by HEC to address the knowledge gap or “digital divide” in the holy period of seven years. Swift and simultaneous promotion in research publication originated by these initiatives was also assessed in this paper.

Some salient features of its ICTs policy were establishment of Pakistan Education and Research Network (PERN), PERN 2, National digital Library (NDL), Pakistan Research Repository (PRR), Video Conferencing facility, Combating Plagiarism and ICT ranking of universities.

To develop and bring the higher education institutions at par with international standards and best possible utilization of ICT in higher education, HEC has launched ICT ranking process in Pakistani universities.

As a result of these revolutionary initiatives, research output has been increased sharply and approached to enviable 300% increase in international publications in the modest period of seven years. Recently, Pakistan has been awarded ‘rising star’ status in five fields: the maximum fields for any country, from an internationally reputed publicising house, Thomson Reuters in its publication ‘science watch’ survey (www.sciencewatch.com). The above prestige, swift and consistent increase in publications is result of gigantic and dedicative efforts of HEC for the promotion of higher education in Pakistan through its robust ICT policy.

Key words: Digital Divide, ICT Policy, Higher Education,

INTRODUCTION

The 21st century, the age of information and globalization is undeniably the age of information technologies that have taken over all fields of human activity, particularly education and training. Globalization evolved with the emergence of global (market) economy and it is often attributed to the rapid development of new information

technologies and their supporting infrastructure (Field and Fegan, 2005). In education, it has been used as slogan for recent activities at institutions of higher education throughout the world. It is a process, which assimilates different systems and allows geographical boundaries to disappear in knowledge creation and its dissemination. (Teichler, 2002)

Over the past decades, globalization has now become a new world order. Globalization promotes the development of productive forces, scientific and technological progress, and economics of scope by collaboration in design and production across borders, and improves communication among peoples and countries (UNESCO, 2005). A better globalization is the key to a better and secure life for people everywhere in the 21st century (Halonen and Mkapa, 2004) and no nation can escape from globalization. Every nation has to face its consequences. Globalization is no longer an option, it is a fact. Developing countries have either to learn to manage it far more skilfully or simply drown in the global cross currents (Mahbubul Haq quoted by Ishrat).

Unless the quality and outreach of education, training, skills, literacy, health status are significantly improved, Pakistan will remain handicapped in maximizing the benefits of globalization (Husain and Sajjad, 2008). In this situation an inclusive strategy is necessary to cope with knowledge base economy in this global era especially for developing countries because there is also a school of thought that claims that the result of globalization benefits those with more financial leverage, meaning rich nations, at the cast of the poor. (UNESCO, 2005)

Higher education in Pakistan needs special considerations for the establishment of knowledge base economy; otherwise the situation will be degrading. The technological improvement of any nation brings her at the threshold of advancement as given below.

Table 1: Export Performance

S.No.	Country	1960	2012	Rank in 2012
1	Pakistan	0.16	21	47
2	Thailand	0.43	195	19
3	Malaysia	1.23	199	17
4	Korea	0.03	466	5
5	China	2.79	1578	1

Source: WTO Statistics (International Trade Statistics 2012) & HEC Annual Report 2002-2003

The table indicates that Pakistan's exports were (16 US \$) about 5times times of Korean exports (0.03 US\$) in 1960 but in 2012 Korean's exports (466 US\$) were about 22 times

of Pakistan’s exports (21 US\$). Similarly Malaysian, Thai’s and Chinese economies have done wonderful progress in these 50 years. Similarly, Chinese exports were about double to Pakistani exports in 1960 but now Chinese exports are 75 times more than Pakistani exports and China is now leading exporter of the world. The reason is clear that those countries have given prime importance to education and technology. Drastic increase in their economies is due to their realization of value to knowledge and technology which can be gauged in the table (2) below. Korea has invested a huge amount (2.6 US\$ of GNP) on education especially on vocational, science and engineering, tertiary education and R&D during these 43 years while Pakistan’s low export performance is due to low priority to education and technology(.2% of GNP). This situation helped Korea to enlist in top ten in the world regarding Network Readiness Ranking.

Table 2: Educational, Economical and technological Development

S.No	Characteristics	S.Korea	Thailand	Pakistan
1	The Networked Readiness Index 2013 Ranking	11	77	102
2	Human Development Indicator (2005)	12	103	146
3	Expenditure on Research and Development (% of GDP 2000-05)	2.6	.3	.2
4	Internet users (per 1000 people 2005)	684	110	67
5	Tertiary students in science, engineering, manufacturing and construction (% of tertiary students)	40	---	24
6	Availability of latest technologies (World Ranking 2013)	24	82	93
6	GDP per Capita (ppp US\$, 2005)	28731	7722	2566

Source: WTO Statistics (International Trade Statistics 2003), Human Development Report 2007/2008 & 2013(UNDP) and Global Information Technology Report 2007-2008 & 2013.

Information and communication technologies cover another very important aspect of education, which is quality of education. Information and communication technologies have rich potential for facilitating the teachers and students. ICTs based programmes and services have increased the quality of education. According to Jung (2005, p.5), “Most of the institutions have introduced information and communication technology (ICT) based programmes and services in pursuit of quality improvement and expectations”. Similarly Ranta (1994) described that these technologies enhanced the quality of education by improving curriculum, standard and research facilities. Information and communication

technologies provide a means for qualitative improvements to the formal educational system, a system which has lost much of its credibility in Third World Countries because of irrelevant curriculum, low standards and lack of resources”.

Information technology has revolutionized every field of life and global requirements of education like education for all and quality education etc. can be met through the maximum provision and optimum utilization of information and communication technologies. The capacity and the possibilities offered by ICT in improving socio-economic life are almost limitless. Hence there is need to fully integrate ICT in education to exploit its potential to overcome any challenges to expansion of quality education. (GOP, 2007)

The Government of Pakistan has realized the pivotal role of ICTs in education which can be visualized in these words, “The investment in information technology infrastructure and its network will bring our institutions of higher education on the world map”. (Education Policy, 1998-2010)

In the light of National Education Policy 1998-2010 a comprehensive strategy was developed for the proper integration of ICTs in education. The National Information and Communications Technology (NICT) Strategy contains the following six elements

- Use ICT to extend the reach of educational opportunity.
- Apply ICT to strengthen the quality of teaching and educational management.
- Employ ICT to enhance student learning.
- Develop complementary approaches to using ICT in education.
- Build on the current experiences of existing and successful ICT programmes.

- Develop capacity at the federal and provincial department of education levels.
(GOP, 2003)

The Higher Education Commission (HEC) was established in 2002 to develop, improve and uplift the higher education in Pakistan according to the global requirements of 21st century. Since its inception HEC is determined to meet the challenges offered by the information age (HEC Annual Report 2004). ICTs have the potential role in the new knowledge-society; so ICTs will be utilize in Pakistan as a force for capacity building and ultimately economic development. Huge amount is being spent for the maximum provision of ICTs to all universities and degree awarding institutions.

CURRENT INITIATIVES AND ACHIEVEMENTS

In the last five years HEC has launched of a sea change of initiatives. Among them some significant measures like hiring of foreign faculty, PhD indigenous fellowship programme, six monthly foreign research programme, linkage of universities indigenous as well as foreign universities, establishment of PERN-1 and 2, digital library, Pakistan Research Repository, ICT ranking of the universities, university-industry linkage programme, faculty development, reforms in curriculum, facility of video conferencing to the universities, educational conferences and tenure track system etc. have fundamentally altered the higher education landscape to face the global competition.

The Annual Report (2004-05) of HEC reflects that “The numerous efforts of the reform process to revitalize institutions into world-class seats of learning and research have injected an influx of scholars into institutions through various programmes. The increased research activity is complemented by the provision of high quality ICT services and infrastructure to deliver educational services to institutions across the country”.

Pakistan Education Research Network (PERN)

Research is the key to advancement in knowledge and to develop and improve research environment in Pakistan's educational system especially in higher education sector establishment of PERN was a revolutionary step taken in 2004 (HEC Annual Report, 2006-07). Its main purpose was to interlink all universities and degree awarding institutions, registered with HEC (HEC Annual Report, 2004-05).

Initially 11,000 scientific journals were provided for access to the researchers which were increased to 25000 electronic journals and 45000 e-books. In 1997 ninety seven universities were connected with it. The total bandwidth was increased from 155 Mbps to 310 Mbps at 50% cost reduction and the equipment was also shifted from XXX system to DRS system to increase research work 45 MB downlink was finalized (HEC Annual Report, 2004-05). This project provides opportunity of access to International Ocean of electronic knowledge.

PERN 2 was launched in 2007 to strengthen PERN and it aimed to provide gigabit connectivity to all higher education institutions in Pakistan. Through this mega project more than 100 times enhanced bandwidth will be provided to all universities as compared to present bandwidth (HEC Annual Report, 2006-07).

National Digital Library

National digital library (NDL) programme of the Higher Education Commission (HEC) is the corner stone of its information and communication technology (ICT) strategy which was launched in January 2004. It is a part of PERN. The vision of the digital library programme is to meet the information requirements of the higher education and research sector in Pakistan by providing access to high quality scholarly information

based on electronic delivery. It is playing fundamental role to address the knowledge gap or “digital divide” between Pakistan and developed countries. More than 25,000 journals and 45,000 e-books from 220 international publishers are being provided for research purpose. Hundreds of scholars are going abroad for presenting their research papers in different educational conferences. Article downloading and publication rate is increased dramatically after the establishment of digital library. In 2004 approximately 10000 full text articles were downloaded while downloading count exceeded 1 million in 2005 and this count increased sharply and reached over 2 million at the end of 2006. (Amina, 2006 and HEC Annual Report, 2006-07)

Pakistan research repository (PRR)

Another key initiative to promote open access to scientific literature, facilitate national and International knowledge sharing to promote the international visibility of research conducted in Pakistani universities, HEC has launched the Pakistan Research Repository. More than 1500 PhD and 50 M.Phil theses are available online in high-quality digitized format. Further 200 theses have been digitized and are in process of being uploaded onto repository and made available through the web. (HEC Annual Report 2006-07).

ICT Ranking of Universities

For best possible utilization of ICT in higher education, HEC has launched ICT ranking process in Pakistani universities. The objectives of this programme are as follow:

- To develop and bring the higher education institutions at par with international standards.
- To define the levels of development of standards-complaint, websites, network architecture.

- To provide and implement standards to access the information worldwide. (HEC 2005-06, p. 45).

University –Industry Technology Support Programme (UITSP)

In this knowledge base economy, technologically advanced countries are enjoying reputable status in the world. Realizing the prime importance of linkage between technology and industry HEC has initiated University-Industry Technology Support Programme (UITSP) which is an important step towards fostering high level of tangible cooperation between academia and industry for the sake of capitalizing on emerging international demands for products and processes in discrete and continuous manufacturing in order to contribute to national economy. (HEC Annual Report, 2005-06). Most important feature, Funding support has been offered by HEC to initiative projects in which both industry and universities collaborative, through a matching grant scheme. These grants provide for a funding ratio of 20% industry and 80% HEC support towards the development of new research ideas. (Achievements of HEC, July 2004-June 2006)

Enrolment

A few years ago the total number of students in higher education was about 2.6% for the age group of 17-23 which was very low and Pakistan ranked amongst the worst in the world in higher education enrolment ratios, as compared to China, Malaysia, Thailand and Korea. (GOP, 1998-2010 and HEC MTF, 2005-2010). Enhancing accessibility and participation in higher education and provision of increased opportunity to FA/FSc graduates to attend universities is an important goal of Higher Education Commission. (HEC, 2007). The figure below indicates the Pakistan's worst position of enrollment amongst other countries, in the previous years and then improved position after given special emphasis on increasing enrollment.

Table 3: Enrolment in Higher Education

S.No	Country	2002	2003	2004	2005	2009
1	Korea	83	87	89	90	100
2	Thailand	39	40	43	43	46.2
3	Malaysia	26	29	32	32	37.5
4	China	13	15	19	20	24.3
5	Pakistan	3	3	3	5	5.4

Source: USAID database-2008, Human Development Report 20072008 & 2013 and Global Information Technology Report 2013

Researchers

Researchers explore the hidden truths of nature and open new vistas of this universe to the human beings but unfortunately due to our own negligence same like the enrollment the number of researchers was also very low as compared to other nations. In 2002 the total number of researcher per million people in the country was about 72 but this number is swiftly increased and reached up to 162 after the establishment of HEC within one decade which can be seen in the figure below.

Table 4: Number of Researchers per Million

S.No	Country	Researchers
1	Finland	7647
2	Iceland	7428
3	Denmark	6390
4	Singapur	5834
5	Norway	5504
6	Japan	5189
7	Sweden	5018
8	Korea	4947
9	USA	4673
10	China	1199
11	Malaysia	365
12	Thailand	316
10	Pakistan	162

Source: Human Development Report 2013 (UNDP)

Publications

Number of research publications in the international reputed journals indicates the quality of research and quality of education. Universities impart knowledge and produce knowledge through research and research play vital role in the socio-economic development of the country, strengthening infrastructure, training of highly qualified manpower and improving the quality of higher education (Isani and Virk, 2005).

HEC has launched several research facilitative programmes to promote research in Pakistani universities i.e. indigenous scholarships, research projects, research grants, best utilization of ICTs and international linkages which resulted in sharp increase in research output after decade of stagnation. (HEC Annual Report 2005-06). Allocation of grant for research purpose is enhanced by 474.47% for the promotion of research in Pakistan. (HEC Annual Report, 2002-03).

Table 5: Number of Publications

Sr.No.	Years	Publication	Increase	
			Number	%
1	2001	460	----	---
2	2002	815	355	77
3	2003	948	123	15
4	2004	1038	90	09
5	2005	1306	268	26
6	2006	1759	453	47
7	2007	2494	635	36
8	2008	3640	1146	46
9	2011-12	5317	1677	46

Source: HEC Annual Report 2005-06

The table: 5 indicates that research output has increased sharply over the past five years especially 47% and 46% increase in 2006 and 2008 respectively. The percentage of publications has been doubled from 2001 to 2002 and likewise 26 % increase from 2004 to 2005. This swift and consistent increase in the count of publications is result of measures taken by HEC for the promotion of higher education in Pakistan. In this achievement facility of ICTs especially the digital library played discriminative role as users access to 25000 international journals and 45000.ebooks provide opportunity to voyage in the ocean of knowledge. This is encouraging situation but the number of publication may be magnified as this count is far behind to our neighbours and regional partners.

CONCLUSION

The 21st century is the age of information and communication technologies. These technologies have spawned new hopes and expectations equating the academic opportunities to all. ICTs have promoted international connectivity and competition of academia and these technologies have opened new horizons of global interactions. These technologies are being used all over the world right from (functional) literacy level to higher education level. Students can learn at their own pace from their homes and work place interacting and participating in networked learning environments.

Incorporation of ICTs has created digital divide between developed and developing countries and poor countries are facing more problems than rich countries. These technologies have produced knowledge base economy and high competitive environment. In fact, the present world scenario proves to a great extent “survival of the fittest”. In this situation, to keep at par with global standards Higher Education Commission was established in 2002.

HEC took revolutionary initiatives to boost up higher education sector in Pakistan. HEC has given top priority to the provision and utilization of information and communication technologies for the promotion of higher education. Utilization of ICTs has played discriminative role in elevating the quality of higher education in Pakistan. Paper publication and presentation is increased radically. For the first time in Pakistan’s history three universities succeeded to enlist in world’s top 600 universities and doubtless to say, this is the golden era in Pakistan’s Higher Education. As a result of these initiatives in higher education in Pakistan, the nation is trying to grab the track of development.

REFERENCES

- Amina, S. (2006) *Accessing Electronic Information: A Study of Pakistan Digital Library*. Oxford. UK.
- Field, M. H. & Fegan, J., (2005). *Globalization and Across-Border Education: Paradims and Challenges*. In Field, M. H. & Fegan, J. (eds.). *Education Across Borders: Philosophy, Policy and Pedagogy-New Paradigms and Challenges* Tokyo; Waseda University Media-Mix Co. Ltd.
- Government of Pakistan (2003) *National Information and Communication Technology Strategy for Education in Pakistan*, Islamabad.
- Government of Pakistan (2007) *Education in Pakistan: A White Paper*. Islamabad.
- Haloneon, T. (2004) *World Commission on the Soicial Diomension of Globalization*, (ILO, 2004).
- Hasan, J. K. (2006) *A Global Guide to Management Education 2006*.
- Higher Education Commission (2004) *Annual Report 2003-04*, Islamabad.
- Higher Education Commission (2005) *Annual Report 2004-05*, Islamabad.
- Higher Education Commission (2005) *Medium Term Development Framework 2005-10*, Islamabad.
- Higher Education Commission (2006) *Annual Report 2005-06*, Islamabad.
- Higher Education Commission (2007) *Achievements of the Higher Education Commission (HEC) July 2004-June 2006*, Islamabad.
- Higher Education Commission (2007) *News and Views*, December, 2007, Islamabad.
- Higher Education Commission (2008) *Annual Report 2006-07*, Islamabad.
- Higher Education Commission (2011) *Annual Report 2009-10*, Islamabad.
- Higher Education Commission (2012) *Annual Report 2010-11*, Islamabad.
- Higher Education Commission (2013) *Annual Report 2011-12*, Islamabad.
- Isani, U. A. G. and Virk, M.L. (2005) *Higher Education in Pakistan*, Islamabad. National Book Foundation.

- Husain, I. (nd) *How is Pakistan Positioning Itself for Challenges of Globalization*. Retrieved from www.google.com on 20 Mar, 2008.
- Jung, I. (2005) *Innovations and Good Practices of Open Distance Learning in Asia and the Pacific*.
- Raouf, A. and Niaz, A.(2006) *Assessing Quality of Higher Education*, Proceedings of 1st International Conference, Lahore
- Teichler, U. (2002). “*Das Hochschulwesen in Deutschland Diskussionen und Reformen.*” Beitrag zur Tagung des DAAD in Tokyo, unpublished manuscript.
- USAID (2008) *Global Education Data*, Retrieved on March 29, 2008, from www.unaid.org.
- UNDP (2009) *Human Development Report 2007-08*, retrieved on March 29, 2008, from www.undp.org.
- UNDP (2010) *Human Development Report 2009*, retrieved on May 10, 2013, from www.undp.org.
- UNDP (2011) *Human Development Report 2010*, retrieved on May 10, 2013, from www.undp.org.
- UNDP (2013) *Human Development Report 2013*, retrieved on May 10, 2013, from www.undp.org.
- UNESCO (2005) *Role of Information and Communication Technologies in Managing Globalization at the National and Regional Levels*, Moscow.
- UNESCO (2004) *Higher Education in Globalized Society*. Retrieved December 29, 2007, from www.unesco.org.
- WTO (2008) *International Trade Statistics 2003*, Retrieved March 29, 2008, from www.wto.org.
- WTO (2011) *International Trade Statistics 2010*, Retrieved May 29, 2013, from www.wto.org.
- WTO (2012) *International Trade Statistics 2011*, Retrieved May 29, 2013, from www.wto.org.
- World Economic Fourm (2012). *The Global information Technology Report 2012*, Retrieved on June 15, 2013, from www.wec.org

World Economic Fourm (2013). *The Global information Technology Report 2013*,
Retrieved on June 15, 2013, from www.wec.org