

MACRO-LEVEL ANALYSIS OF DOCTORAL EDUCATION IN PAKISTAN FOR PURSUIT OF INTERNATIONAL QUALITY EDUCATION

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Abstract

This paper is an attempt to evaluate the doctoral education in Pakistani universities. The research has two facets of horizontal and vertical coherence of quality. Horizontal coherence of quality refers to external measures for quality of doctoral education in Pakistan by regulatory bodies specifically by Higher Education Commission of Pakistan. On the other hand, the vertical coherence of quality refers to inter-institutional measures of quality including supervisor-candidate relationship, administrative system, academic-research assistance, financial support, etc. After deep comparative analysis of doctoral education there were a number of pragmatic recommendations introduced to HEC Pakistan, universities and doctoral candidates for making more effective, efficient and shared strategic solutions.

Keywords

Higher Education, Doctoral Education, Pakistan

Introduction

In recent years we observe that the whole world has become a global village as a result of increase of information, technology and developing international and supranational structures of economics, politics and governance. This is also evidence that doctoral education and research has also become globalized. We witness the level of competition in business as well as in doctoral education and research. Its means the doctoral education also has a great deal of globalization and consequently different countries around the world give exceptional attention to policy making to the doctoral education, teaching and research.

Pakistan towards pursuit of excellence

In Pakistan the education following the 12 grade education is called higher education that is sub-divided to universities/degree awarding institutes and colleges (World Bank, 2009).

There was a remarkable shift of Pakistani policy makers towards doctorate education by early 2000s during Musharaf's era. A study shows that total number of PhDs in Pakistan were 8,142 throughout history but 5,000 of them were awarded PhD after establishing Higher Education Commission of Pakistan (HEC) in 2002 (Shaukat, 2012).

With the great emphasis of HEC's initiations on development of higher education in Pakistan, now six Pakistani universities are included in top 300 Asian, two of them among 300 science and technology institutions of the world (HEC Annual Report, 2012-13).

The Commission also produced highly qualified manpower regarding research and development. It provided foreign and indigenous scholarship for PhD and post-doctoral scholars, 6,000 scholars have been sent abroad for MS, PhD and Post-doctoral research in which 4,000 have successfully completed their research and they are serving Pakistan after proceeding back. Among 5,000 scholarships given to indigenous scholars, around 1,200 scholars have completed their doctoral degrees. Other than this 1,000 scholars from different provinces are still Indigenous PhD fellows funded by HEC (HEC Annual Report, 2012-13).

Other than funding PhD and Post-doctoral programs, HEC also encourages the faculty development program. These initiatives increased doctoral studies in Pakistani public sector universities to 76% between 2002 and 2008 (Shaukat, 2012).

HEC initiatives in Pakistan

The advancement of knowledge through original research: HEC Pakistan declared its improvements for respect, recognition and nurturing of research. (HEC Plagiarism Policy) Furthermore, this system encourages the original works accomplished with the career development and financial gaining linkage. This system implies avoiding replication. For making this system well

equipped, HEC set a compulsory requirement of plagiarism test of doctoral theses (and research papers applied for HEC funding). HEC has published a clear plagiarism policy which sets the line of action for doctoral candidates and higher education institutes both (HEC Plagiarism Policy).

The HEC showed its sincere loyalty to develop good quality doctoral training. For providing the best possible facilities to PhD scholars it initiated measures for hiring foreign faculty, PhD indigenous fellowship program, foreign doctorate and post-doctorate funding, indigenous universities linkage program, establishment of Pakistan Education Research Network (PERN) 1 and 2, digital library, Pakistan research repository, university-industry linkage program, and many more (Safdar & Baloch, Nafees, 2013)

Since its establishment, HEC shows its ambition for improving research by developing doctoral studies and for this, there were number of doctoral theses caught plagiarized. There were several people dismissed from different universities convicted to plagiarize their PhD theses. In April 2015, HEC updated a list of twenty one university academicians who were found plagiarizing research theses and papers (Haq, 2015).

But this campaign of HEC on indigenous level was criticized by some experts as a synthetic boom of research papers and theses. Famous Pakistani physicist and educationist Hoodbhoy (2013) criticizes on Pakistan's universities to produce *a bumper crop of research writings* every year. He also criticized the HEC to trumpet its success as increasing numbers of publications by professors and PhD theses by scholars rather having quality and originality.

Institutional strategies embed with PhD education: Higher Education Commission of Pakistan has done significant efforts to encourage public and private universities for developing a research culture within universities. In 2002 it developed a policy for promotion of faculty where there was a great share of research work including MS/PhD studies, research publication and research presentations in conferences. By fostering this, few public sector universities such as Quaid-e-Azam University (QAU) and National University of Science and Technology (NUST) in Islamabad emerged with having research culture. On the other hand we found various private university's mission and vision statements showing a great deal of research. Institute of Business Administration, Karachi aspires to undertake original research. (Official Website: IBA) Lahore University of Management Sciences (LUMS) also aims to achieve excellence through unparalleled teaching and research. (Official Website: LUMS). Institute of Business Management (IoBM) uses the tag of *Pursue leading-edge research* (Official Website: IoBM) and Agha Khan University as *strength in research and excellence in education*, (Official Website: AKU).

For quality assurance both in academics and research, the HEC developed a regulatory authority as Quality Assurance Agency (QAA) that undertakes the quality of education within universities for higher education. This system monitors and evaluates the university's overall performance and ranks them every year. The ranking criteria weigh for 100 marks of three components of *Implementation status of QA criteria's, teaching quality and research*. The HEC emphasizes over PhD studies is illustrated in the tables below:

Implementation Status of QA Criteria

S#	Components	Assigned scores during 2011-12
1	Appointment Criteria for faculty members	4
2	Criteria for M.S, MPhil/PhD	6
3	Plagiarism Standing Committee (PSC)	5
4	QEC Categorization:	7
5	Peer Perception Survey	2
	Total	24

Teaching Quality

S#	Components	Assigned scores during 2011-12
1	Full time PhD faculty	Amended *
2	Ratio of PhD faculty to total faculty	7
3	Student teacher ratio	10
4	Enrollment ratio to total Applicants	4
5	Computers per full time student	4
6	Library books per full time student	3
*Amended and newly added parameters during 2011-12		
1	Ratio of full time faculty to Part time	6
2	Teacher Evaluation	3
3	Training of faculty (3 years data)	3
	Total	40

Research

S#	Research Components	Assigned scores during 2011-12
1	HEC approved PhD supervisors per total full time faculty	4
2	Indigenous scholars studying in the university per total full time PhD faculty	2
3	HEC Research grants approved per faculty	2
4	HEC Travel Grants approved per full time faculty	3
5	Publications in Impact Factor Journals[2011] per faculty	5
6	Total Number of papers published in impact factor journals by the university	3
7	University H Index	2
8	Number of W, X, Y, Z Journals Published by the University <ul style="list-style-type: none"> • W =2 max score • X=1.5 • Y=1 • Z=0.5 	4 W=1.5 X=1.25 Y=0.75 Z=0.5
9	Internet Bandwidth (PERN) utilization per Student	4
10	Number of Conferences Organized per faculty	3
11	Total PhD output for 2011	4
	Total	36

In table 01 point 02 & 03; table 03 point 01, 02 and 11 are directly concerned about doctorate education. It provides a clear picture for HEC's ambition for promoting doctorate education in the country.

Our observational research in Pakistani universities suggests that few universities are there including research in their mission/vision statements and the rest need to adopt a core research policy and make doctoral education as a strategic goal. A study shows that there is a share of few universities in producing PhDs and the rest have a very small share.

PhDs Produced by Universities /Degree Awarding Institutions recognized by HEC (province-wise)

Chartered by	No. of Universities	No. of Universities which Produced PhD	% of Universities which Produced PhD
Govt. of Pakistan	30	13	43.33
Govt. of the Punjab	42	20	47.61
Govt. of Sindh	44	16	36.36
Govt. of Khyber Pakhtunkhwa	28	11	39.28
Govt. of Balochistan	6	1	16.66
Govt. of Azad Jammu & Kashmir	6	1	16.66
Total	156	62	39.74

This statistics shows that there are 156 universities and higher education institutions in all over Pakistan but only 62 universities/Higher education institutes awarded 3,949 PhD degrees by December 2013. This is only 39.74 per cent share among 156 universities. (Shaikh, 2014) Its means Pakistani universities should have to increase their share in developing PhD education.

Diversity in doctoral programs: There are a lot of authors who claim HEC is more focused on natural and applied sciences (Siddiq, 2011). Moreover, there is a need for cutting-edge research on national policies, law & order, different societal, local and regional problems in Pakistan and HEC should extend its focus to everyday problems of Pakistani society. (Abbasi, 2015)

This is also illustrated from the Annual Report of HEC for 2012-13 (currently latest report) in Table 05

PhDs completed by June 2013 (Discipline/Gender-wise)										
Scholarships	Gender		Discipline							
	Male	Female	Agriculture and Veterinary Sciences	Biological and Medical Sciences	Physical Sciences	Engineering and Technology	Business Education	Social Sciences & Arts and Humanities	PhDs Completed by June 2013	PhDs Completed in 2012-13
Foreign	1412	220	194	211	555	443	72	157	1632	325
Indigenous	1001	267	227	247	505	129	44	116	1268	227
Total	2413	487	421	458	1060	572	116	273	2900	552

According to the above statistics among the total number of foreign scholarship holder PhD by 2013 were 1632 in which 157 scholars were from social sciences background that is only 9.2% among other disciplines. For indigenous scholarship this ratio is bit same as 9.1% for social sciences. High officials of HEC are well aware of this missing link as the HEC chairman, Dr. Mukhtar Ahmed urged that even social sciences were important for our education system but not that prominent. (Daily DAWN, Karachi, 2016) In same occasion he was addressing the Second National Symposium on Thematic Research in Social Sciences at the HEC secretariat. At this point in time he declared to establish a Social Sciences Council of Pakistan under umbrella of HEC. This was a positive initiative and it is believed to be a serious concern for development of social sciences on doctoral education.

Doctoral candidates as early stage researchers and professionals: HEC has a clear and transparent procedure for financial support for indigenous and foreign doctoral candidates. On the other hand HEC provides need-based scholarship, PhD (jointly funded and closed programs), partial support for PhD studies abroad, and split PhD scholarships. Detail of certain financial support plans is available on its website. (HEC website, 2016)

These are very encouraging facilities provided by HEC in Pakistan but these are only available for those who comply with the strict HEC criteria for scholarship. Generally for other doctoral candidates, there is neither HEC financial support nor government stipend. Furthermore, the status of doctoral candidate is not recognized as early stage researcher or professional with having appropriate commensurate rights in Pakistan. There are different reasons of this status to be given to doctoral candidates including lack of government funds to educational sector that is only 2.1% of total GDP (Pakistan Federal Budget, 2016).

Shared responsibilities of individual doctoral candidate, supervisor and higher education institution: Likewise criterion 04, the HEC has very clear guidelines for supervisors who are providing supervision to indigenous scholarship holder doctoral candidates but for others, the HEC empowered universities and higher education institutions for developing standard operation procedure (SOPs) at their own requirement. Therefore, different universities in Pakistan develop their own doctoral SOPs for mechanism of shared responsibilities in which candidate, supervisor and university can take part accordingly.

HEC is ambitious to remove the obstacles from doctorate education. It barred around 19 universities with their sub-campuses and higher education institutes from carrying out their doctoral programs after they failed to meet the HEC's criteria. (Haq, 2015) According to HEC policy, a supervisor can take only five students for a PhD program at a time. But in above cases many supervi-

sors were convicted to violate this policy and were strictly barred to continue their PhD programs. (Haq, 2015)

There is also an imperative need for HEC to develop an appropriate system of evaluation for shared responsibilities among university, supervisors and candidates. Some authors believe that there is not appropriate system of formal checks on the supervisor-candidate relationship. (Agha, 2015) This is a reason why the supervisor feels him/herself accountable and answerable to anyone. Agha (2015) also mentions some cases by supervisors to enforce for publishing research papers by supervisor's name, assisting supervisors as their research helpers, using candidates for personal works and sometimes sexual favors etc.

Most of supervisor-candidate related problems are not merely cultural and limited to Pakistan but these are rather global (Vilkinas, 2002). These can be resolved with strict and comprehensive regulatory norms and mechanism shared with HEC and universities as well as supervisor and candidate.

University exchange collaborations among universities: The HEC has enthusiastically worked hard for getting a mass of doctoral programs. According to Annual Report (2012-13), a total of 6,726 scholar have been sent abroad for MS, PhD, Post-doctoral programs. Among all of them 4,084 are serving Pakistan after successful completion of their programs. HEC also invested on 5,524 scholars under indigenous PhD scholarship that shows HEC's ambition for getting critical mass of doctorate program. There was a significant gap of social sciences doctorate that has been filled by initiative of HEC chairman as establishing the social science council Pakistan.

The second part of this criterion is university exchange collaborations among universities. HEC Pakistan believes to develop collaborations among universities and higher education institutions and it has track record of maintaining relationship as a regulatory body. Other than different operational and administrative matters, the doctoral exchange collaboration among universities under umbrella of HEC is a missing link that needs to be established and improved.

Doctoral programs completion on time: Quality Assurance Agency (QAA), a body of HEC has direct concern to monitor the doctoral programs of university. It provides some strict guidelines/forms/proforma to universities for supplying accurate and appropriate information about doctoral programs. University's doctoral program is judged by this information. There are two forms provided by HEC; PhD scholar's proforma and PhD program review university proforma.

These initiatives help HEC to persuade universities for limiting their doctoral programs according to destined time duration.

PhD programs for promoting the innovative structures: For technological advancement there is a need to develop the National innovation systems in counties as it plays a crucial role specially in developing countries. (UNCTAD, 2005)

In Pakistan, the first ever initiative for innovation enhancement goes back to 1953 when an institute named Pakistan Council for Scientific and Industrial Research (PCSIR) was established. In 1960, the National Scientific Commission of Pakistan (NSCP), in 1984 the first National Science & Technology Policy, National Technology Policy and Technology Development Plan 1993 and then National Commission for Science and Technology are some considerable efforts by Pakistani governments (National Science, Technology and Innovation Policy, 2012).

HEC Pakistan is continuously working on bridging among research, academia and industry by promoting research programs, providing international scholarships and granting indigenous scholarships for local scholars and initiating training and development programs. Thus there is a need of promoting innovation among universities and institutions by themselves. HEC Pakistan recently established an Innovation Steering Committee for developing innovation activities in Pakistani higher education institutions that is ambitiously to promote job opportunities and industry-academia relationship. (Business Recorder, 2016)

This is a good initiative by HEC that can play important role in bringing maximum number of academia, researchers and students together for innovation and entrepreneurial endeavors. It can set mile stone in future if successfully accomplishes its objectives.

Although we observe numerous innovation plans and policies in Pakistani history but most of those policies suffered due to the reasons as mentioned below (UNCTAD, 2005):

- Lack of science & technology networks among universities and research institutes
- Isolation of institutions from industry
- Inadequate coordination level among national public policies including fiscal/monetary, trade, foreign investment, environment and health policies with science & technology innovation
- Insufficient coordination of national, regional, community policies with science & technology policies.
- Lack of consultation with government agencies, business, academia, labor market, civil groups etc.

Doctoral programs seek to increase geographic, interdisciplinary and inter-sectoral mobility: HEC Pakistan also leads PhD students enrolled in Pakistani universities to enhance their research skills in the technologically advanced countries. It has a six month research fellowship program as International Research support Initiative Program (IRSIP) designed for PhD students of Pakistani universities. According to annual report (2012-13) this scheme helps indigenous PhD students to conduct research abroad. With the help of this scheme 1511 scholars of Pakistan completed their research between 2012 and 2013, 241 scholars were still proceeded abroad by joining foreign universities from technologically advanced countries. (HEC, Annual Report, 2012-2013)

There is again a missing connection of Pakistani universities for enhancing interdisciplinary and inter-sectoral mobility programs among them. HEC Pakistan encourages the mobility programs but the numbers of scholarship holders by HEC are limited and mostly its focus is on international mobility programs. There is a lot of vacuum in Pakistani universities to develop inter-university doctoral exchange program in national, cross-provincial and cultural circumstances.

Ensuring appropriate funding for doctoral programs: Most of Pakistani public universities rely on HEC or national funding for PhD programs and private universities rely on self-financing by the scholars. This is apparently difficult for PhD scholars to be funded by individual university where they are enrolled. They usually look forward to HEC Pakistan and bear all expenses by themselves if they cannot comply with the strict criteria of HEC for funding.

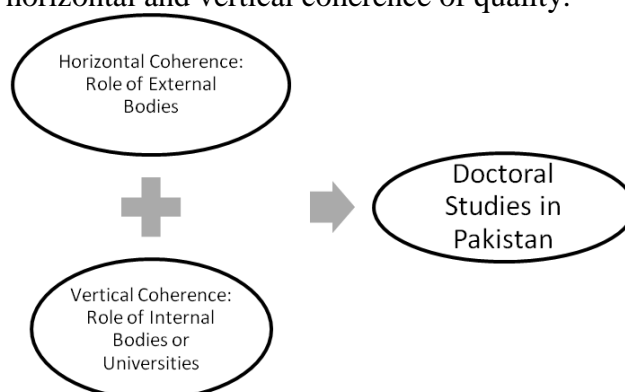
Problems with Doctoral Programs in Pakistan

- Traditionally, Governments did not enlist education generally and doctoral education specifically in their priority. Therefore, focus on doctoral programs and strategic vision are scarce.
- Low budgets allocated to education. Pakistan spends 2.4 percent of its budget on education where 89 percent of total budget spends on teacher's salaries. Only 11 percent spends on education from primary to higher education (Hussain, 2015).
- Iqbal, Saeed, Abbas (2012) studied that PhD scholars in Punjab, Pakistan face diversified problems including financial support, accommodation, research knowledge, weak communication skills, less research competent supervisors, inadequate student-supervisor meetings, administrative staff's problems, and inadequate online and books resources. This situation is rather observable in many other public universities.
- There is no system of forecasting the industrial needs of doctorates and then their strategic execution. On the other hand production of PhDs is remarkably low and research structures within universities are thin.
- There is less focus on applied doctoral programs in humanities and most of doctoral research is not persuaded to be conducted from basic sources.
- In 2007, The Planning Commission of Pakistan developed a comprehensive document as *Vision 2030* showing a multidimensional strategic road map during Musharraf's government but during current government new policy *Vision 2025* (Daily Times, 2016) was approved and old one obsolete. This is a behavior where governments have come and gone without setting a clear way forward (Hoodbhoy, 2009). This confusion of government also impacts on the delivery and quality of doctoral education.

- A remarkable PhD research was conducted by Iqbal (2004) in which he addresses numerous problems with higher education in Pakistan (in eight sample public universities) including low quality research, less competent faculty and staff, inadequate funds provided, no linkage between academic work and industry, non-existent good governance, examination system was faulty, library/laboratory facilities were inappropriate etc.

Discussion, Model Development and Conclusion

Doctoral programs in Pakistan are running under the guidance of a national regulatory body, HEC Pakistan. HEC Pakistan has played significant role for setting norms and standards of procedure for doctoral programs in Pakistan. It provides step-by-step guidance to universities for running their doctoral programs. But other than HEC's enthusiastic initiatives for growing research culture in the country this is argued that total number of production for doctorates is very low and the quality of PhD theses is also under steak by some critics. Problems of doctoral programs in the country can be seen in two ways; horizontal and vertical coherence of quality.



The role of HEC and other external bodies for developing doctorate programs can be seen as horizontal coherence of quality and the efforts of internal actors including universities and higher education institutions are deemed to be called the vertical coherence of quality. There are diverse problems witnessed in both horizontal and vertical coherence of quality. Although there were two strategic policies presented by two governments in Pakistan as Vision 2030 and Vision 2025 but other than their own contradictions, these plans do not provide clear line of action for specifically doctoral or higher education because these are entirely the national plans rather educational or research plans. This is inevitable to lick into shape at least 10 to 20 years plan for production of PhDs so that national regulatory bodies can have clear mission, vision and measurable objectives. For this, forecasting and evaluation of industry needs would also be expected that is also a missing pearl.

Recommendations

For HEC Pakistan: This is recommended for HEC Pakistan to adopt 25 years long strategic plan for higher education generally and PhD specifically including some features as below:

- Clear vision and mission statement showing directions towards its strategic aims and objectives
- Defining principles for advancement of knowledge through original research showing mechanisms, procedures, and systems for developing critical thinking and creative solutions among doctoral candidates.
- More emphasize on institutions to develop strategies and policies embedded with professional career development opportunities.
- Make sure there is a good selection of diversity in doctoral themes and programs
- Do not only focus on increase of PhD numbers but on quality of theses. Program entry requirements, progress reports and exit barriers should be aligned with more focused quality measures.
- Recognizing doctoral candidates as early stage researcher and professional is right as rain. This small recognition can impact positive on psychological empowerment of candidates.
- Clearly define the principles for shared mechanism among the candidate, supervisor and university. For more, HEC can become the fourth stakeholder in this shared-mechanism for making this mechanism more transparent.

- Set the numbers of PhD per year to be passed out with their disciplines/themes according to industry need and strictly monitor universities to follow and respect the quota
- This is very encouraging to see the focus of HEC on providing opportunities to international scholarships but this is recommended to give priority to local or indigenous doctoral programs because only few candidates comply with strict international competition as well as national competition for getting scholarships. Most of doctoral candidates work in their local circumstances. Other than indigenous and international scholarship holders, thousands of doctoral candidates are still working on their theses in different universities on national level and their research works are unattended by national bodies and sometimes from their own universities because they are suffering from less professional behaviors of supervisors or complex administrative bureaucracies.

For universities:

- Universities should develop their vision/mission and strategic aims/objectives align with HEC's suggested (as our proposal) 25 years' strategic vision/mission and objectives for best possible synchronized and harmonized system with national doctoral plan.
- Doctoral education is getting global as quality measures are getting synchronized gradually. Universities are recommended to grow their Quality Enhancement Cells (QECs) and Offices of Research, Innovation & Commercialization (ORIC) suggested by HEC Pakistan. According to our observational research many Pakistani Universities use these two sections only as HEC requirement and uplifting their university ranking rather understanding its own spirit. This is recommended to tentacle these divisions according to the models of successful national and international universities. Doctoral programs can play vital role in achieving this mile stone.
- Universities should develop a shared mechanism to monitor the doctoral programs including supervisor and doctoral candidate. And they should not keep them aside from supervisor-candidate relationship because many doctoral candidates in universities are suffering from bad supervisor-candidate relationship.
- Universities should realize that their distinction should be on research and innovation. They should include research and innovation on top in their vision, mission and academic aims and objectives.
- Universities should provide appropriate and best possible administrative and academic assistance to accomplish the doctoral education endeavors.
- This is recommended for universities to not only focus on national grant or financial assistance from regulatory bodies including HEC but they should work on developing their own industry linkage. HEC Pakistan requires them to develop ORIC and it has an integral office for industry linkage. This could be a best tool for developing industry links and working for generating funds by grant, donation and financial aid.
- Shared PhD and research mobility programs are also unattended in most of Pakistani universities. This is recommended for universities to start and develop similar doctoral programs with academic and research collaborations of other universities.

For Doctoral Candidates:

- This is recommended to be updated with international research trends. Always keep in touch with progress of your field in international universities, research centers and think tanks. This is a best way for sharpening your ideas.
- Develop social media contacts especially on LinkedIn, yahoo/Google groups and networks of your field.
- Do not always look forward financial rewards of your doctoral degree but focus on what and how your research can add value to the industry, society, nation and/or globe.
- Do not always focus on national or university grant for your research or academic's financial requirements. There are hundreds of international resources available worldwide that can help in financial hardship.

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ANALYSIS OF EQUILIBRIUM DEVELOPMENT OF HIGHER EDUCATION IN CHINA BASED ON THE HIGHER EDUCATION DEVELOPMENT INDEX

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Abstract

Equilibrium development is the basic requirement of global education quality assurance. The balance of the quality is becoming an important subject on higher education development day by day. This paper sorts out design and assessment cases of education development index in China and abroad, summarizes relevant research analyzing Chinese higher education equilibrium development by calculating the chief indicators such as higher education opportunity, education input, education quality etc. Further inquiries into the applicability of education development index. Throughout a suggestion on improving the assessment of Chinese higher education equilibrium development, pointing at merits and drawbacks of these indicators.

Key Words

Education development index; Equilibrium development; level of higher education development