



ASSESSING QUALITY OF HIGHER EDUCATION IN PAKISTAN

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Dr. Naseem Aadil gained his M.Sc. degree in Geology with specialization in Structure/Petroleum from the Institute of Geology, University of Punjab, Lahore. Later he joined the Centre of Excellence in Hydrology and Water Resource Management which is one of leading research institution in hydrology and water resource management in Pakistan to do M.Phil. (Hydrology). After gaining four years of practical industry experience, he joined Department of Geology, University of Auckland, New Zealand on “MERT Scholarship” in 1991 for his Ph.D. studies. His research topic was “*The estimation of burial history of Northland Allochthon rocks of the Northland basin using vitrinite reflectance, clay mineralogy and stable isotope analysis*” under the supervision of Dr. Peter Balance and Dr. Phillipa Black. In addition to Ph.D., he also completed a post-graduate Diploma in Management from the same university to enhance his managerial skills.

After completing his studies, Dr. Naseem Aadil resumed his duties with his parent department, Oil & Gas Development Company Limited (OGDCL), as a Geologist. After migration to Australia in 1996, he joined NSW Department of Mineral Resources, Sydney, Australia as a Petroleum Geologist where he worked in different position until 2004 when the Higher Education Commission (HEC), Pakistan hired him as a Foreign Professor under Foreign Faculty Hiring Program (FFHP) and placed him in UET, Lahore. Currently, Dr. Naseem Aadil is working with the Department of Geological Engineering, University of Engineering & Technology, Lahore as Professor which his key responsibilities include teaching various geological courses and carrying out research activities to help in establishing new discipline at the University.

Dr. Naseem has good computer skills and is a member of Australian Computer Society and holds an International Computer Driving License which is recognized worldwide. Further he has good multilingual oral and written communication skills.



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ABSTRACT

Purpose:

It is a well-established fact that the impact of quality on higher education is multidimensional in a country like Pakistan. There is a direct link between the quality of higher education and socio-economic development of the country. Nowadays, higher education is recognized as a capital investment as it leads to the accumulation of human capital, which is the key to increasing incomes and sustained economic growth. But unfortunately, its importance is yet to be realized in many developing countries of the world, including Pakistan. The purpose of assessing the quality of higher education in Pakistan is to support and improve the process of social and economic development. Moreover, it enables individuals to achieve success and excellence by developing their capabilities to the highest potential level so that they grow intellectually and contribute effectively to a society.

Design/methodology/approach:

The Higher Education Commission (HEC) in Pakistan has tried to improve the standard of M.Phil/MS and Ph.D. Programmes by setting up basic criteria. In this paper, the status of higher education at public and private institutions is reviewed with various parameters of quality assessment using modeling software. The proposed model is used to analyze the outcome criteria of different universities in the country which indicates the weak and strong areas of research in Pakistan. Further, it is used to highlight the subject based analysis as well. Considering these facts, a new modified criterion is suggested to improve the quality of higher education in Pakistan.

Finding:

The key findings of the study are

- 1) The student enrolment in universities has increased significantly, from 1947 to 2009. The number of enrolments of both male and female students in higher education degree programmes increased by more than double from 2001 to 2008 but, only less than 3% of the age group 17-23 has an access to higher education. The average

- enrolment at public institution is almost three fold higher than private sector institutions.
- 2) A considerable increase in the number of public and private sector universities and degree awarding institutions (DAIs) is observed from 1990 to 2009. First female university was established in 1997.
 - 3) Punjab and Sindh have emerged as centre of higher education as far as enrolments of students are concerned however Khyber Pakhtoonkhaw(KPK), Baluchistan and Azad Jammu Kashmir (AJK) seems behind in the higher education base in the country.
 - 4) Strong areas of Ph.D. research are related to non-engineering subjects such as science and arts.
 - 5) In 1960, the government of Pakistan spent only 1% of its GDP on education. During the year 2001 to 2002, the government spent \$5.9 billion in educational sector whereas in the year 2005 to 2006, the government expenditure on educational sector increased up to \$15.7 billion.
 - 6) The role of HEC is commendable for increasing the funding and providing opportunities to both students and indigenous faculty for promotion of higher education in Pakistan in cooperation with international experts.
 - 7) Various quality enhancement measures were taken by HEC with the cooperation of both public and private sector universities however, a system needs to be modeled to implement the true spirit of these measures in cooperation with local faculty and foreign universities.
 - 8) The role of Pakistan industry seems very limited in research particularly in engineering disciplines to develop and promote indigenous industry for economic development.
 - 9) Lack of integration of research among three main components i.e. students, teachers and industry is observed

Relevance / contribution:

With the adoption of proposed quality criteria for higher education in this paper, a trained and qualified human resource will be developed for economic and social development of the country in the future. In addition to role of industry, the quality of teachers and institutions is highlighted for improving research culture in the country.

Category: Research Paper

Key Words: Higher Education Commission, Criteria, Modeling, Quality, Human Resource, Economic and Social Development

INTRODUCTION

In 21st century, the trained human resource cannot be achieved without quality education particularly higher education to face the current competitive work environment. Mok (2007) pointed out that quality in education is multifaceted, multidimensional, complex, and a dynamic positive concept. Frazer (1992) discussed that “quality in higher education is

important because universities must be accountable to society, to employers, to students, and to each other". He reiterated that there are three broad aspects for quality in higher education which are (i) goals; (ii) the process deployed for achieving goals; and (iii) how far goals are achieved.

The mission under World Declaration (1998) on higher education for the 21st century is to enable highly qualified graduates to meet the needs of all sectors of human activity. Article 11(a) of World Declaration focuses on the quality in higher education which covers its functions and activities with respect to students, teaching and non-teaching staff, infrastructure, services to the community and the academic environment. Quality is assured by both internal and external review system which is conducted openly by local and international independent specialists. Further in strengthening the quality in higher education, emphasis is given on exchange of knowledge, interactive networking, mobility of teachers and students, and international research projects keeping in view of cultural values of the country.

Higher education in Pakistan is referred to as a type of education that is pursued in post-secondary educational institutions including professional schools which are approved as institutions of higher education by the competent state authorities. These institutions have the basic responsibility for providing individuals with the advanced knowledge and skills that are required for their professional life and are the greatest asset of a nation (Mughal & Manzoor, 1999). The purpose of these institutions is not just to provide knowledge but they also have multidimensional objectives with an aim to support and improve the process of social and economic development. Moreover, they develop capabilities of individuals to the highest potential level so that they grow intellectually and contribute effectively to a society.

Higher education in Pakistan is facing great challenges and difficulties related to students, staffing, financing, poor infrastructure, poor research environment, and employability of graduates. Pakistan is currently working to improve its educational standard through Higher Education Commission (HEC) by providing guidelines and financial resources to its citizens but, still, the HEC is facing many obstacles. Strengthening the quality of higher education is the key agenda of HEC with an aim for preparing individuals to improve the socio-economic conditions of the country. Many factors like illiteracy, lack of qualified faculty, population explosion, lack of resources, non participation of the private sector, inconsistency in the policies of administration, political instability, inefficient educational management system, inadequate use of resources, poor implementation of policies and many more are adversely affecting the educational standard of Pakistan.

The HEC is implementing a number of initiatives to improve the quality of higher education by setting up basic criteria. This has contributed in providing not only higher number of Ph.D. thesis but also improved the quality significantly; however, the task is not fully achieved. In this paper, the impact of this HEC model is reviewed and different computer programmes are used to analyze the HEC data on higher education for comparing the weak and strong areas of research in Pakistan. Further, it is used to highlight

the research pattern in various disciplines which could be helpful in future resource planning and development. As a result, a new modified model is suggested to improve the quality of higher education which could be one step towards implementing the World Declaration on higher education for the 21st Century (1998) in Pakistan. The proposed model is given a name "Integrated Quality Management (IQM)" which focuses on engagement of three key parameters i.e., faculty, students and administrators. This model proposes not only students' criteria requirements for higher education in Pakistan but also quality faculty to promote research and development activities. To achieve this goal, an integrated network among students, faculty, industry and both local and international researchers is suggested. Continuous staff development with advanced teaching and learning methodology and collaborative research projects is also recommended for sustainable quality in higher education.

Importance of Higher Education

The importance of higher education for the socio-economic development is discussed in the Boston Report (2002) which states that, "Higher education has always been an important component of the social agenda, but it has acquired a new importance today. In the emerging 'knowledge economy', nations that fail at creating a decent learning environment will lag behind, and may end up becoming virtual colonies of those that do succeed in this regard." The Boston Report identifies many of the key areas of problems in Pakistan education such as teacher remuneration, inappropriate curricula, the relative absence of research and the mismatch of outputs from higher education with the needs of society. However, it is stated that "students who graduate from the Pakistan educational system routinely do well (and often excel) in educational and professional environments abroad suggest that the system in Pakistan is still able to produce good students" (Boston Report, 2002).

The importance of higher education in developing countries for the socio-economic development is indicated by the UNESCO Task Force Report on Higher Education in Developing Countries (2000) which states that "The world economy is changing as knowledge supplants physical capital as the source of present (and future) wealth.... As knowledge becomes more important, so does Higher Education.... The quality of knowledge generated within Higher Education institutions, and its accessibility to the wider economy, is becoming increasingly critical to national competitiveness.... This poses a serious challenge to the developing world.... Quite simply, many developing countries will need to work much harder just to maintain their position, let alone to catch up."

Status of Higher Education

The quality of higher education is extremely important for the development of societies with an aim to prepare knowledge and skill based human resources. However, some critical problems are observed in Pakistan with increase in numbers of Ph.D. students such as lack of research skills and aptitude, motivation and passion. Insufficient resources and lack of proper guidance both in their studies and future career counseling could be the reasons for

these problems. As a result, this affects the quality of higher education in Pakistan. Moreover, the deterioration in quality of scholars resulted in academic malpractices like plagiarism (Owais, 2008).

Under 1973 constitution, the Federal government makes policies for educational institutions for their development and promotion to develop human resource in the country. Public and private universities are autonomous bodies under Constitution as far as their internal matters are concerned. Prior to 2002, the University Grants Commission (UGC) was acting as a coordinating body between the government and the universities to implement education policies of the Federal government which was replaced by HEC. Percentage of population enrolment in universities ranges up to 2% as indicated in Table 1. It also shows number of students produced by level of degree and by area (province wise) in Pakistan. The number of universities increased significantly since the creation of HEC (Take Figure 1). The budget of public universities is met by the federal government which is consistently fallen since 1979 when the federal government took the responsibility for providing the recurring budgets for universities which was previously provided by the provincial governments. This low budget is one of the main factors for degradation of quality of higher education.

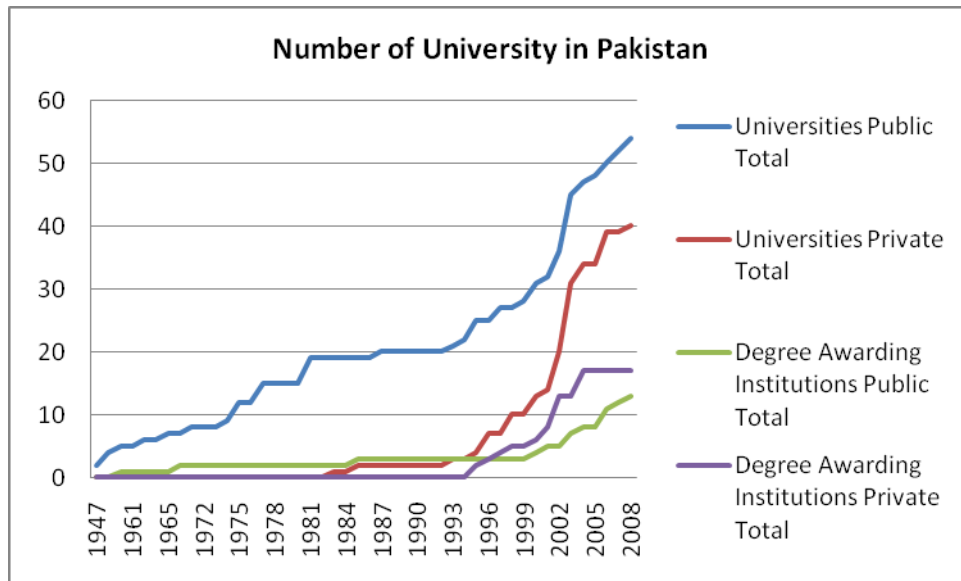


Figure 1: Increase in number of universities in Pakistan from 1947 to 2008 (source: HEC)

Table 1: Percentage of population enrolment in universities, number of students produced by level of degree, and number of students produced by area in Pakistan (M means Male and F means Female).

Year	Percentage of population enrollment in universities			Number of students produced by level of degree						Number of Students Produced by Area							
				Bachelor		Master		Ph. D.		Balochistan		Khyber P		Punjab		Sindh	
	M	F	Total	M	F	M	F	M	F	M	F	M	F	M	F		
2001-02	1.5	0.9	1.16	31714	25535	19178	12305	155	72	927	309	7435	2682	8759	6534	8073	5323
2002-03	1.7	1.1	1.37	37243	33372	19879	13729	206	84	909	320	7867	2841	11814	10380	7938	5686
2003-04	2	1.4	1.7	40350	41714	18928	13105	216	78	849	321	7492	3080	12794	15266	10031	6147

The total number of enrolled students has also increased significantly both by sector and level of degree over the years since 2002 after the creation of HEC as indicated in Table 2. The status of higher education in Pakistan was on decline after 1998 to 2001 which is indicated by the number of Ph.D. produced during this period range from 174 to 211. This pattern reversed after the establishment of HEC in 2002 in which the total number of Ph.D. thesis went up to 671 in 2009 from 271 in 2002 (Figure 2). The statistical analysis indicates a positive trend in the number of thesis produced during last ten years. The Ph.D. research at the public and private universities has increased significantly. The data shows that research conducted in Punjab has increased significantly as compared to other provinces over the years. The research in Sindh has gone down while in PKP and Baluchistan, it remains constant from 2000 to 2009 (Figure 3). This indicates either the lack of required resources for advanced research or poor education base with low intake at higher education.

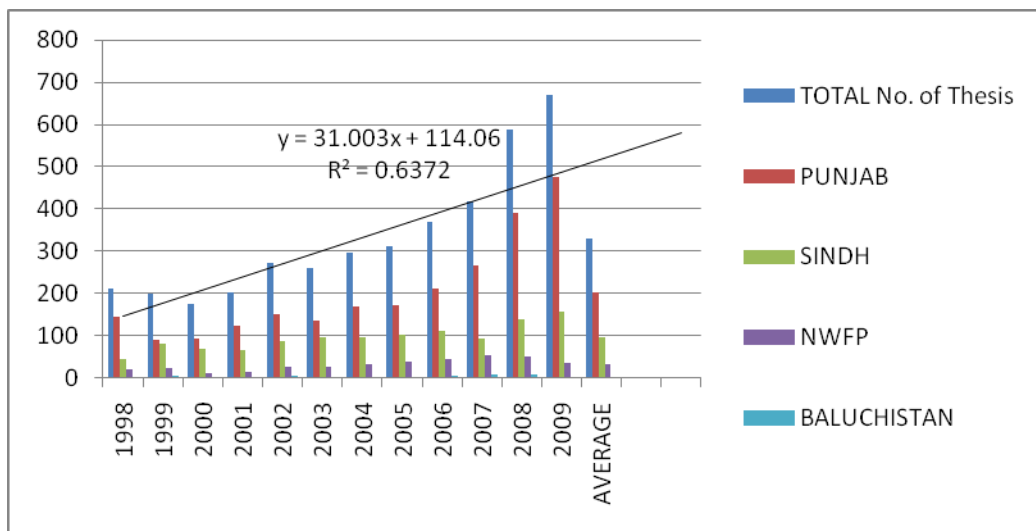


Figure 2: Total number of Ph.D. produced from 1998 to 2009 (source: HEC)

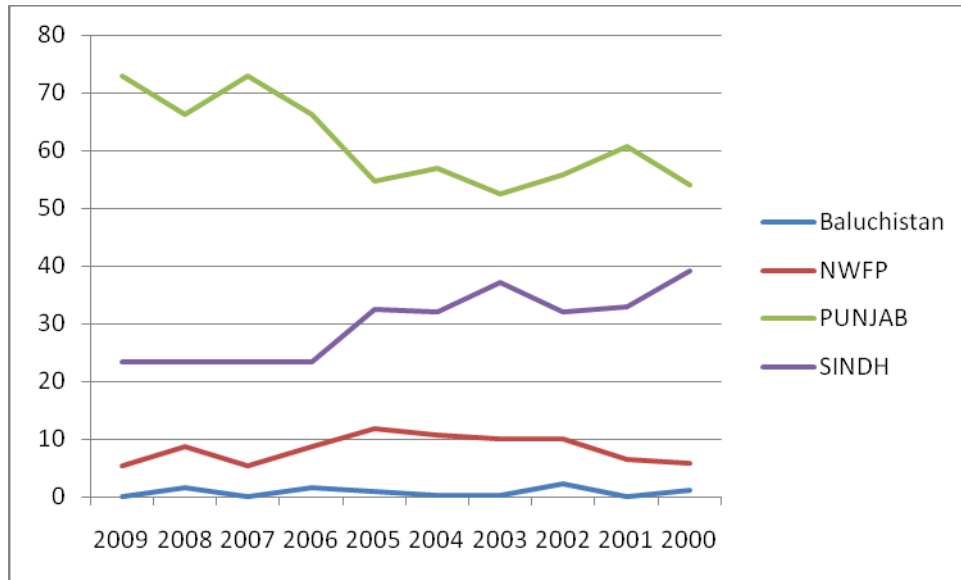


Figure 3: Province wise percentage of Ph.D. produced over the years in Pakistan (source: HEC)

Pakistan is conducting about 90% of research in Basic Sciences, Languages and Islamiat as compared to 10% research in Education, Engineering and Medicine as shown in Figure 4 which are key areas for bringing change in the society (Table 3). After reviewing the data of last ten years, it is found that more than 60% research is carried out in Basic Sciences, Agricultural Sciences, Humanities and Social Sciences while only 4% research was conducted in Engineering and Medicine fields. This demonstrates that the objective of stimulating Research and Development in public universities of Pakistan is somewhat achieved, however, other objectives of achieving social, economic and industrial sustainable development of Pakistan and contributing in the industrial and corporate sector are not fully satisfied while using the current HEC criteria. Figure 4A: Total number of thesis of various discipline with 10 or more than 10.

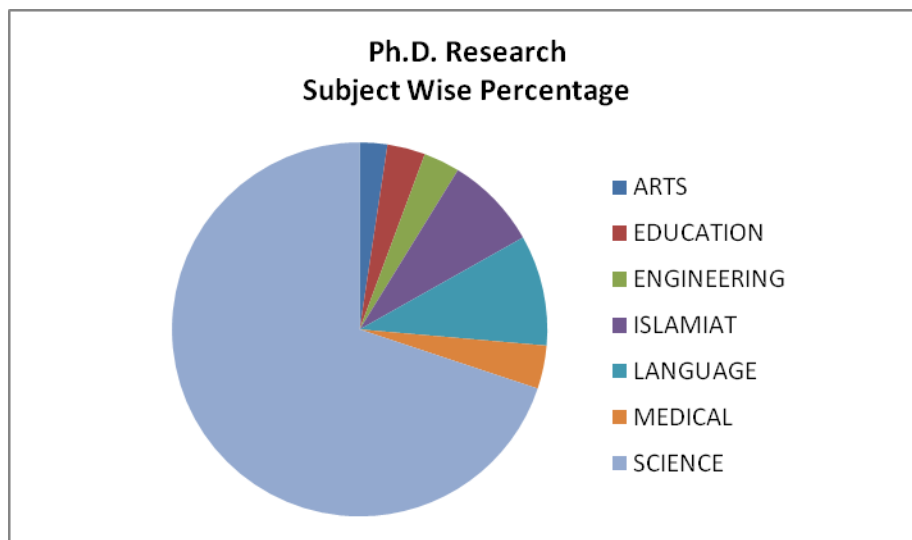


Figure 4: Subject wise percentage of Ph.D. research conducted in Pakistan (source: HEC)

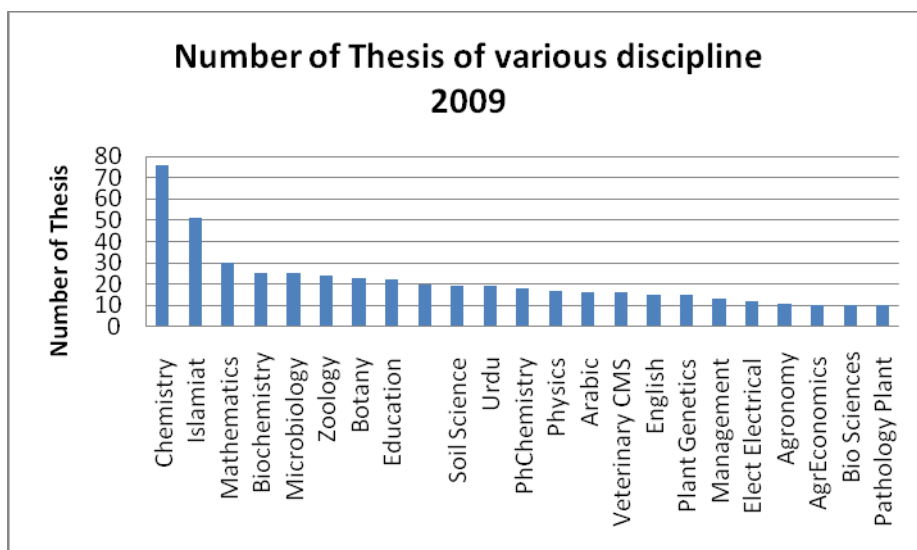


Figure 4A: Total number of thesis of various discipline with 10 or more than 10

Table 2: Number of students enrolled by level of degree over the years with %age share of public and private universities

Sector	Year	Bachelor	Master	M. Phil.	Ph.D.	PGD	Total	%age
Public	2001-02	156141	66675	3683	3061	2841	232401	84.12
	2002-03	186602	78709	4462	4045	2666	276484	83.34
	2003-04	252841	92613	6802	6277	3595	362128	85.56
	2004-05	281915	107110	7229	4213	3544	404011	85.60
	2005-06	306097	118615	9134	4826	3867	442539	84.86
	2006-07	380350	147015	11321	5019	4793	548498	85.69
	2007-08	441112	170905	13161	6876	5572	637626	86.04
Private	2001-02	30340	11854	188	63	1428	43873	15.88
	2002-03	37688	15815	380	93	1285	55261	16.66
	2003-04	42871	16054	652	195	1336	61108	14.44
	2004-05	48018	17786	1127	230	792	67953	14.40
	2005-06	53586	22302	1296	313	1437	78934	15.14
	2006-07	62196	25870	1503	326	1667	91563	14.31
	2007-08	70204	29233	1699	446	1887	103466	13.96

Based on 2009 data, only forty universities out of 120 offer Ph.D. research in the country. Only three public universities, Punjab University (PU), Karachi University (KU) and University of Agriculture (UAF), out of 40 universities contributed more than 60% which is indicated by the 359 thesis completed out of 671 while other 37 public and private universities out of 120 produced only 312 research thesis. Seven universities, Punjab University (PU), Karachi University (KU), University of Agriculture (UAF), National University of Modern Languages (NUML), Quaid-i-Azam University (QAU), Government College University (GCU) and University of Arid Agriculture (UAA) produced only 4% or

more research and other fifteen universities contributed only 1% or more research as shown in Figure 5.

The faculty strength and student teacher ratio is shown in Table 4 which indicates that more than 95% full time faculty is deputed in public universities as compared to 4% in private universities. It also shows that 80% Ph.D. faculty is dedicated to public universities while 20% is hired in private sector. The student teacher ratio is better in private universities as compared to public universities.

Table 3: Total number of thesis produced per year in various disciplines.

Year	Total No. of Thesis	ARTS	EDU	ENGG	ISLA	LAN	MED	SCI	LAW	MGT
2000	174	6	5	3	26	13	3	116		2
2001	201	18	15		21	18	3	125	1	
2002	271	21	18	1	23	32	2	169	2	3
2003	259	30	19	1	20	40	3	144	1	1
2004	299	18	25	11	16	32	3	180	1	13
2005	313	16	28	8	22	36	4	190	1	8
2006	398	14		14	33	52	2	278	1	4
2007	419	27	13	21	26	67	2	261	1	1
2008	588	29	32	40	42	72	18	355		
2009	671	16	23	21	55	64	25	462	2	3

Subject	No. of Thesis	Subject	No. of Thesis	Subject	No. of Thesis	Subject	No. of Thesis
Agricultural Economics	20	Electronics	1	Human Resource Development	6	Poultry Science	2
Biochemistry & Biotechnology	34	Engineering Computer Software	2	Information Security	1	Psychology	6
Botany	23	Engineering Sciences	5	Library & Information Science	1	Public Administration	4
Business Administration	3	Entomology	9	Livestock Management	2	Robotics	1
Chemistry (HEJ)	74	Environmental & Soil Sciences	3	Management and Social Sciences	10	Social Sciences	8
City and Regional Planning	1	Food Technology	20	Marine Biology	2	Soil Science	19
Commerce & Finance	2	Forestry & Range Management	2	Mathematics	30	Statistics	2
Communication Mass	3	Geography	1	Microbiology & Molecular Genetics	38	Veterinary CMS	22
Computer Science	8	Geology	4	Pharmaceutics	5	Water Management	1
Crimnology	1	Hematology	1	Physics	22	Zoology	24
Earth & Environmental Sciences	5	Home Economics	1	Plant Breeding & Genetics	15		
Economics	8	Horticulture	4	Political Science	6	Total	462

Table 4: Full and part time faculty classified by their highest qualification and student teacher ratio in public and private universities

Sector	Faculty		Full Time Faculty Classified by their Highest Qualification					Student Teacher Ratio
	Full Time	Part Time	Bachelors	Masters	Master (H)	M. Phil.	Ph.D.	
Public	10471	2975	1059	4525	1319	1019	2549	15.09
Private	3963	2217	1151	1480	508	284	540	9.89

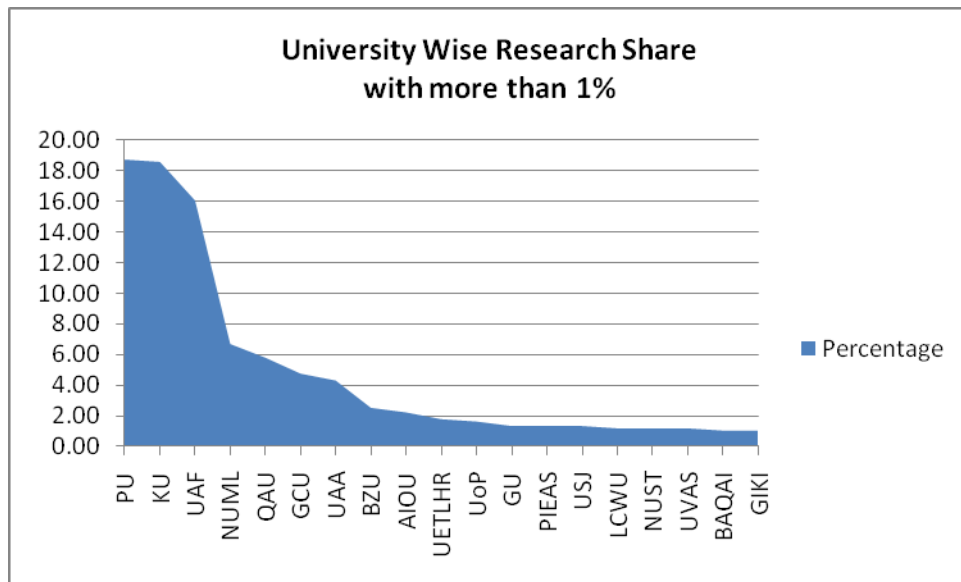


Figure 5: Percentage of research contributions by various universities (source: HEC)

The modeling of current HEC data regarding number of thesis produced in 2009 is shown in Table 5 and Figure 6 which indicates the strong and poor research centers in Pakistan. The main research centers comprise of Karachi, Lahore, Islamabad and Faisalabad while the poor areas in research are Quetta and PKP.

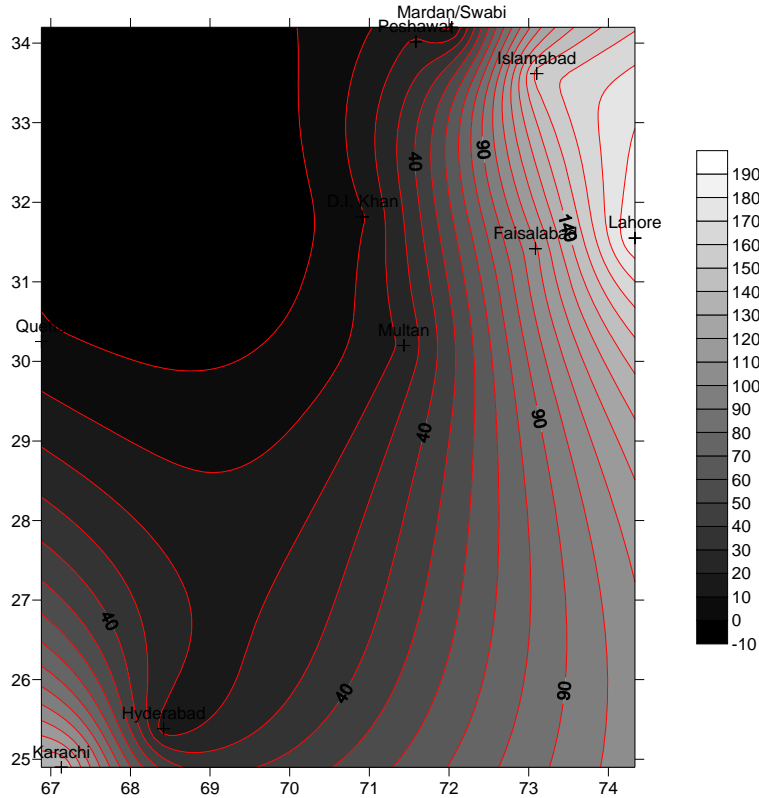


Figure 6: Emerging Ph.D. research centers in Pakistan. Also shows the poor research areas.

These above facts indicate that the current higher education system in Pakistan cannot fulfill the future needs of the country to produce quality human resource to meet the changing challenges of the world. This previous system needs to be addressed which was built on the tradition of the British system from the 19th century, with its emphasis on preparation for the public services. Now the needs are changed dramatically due to advancement in science and technology. Pakistan urgently needs to conduct research in Medicine, Engineering and Education areas which currently constitute only 15% of the total research for socio-economic development of the country.

Table 5: Area wise number of thesis produced during 2009.

City	Longitude	Latitude	No. of Theses
D.I. Khan	70.9167	31.817	9
Faisalabad	73.0833	31.417	108
Hyderabad	68.4167	25.383	15
Islamabad	73.1	33.617	155
Karachi	67.1333	24.9	141
Lahore	74.3333	31.55	190
Mardan/Swabi	72.0333	34.2	7
Multan	71.4333	30.2	22
Peshawar	71.5833	34.017	22
Quetta	66.8833	30.25	2

Approaches and Parameters to Assessing Quality in Higher Education

Normally two approaches of Bennett (2001) are utilized in assessing the quality of higher education. First one is the assessment of value addition in the students' capabilities due to higher education where as the second one is the outcome based of value. Value addition approach is difficult to measure due to its multidimensions, own criteria for institutions, time required to unfold effects of their values and so on. However the outcome based of value is more practical and can be assessed by evaluating students based on the skills and capabilities they have acquired during their stay in the universities.

In addition retention rate which is the most frequently used outcome indicator, following parameters are generally used to assess the quality in higher education

- 1) Financial resources
- 2) Faculty resources
- 3) Student selectivity
- 4) Outcomes parameter
- 5) Reputational measure
- 6) The Templeton
- 7) Self-Reports
- 8) Processes and Participation Rates

Quality Assurance System

Quality assurance systems are based on the hypothesis that everyone in higher education institution has the responsibility for maintaining and enhancing the quality of the product (students). It requires commitment, time, effort, and willingness of everyone in the university, from top level administration to the lower level of hierarchy (Tam, 2001).

The systematic quality assurance and improvement of higher education institutions is the key component of higher education reforms all over the world (Bornmann, Mittag, & Daniel, 2006). Higher education is facing extraordinary challenges of quality assurance around the world universities (Strydom, Zulu, & Murray, 2004). The main challenges the higher education is facing include compliance of quality assurance procedures, accountability, reliability, credibility, development and efficiency (Hodson & Thomas, 2003). Kontio (2008) defined the quality assurance by including all the procedures, processes and systems that support and develop the education and other activities of the higher education institutions. Strydom, Zulu, & Murray (2004) by referring research literature argued that the major motivators for the establishment of quality assurance systems internationally appear to be: (i) massification of higher education; (ii) accountability from a value for money perspective; (iii) internationalisation of qualifications; (iv) increased mobility of staff and students; (v) matching programs to labour and employment needs; (vi) rise of private education; and (vii) indirect steering of higher education by governments. Due to these challenges, countries across the world developed their own quality assurance systems.

Bogue (1998) discussed following four contemporary approaches for effective quality assurance systems in higher education:

- 1) Peer Review Evaluations
- 2) Assessment-and-Outcomes Movement
- 3) Total Quality Management
- 4) Accountability and Performance Indicator Reporting

Another approach, known as referred as “instrumental approach” was introduced by Lim (2001) by stating the objectives of higher education institution which must be consistent with national objectives. After establishing this purpose, following sequential steps are involved to achieve the mission.

- 1) Identification of mission of the university.
- 2) Identifying different functions to fulfill the missions of the university and faculties.
- 3) Identification of objectives for each function and setting of quantitative and qualitative performance indicators.
- 4) Establishing quality assurance management system in the university
- 5) Establishment of a quality audit system.

Lim further discussed that wherever the quality assurance systems are implemented in higher education institution, these steps are followed in same sequential steps order, however literature indicates that the instrumental approach to quality assurance system is used widely in higher education institutions of developed countries with significant differences in the implementation procedures (Ratcliff, 2003; Lim, 2001; Warn & Tranter, 2001).

Quality assurance in higher education is highly complicated and the problem of quality is embedded in complex set of interacting issues that are the concern to many and varied stakeholders (Rizwan & Norman, 2008). The universities in developing countries like Pakistan normally follow the international quality assurance systems to improve the quality of their activities (Lim, 2001; Idrus, 2003). Though there is a huge difference in the economic and financial status between developed and developing countries, it is not possible to apply quality assurance system of developed countries in the higher education institutions of developing countries to get maximum results. Therefore attention must be given to conditions prevailing in the developing countries. Lim (2001) further stressed to check the relevance of quality assurance systems implemented in higher education in developed countries for the higher education sector of developing countries. Firstly, it is not yet verified by research studies that adoption of quality assurance system has produced the effects at the same intensity as it was assumed, though both positive and negative or least effects have been found in the universities of developed countries. Secondly, questions can be raised about the usefulness of successful quality assurance systems of developed countries in developing countries because of the relevancy of aims to the higher education needs of these countries.

The quality assurance system in higher education of Pakistan was introduced by HEC which comprised of following three major components:

- 1) Development of admission criteria and quality assessment standards in higher education;
- 2) Development of processes and capacity building to ensure implementation of these criteria; and
- 3) Develop a monitoring system of the higher education institutions to ensure implementation of the quality criteria and quality control processes.

In 2004, the HEC introduced Ph.D. Indigenous - 5000 Fellowships Program in which 5000 Ph.D. scholarships were planned to be allocated in five batches, preferably in the fields of Engineering Sciences, Pharmaceuticals, Biotechnology, Information Technology, Basic Sciences, Agricultural Sciences, Humanities, Social Sciences and Health Sciences to increase the number of qualified faculty at the public universities. It was expected that these scholars will address social, economic and industrial problems of Pakistan after getting higher education both from local and international institutions. For this programme, the following minimum admission eligibility criteria were set by HEC for Ph.D. students:

- 1) Master Degree with minimum 18 years of education with CGPA 3.00 or more
- 2) Maximum age 35 years but for working candidates it is 40 years
- 3) Full-time student
- 4) Qualify International GRE subject test
- 5) Supervision by HEC approved supervisor

The Ph.D. scholars need to fulfill the following HEC requirements before the award of Ph.D. degree:

- 1) Eighteen credit hours course work of specific discipline
- 2) Qualify comprehensive exam of 18 credit hours
- 3) Preparation and defense of synopsis
- 4) Approval of synopsis by Board of Studies and Advanced Research Board
- 5) Publish research paper in HEC approved journal
- 6) Completion of research work for Ph.D. thesis or dissertation
- 7) Evaluation of thesis by two experts from academically and technologically advanced countries
- 8) Open defense of Ph.D. thesis

The Quality Assurance Committee of HEC which is comprised of Vice-Chancellors of different universities of Pakistan developed a framework for accreditation and ranking of universities in Pakistan (Batool & Qureshi, 2006) and issuance of guidelines for Ph.D. programs. The key role of this Committee is to look after the issues of quality enhancement in higher education. In addition to this committee, the HEC has also constituted Quality Assurance Agency (QAA) with a mission to arrange the capacity building to enable the

higher education institutions of Pakistan to meet the challenges of quality assurance. Under the auspicious of Quality Assurance Agency, the HEC has established Quality Enhancement Cells (QECs) at public universities to monitor the implementation of HEC quality criteria and quality control processes. The quality assurance measures adopted by HEC for the fully funded Ph.D. indigenous program are:

- 1) Well defined admission criteria
- 2) Internationally adopted rigorous research based course work
- 3) Impact factor requirements for research publications
- 4) Access of scholars and supervisors to digital library
- 5) By annual performance reports of scholars
- 6) Supply of plagiarism software to detect plagiarism in Ph.D. Thesis
- 7) Funds for seminars, workshops and conferences
- 8) HEC approved journals
- 9) External evaluation of PhD Thesis
- 10) Public oral defense of research

Ten broad categories of the quality assurance process for teaching were discussed by Bashir & Graeme Aitkin (2008) which include the development of teaching and learning plans, policies, and processes, and their implementation for the enhancement of teaching and learning; feedback from students and peers on the quality of teaching and courses; professional development opportunities for academic staff; recognition, rewards, and incentives for scholarly teaching; teaching-research nexus; development and approval of courses; teaching portfolios; teaching quality appraisal processes for faculties and departments; external incentives for the enhancement of teaching and learning; and, academic audits of universities including that of teaching and learning activities.

Issues of Quality in Higher Education

The concept of quality in higher education is indefinable. It becomes more problematic when quality is conceptualized in terms of a particular aspect of education. The current HEC model poses some serious issues which need to be addressed to meet the challenges of future needs.

1. Non-flexible admission criteria

The current HEC criterion qualifies students only with master degree holders with minimum age of 35 years to pursue Ph.D. studies as full time students after qualifying International GRE subject test. This requirement may be valid for those countries where percentage of students for admission is very high. In Pakistan, this is already very low percentage; only 1 to 2% graduates prefer to do Ph.D. studies from local universities. Moreover, this admission criterion may suite to those students who intend to apply for HEC scholarships for their Ph.D. studies. Additionally, this criteria does not attract students from industries with sufficient experience of their respective fields.

2. Lack of quality faculty

The role of quality faculty is the key component in the enhancement of quality in higher education because in the guidance of supervisors, students achieve their educational targets. The flimsy guidelines from teachers' fallout poorer result, so it is important that the institutions should hire not only qualified faculty but also adopt more credible and reliable measurement tools to measure teacher's performance on a regular basis. It is recommended to use more than one valid and reliable method rather than stick on to one technique to avoid biasness.

3. Supervisors lack local industry experience

The HEC seeks to improve the quality of teaching by continuous development of university teachers through its various faculty development programmes. The Commission has initiated different training initiatives according to the areas of expertise in order to improve skills and effectiveness of teaching. Nearly every state is involved in the movement to raise education standards in Pakistan. This research investigates the effectiveness of such teacher training on the performance of university teachers.

It is found that improved knowledge, skills and attitudes of teachers are necessary requirements to support the teaching program. Moreover, the effective teacher aides and required competencies in broad areas of human relations, instructional activities, non-instructional activities, and basic skills were necessary for the teachers. This study concludes that basic and advanced level training is necessary for future training programs in Pakistan.

Inspite of faculty training programme at different stages of their career, it is found that most of the faculty at the public universities lacks industry experience due to their direct appointment after graduation. This leaves a gap in the understanding of true industry in research and development. Although, universities prefer to induct experienced faculty from the industry but the salary gap and other facilities between university employees and industry do not attract professionals to work in the universities.

4. Lack of collaboration with both local and international researchers and industries

Industry based research plays a key role in the economic development of a country however, a very few research projects in public universities are jointly conducted due to shortage of funds. The universities have limited financial resources to create projects of its own and the industry does not provide any financial assistance due to current economic recession of the country. The government cannot enforce industry to collaborate research projects in which high financial budgets are required.

5. Lack of seriousness

Although the time period for the completion of Ph.D. is flexible for full time students, a few students complete their projects within the stipulated time period. Table 6 indicates number of students enrolled in Ph.D. programme and passes out after 4-years of studies in 2009 of various disciplines. This portrays a disappointing scenario for qualified percentage except in Art & Design where 16 Ph.D. students were awarded degrees while the enrolment was 22 in 2005 (Table 5), however, this data does not indicate how many students were enrolled prior to 2005 session. This data shows the lack of seriousness of students regarding their Ph.D. studies.

6. Lack of Brand

Our universities lack creativity, innovativeness and risk taking due to lack of entrepreneurial in nature. The professor is not responsible for creating their own funds for research which hinders the growth in research and development in the universities.

“Integrated Quality Management (IQM)” Model

Pakistan is facing extreme shortage of skilled human resource for industrial growth. The increased numbers of qualified graduates are not appropriate for work place due to lack of industry experience or exposure. This is the reason we should synchronise higher education programme with industry to produce quality graduate with relevant training.

The proposed “Integrated Quality Management (IQM)” model (Figure 7) is based on the integration of students’ needs, role of institutions and the industry to produce high quality graduates which is for the economic development of the country. This is not possible until we use an integrated approach through the interaction of students, institutions and industries. This proposed model enhances the employability profiles of students based on their knowledge, skill and attitude.

The quality of institutions is assessed based on curriculum content and work based learning. The role of industry for producing quality graduate is the most vital for preparing students according to their needs by providing not only financial support but also technical knowledge. This can be promoted through industry based research projects which cater the need of institutions and the industry.

The proposed “Integrated Quality Management (IQM)” Model for higher education in Pakistan is given in Figure 6 which is based on the following parameters:

Table 5: Comparative studies of number of students enrolled and pass out after 4-years of studies in various disciplines

Discipline	Discipline wise Enrollment during 2004-05												Total Ph.D. Pass out in 2009	
	Bachelor		Master		M.Phil		Ph.D		PGD		Total			Grand Total
	M	F	M	F	M	F	M	F	M	F	M	F		
Arts & Design	783	1,370	78	397	1	3	5	17	8	27	875	1,814	2,689	16
Engineering	31,931	4,163	4,178	540	104	29	265	11	166	0	36,644	4,743	41,387	21
Law	4,227	1,148	421	280	213	100	17	2	15	0	4,893	1,530	6,423	0
Dental Surgery	418	613	11	6	0	0	0	0	0	0	429	619	1,048	0
Medical & Health Science	5,359	6,717	265	137	51	67	32	18	382	300	6,089	7,239	13,328	25
Nursing	62	173	0	12	0	0	0	0	0	0	62	185	247	0
Business Administration	17,379	6,886	25,994	5,716	159	62	228	45	556	109	44,316	12,818	57,134	3
Public Administration	625	327	1,013	586	5	0	11	1	122	23	1,776	937	2,713	4
Agriculture	4,618	1,462	1,105	238	0	10	463	55	16	9	6,202	1,774	7,976	20
Biology	1,596	3,846	1,063	2,626	313	349	332	124	0	0	3,304	6,945	10,249	34
Chemistry	1,081	1,260	1,569	1,864	274	186	181	80	0	0	3,105	3,390	6,495	74
Commerce	6,601	1,667	2,360	823	13	3	7	0	144	38	9,125	2,531	11,656	2
Computer Science & I.T	26,994	5,955	7,083	1,414	592	105	64	8	173	38	34,906	7,520	42,426	8
Pharmacy	4,296	3,519	67	43	125	56	29	8	0	0	4,517	3,626	8,143	5
Veterinary & Husbandry	1,779	153	287	46	129	15	160	25	0	0	2,355	239	2,594	22

Table 6: Number of thesis produced in various disciplines from Pakistani universities during 2009. Symbols Educ, Engg, Islt, Lang, Mgmt, Med & Scin indicate Education, Engineering, Islamiyat, Languages, Management, Medical and Science respectively.

City	Longitude	Latitude	Ph.D. Thesis	Disciplines									
				Arts	Educ	Engg	Islt	Lang	Law	Mgmt	Med	Scin	
Dera Ismail Khan	70.9167	31.8167	9	1	0	0	0	0	0	0	1	0	7
Faisalabad	73.0833	31.4167	108	0	2	0	0	0	0	0	0	0	106
Hyderabad	68.4167	25.3833	15	0	1	1	2	0	0	0	0	0	11
Islamabad	73.1	33.6167	155	5	16	8	10	28	0	0	0	1	87
Karachi	67.1333	24.9	141	4	1	2	16	9	2	0	0	21	86
Lahore	74.3333	31.55	190	5	2	6	21	21		1	3		131
Mardān/Swabi	72.0333	34.2	7	0	2	0	0	0	0	0	0	0	5
Multan	71.4333	30.2	22	1	0	0	4	3	0	0	0	0	14
Peshāwar	71.5833	34.0167	22	1	0	2	1	3	0	1	0	0	14
Quetta	66.8833	30.25	2	0	0	0	0	0	0	0	0	0	2

1. Role of Administration

The administrators should facilitate for improving the learning process by all means. To monitor this process, a team comprising of all stakeholders i.e. senior students, teachers and administrators should be appointed in each public university for devising new methods for improving education standards with the Quality Enhancement Cell (QEC) of HEC.

2. Role of Government

The government should not only provide funds for implementation of strategies but also encourage industry to share their experiences in the development of higher education in the country. In this regard, joint ventures projects between industry and universities can be initiated.

Further, the industry can share their practical knowledge if they document it by writing books or articles and circulate it to universities for research scholar and faculty.

3. Role of Universities

The universities should promote teaching pattern which enhance critical thinking skills among students of higher education (Raisa et al., 2008, Boychuk Duchscher, 1999; Brookfield, 1987). Critical thinking can be created among students by adopting such teaching strategies which engage actively all students in their learning to foster critical thinking. This could only be achieved by creating critical learning environment with the help of instructor's competence and approach to teaching. However, contrary to the required teaching practices to develop students' critical thinking, didactic teaching and rote learning—memorization of material through repetition are prevalent in most teaching institutions in Pakistan (Davies and Iqbal, 1997; Khalid and Khan, 2006).

To make the value mapping strategy more plausible to student, the concept mapping technique has to be introduced in the first semester of the programme. Considering students' responses, it is recommended that teachers should be trained first to become expert in developing concept map related to their subject matter and then use it as a teaching strategy in classroom discourse. Moreover, it is desirable that concept mapping be incorporated into student assessment.

Students and faculty face difficulties in identifying a suitable research topic and required infrastructures available in the country.

4. Collaboration with Industry

Both universities and industries have intrinsic and extrinsic difficulties to collaborate in research. The industry can provide support at the initial stage of research rather than at the end.

5. HEC Unrecognized Ph.D.s

The equivalency of foreign Ph.D. from unrecognized universities of HEC should be established after the defense of their work before the board comprising of HEC experts. If unsuccessful even after second chance, they should register the topic again in the country under HEC approved supervisors to complete the degree.

6. Staff Training

As Abid (2008) reiterated in his paper that staff training and development serves as a genuine tool to successful implementation of total quality management. Juran (1989) used the Japanese word Kaizen which means step by step improvement. The HEC should devise such strategies keeping in view of the “Zero defects” concept of Crosby (1993) in the line of the needs of the country. Implementation of TQM is extremely important not only to design appropriate strategies for quality enhancement in higher education in Pakistan but it will also help in effective management of projects in their jobs after completing their studies. To achieve this target staff must be trained using TQM principles for which funds should be made available by the HEC. Further staff should be encouraged to go for conferences, seminars, workshops and short courses for their professional development.

CONCLUSIONS & RECOMMENDATIONS

The safety, health, and economic well-being should always be the top priorities of a nation. It is well-documented agreement that a well-educated population is a basic ingredient for the success of a nation. To become a developed nation, the nation needs a research and professional infrastructure that graduate education provides.

Quality assessment in higher education is an important issue in Pakistan and concern for everyone who is involved in education: the academic staff, the students, the administrators, as well as tax payers. In Pakistan, there is growing interest, effort, and concern for effective quality assurance systems in order to excel as a nation in the world of globalization. However, this needs a high level of commitment and cooperation from administrative leaders, faculty members and students to meet the challenges of 21st century and make Pakistan a prosperous and developed country.

After reviewing HEC model and literature on quality of higher education it is suggested that:

- 1) Higher education institutions must be responsive to the challenges of the rapidly changing new world: expectation of society and growing demands of the rising student population. This policy therefore looks forward to a new beginning in higher education in Pakistan.
- 2) The minimum eligibility criteria for admission in higher education must be revised to attract students from the industry who could not pursue their studies at Master or Ph.D. level due to some reasons to promote research at industry level. To keep the quality of research, such students should be supervised by a team of experts both from universities and industry. The aim is not only to promote research activities in the country but to address industry issues for sustainable growth in the future. The minimum eligibility criteria should be
- 3) Graduation with at least five to ten years of industry experience or Master Degree with minimum 18 years of education with CGPA 3.00 or more
- 4) Maximum age limit 50 years
- 5) Part time or full time students
- 6) HEC/NTS test for part time students or International GRE subject test for full time students
- 7) For award of Ph.D. the following modified conditions should be applied to encourage part time research studies in the country to create research culture especially from students of industry based experience.
- 8) Eighteen/Thirty credit hours course work of specific discipline for Fulltime/Part time students
- 9) Qualify comprehensive exam of 18/30 credit hours
- 10) Preparation and defense of synopsis
- 11) Approval of synopsis by Board of Studied and Advanced Research Board
- 12) Publish research paper in HEC approved journal
- 13) Completion of research work for PhD thesis or dissertation
- 14) Evaluation of Thesis by two experts from academically/ technologically advanced countries
- 15) Open defense of PhD thesis
- 16) Presentation in both Local and International Conferences, Seminar and Workshops
- 17) Adopt an integrated approach as indicated in the proposed model which requires integration of creative thinking, analysis of information, planning and applications of research tools to solve problems critically.
- 18) Define clearly objectives of quality enhancement based on proposed model for next five years by introducing not only a mechanism of comparable degree programmes in the country but induction of new discipline relevant to the job markets. This will enhance employability of postgraduate students in the industry. A deadline should be specified for implantation of above action plan in higher education to achieve future targets.
- 19) Collaborate with college or universities of Baluchistan and AJK to advance R& D activities. This can be done by allowing at least top 5 to 10% of students on merit from Baluchistan & AJK to initiate joint research with students of public universities of Sindh, Punjab & PK. Further, this practice can be extended These students should

- not only be trained in their area of research but should be encouraged to promote R&D in their province after completion of their studies.
- 20) As indicated by Bashir & Graeme Aitkin (2008) a collaborative and coordinated university-wide approach need to be adopted towards the quality assurance processes in the universities. In this scenario, faculty of Baluchistan and AJK universities must also be encouraged to initiate joint research projects of Baluchistan with faculty of other universities of the country to share knowledge with each other. This will contribute in promoting interprovincial harmony for a politically strong country.
 - 21) Discourage academic malpractices which are one of the reasons for deterioration of quality in higher education with the strict implementation of rules & regulations of HEC. It is recommended that universities should provide professional development opportunities for academic staff to enhance their teaching skills and to reinforce the importance of the teaching-research nexus.
 - 22) Eliminate obstacles to the free mobility of students and teachers among public universities to share the knowledge and experience from research centers such as Punjab and Sindh to less research oriented areas such as Baluchistan, AJK and PKP.
 - 23) The HEC should invite higher education community of the country to contribute to the success of the process of reform and convergence. Due to rapid change in the society, Pakistan needs to establish a knowledge bases and people oriented education quality education system particularly in higher education for a sustainable growth of both economy and its human resource. Since the government has limited resources to achieve this objective, decentralization under the HEC umbrella should be promoted.
 - 24) The universities should be treated as a commercial organization and behave like entrepreneurial. This will help in creativity and innovative research. Also, the role of professor will be redefined and will be responsible for arranging its own research funds with the collaboration of industry. This will not only increase the research activities but the quality will be improved due to competitive environment.
 - 25) Implement the proposed model to create a collaborative and coordinated approach between students, faculty, administrative authority i.e. HEC and the industry. It will improve the standards of higher education in Pakistan if adopted with full spirit. In this model, both student and faculty are focused with the key role of industry for enhancement of students' skills for economic development.

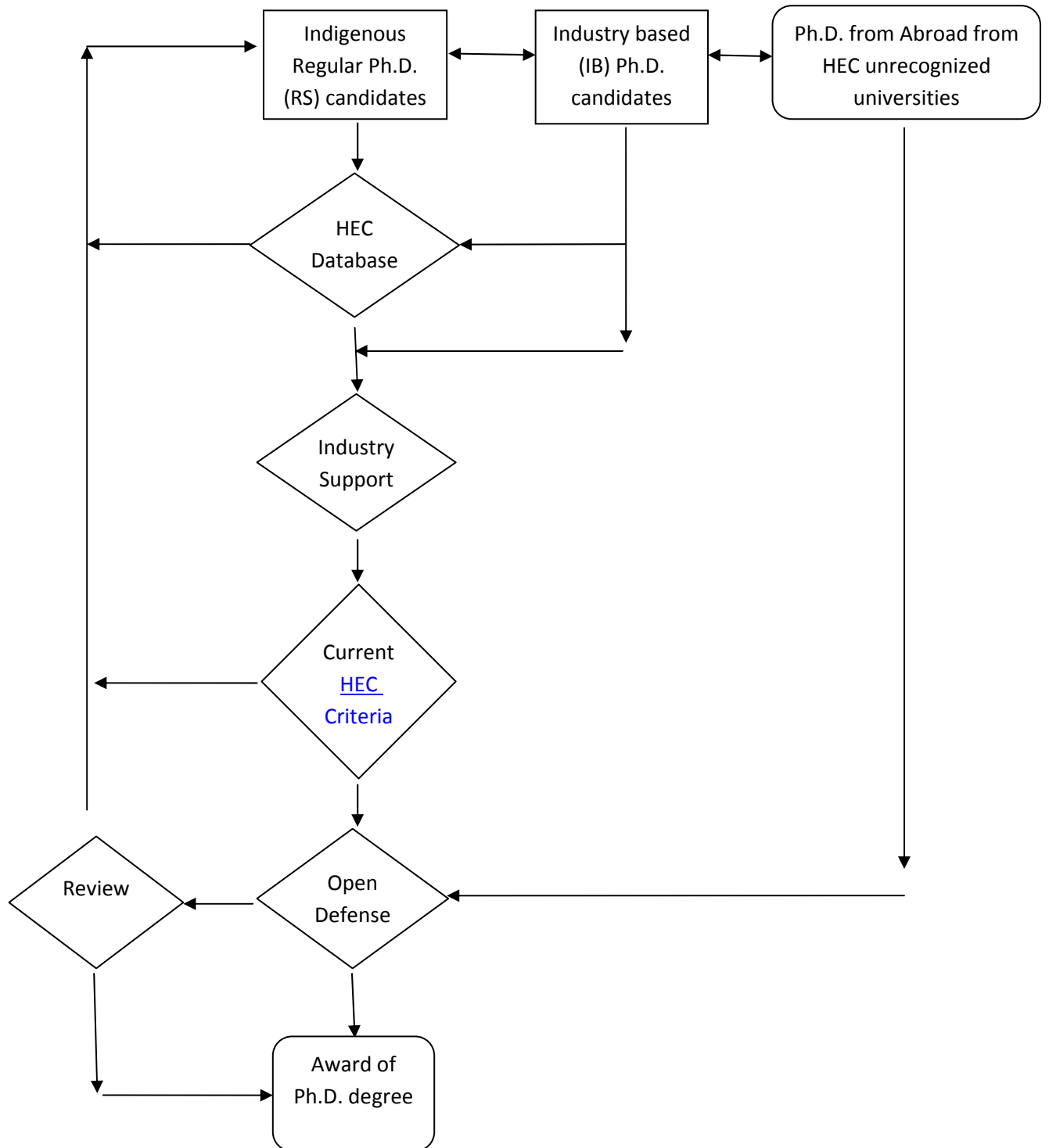


Figure 7: Proposed “Integrated Quality Management (IQM)” Model for Higher Education

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