



Research Performance

Promotion of Excellence in Learning and Research

The generation of new knowledge and efficient dissemination of existing knowledge is a key responsibility of Institutions of higher learning. Research is what distinguishes Universities from Colleges, and therefore the development of an environment conducive to research and the provision of necessary facilities, whilst ensuring the research enterprise is sufficiently integrated with industry, has remained a key strategic objective of the HEC.

- ***Enhancing Research Facilities***

To support the conduct of truly excellent research, more than 20 Central Research Laboratories have been established in the major universities across Pakistan. The improved facilities are supported by sophisticated IT-based solutions to cater to the research needs of researchers. The HEC Digital Library now provides access to over 23,000 leading research journals, covering approximately 75% of the world's peer-reviewed scientific journals. Furthermore, starting from year 2007 over 45,000 e-books have also been made available to the universities across Pakistan. The Access to Scientific Instrumentation program launched to allow any researcher in Pakistan access to sophisticated scientific instrumentation at all participating universities and research centers in Pakistan.

- ***Research Support***

HEC has laid special emphasis towards supporting research program in the country. Generous funds have been released to the academic and research institutes in this regard. A comprehensive peer review process takes place prior to release of the funds for the projects. Additional programs have been implemented to sponsor the attendance of international conferences to researchers presenting original papers, as well as initiatives to fund the hosting of local workshops and conferences, and to provide teaching faculty with sabbatical leave to pursue their research interests

- ***Impact on Research Productivity***

According to the Institute of Scientific Information (U.S.), the total number of publications appearing in the 8,000 leading journals indexed in the Web of Science arising out of Pakistan in 2005 was 1,259 articles, representing a 41% increase over the past two years, and a 60% increase since the establishment of the HEC in 2002.

The impact of HEC on the research output originating from Pakistan has been astounding. This is depicted in the following tables. All data has been collected through *ISI Web of Science* for a period of past three years i.e. 2005 through 2007. The compilation date for this data is January 12, 2008.

1.1 Total Publications & Citations

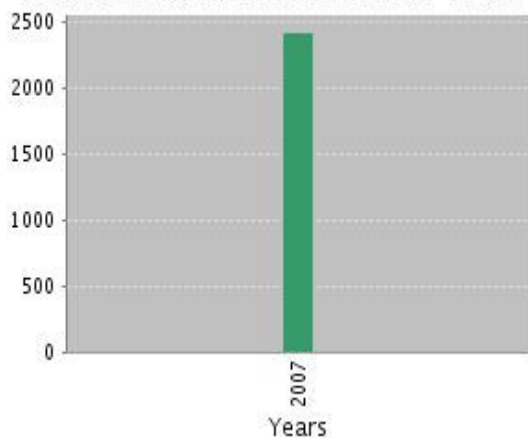
	2007	2006	2005
Publications	2,415	1,714	1,304
Citations	1,145	2,738	3,628

Citations for the articles published in a particular year are also cited in subsequent years. For instance, articles published in 2005 are cited in 2005 and all subsequent years. However, the articles published in 2007 are only cited in 2007 and after. Therefore, the count increases as the years goes by. The figures below for each year i.e 2007, 2006, and 2005 depict a detailed relation of publications with citations.

Year 2007

The 2415 publications during the year 2007 have been cited 1145 times so far.

Published Items in Each Year



Citations in Each Year

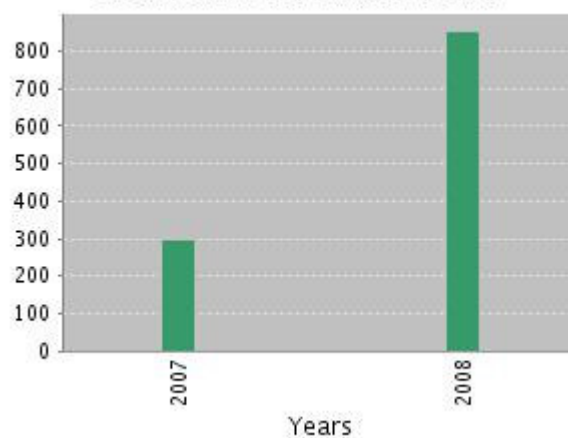
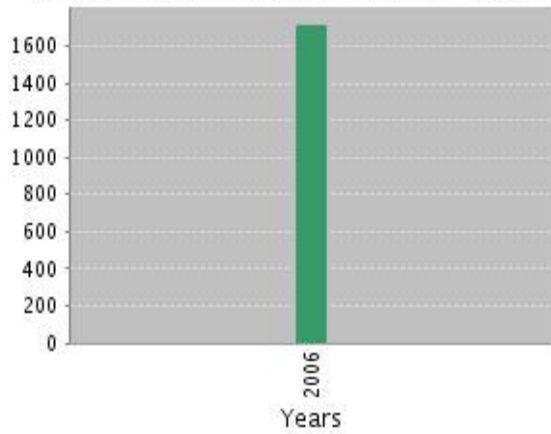


Fig. A-1

Year 2006

The 1714 publications during the year 2006 have been cited 2738 times split over from year 2006 to date.

Published Items in Each Year



Citations in Each Year

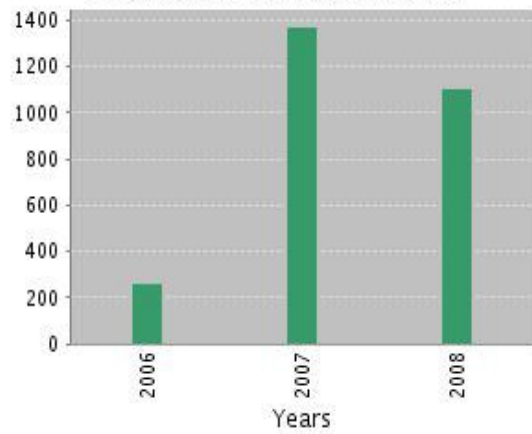
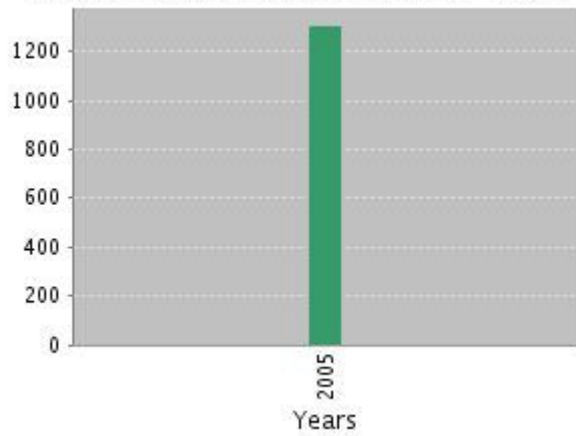


Fig. A-2

Year 2005

The 1304 publications during the year 2005 have been cited 3628 times so far.

Published Items in Each Year



Citations in Each Year

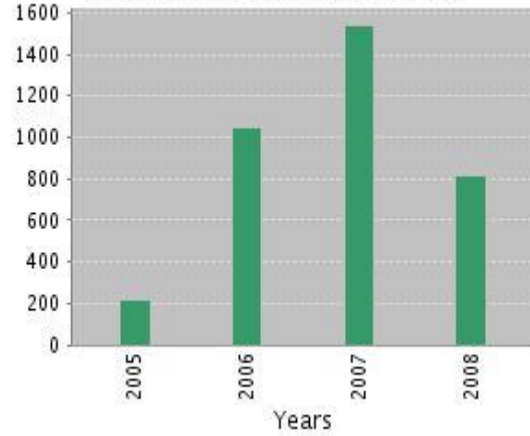


Fig. A-3

Cumulative

For the year 2005 - 2007 the cumulative situation of the research activity in Pakistan is depicted in the figure A-4

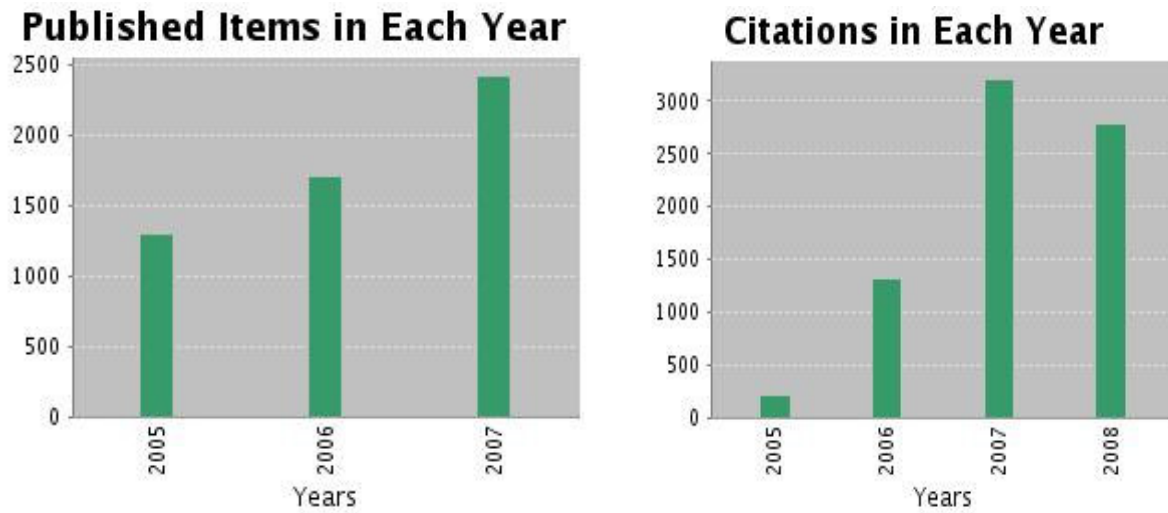


Fig. A-4



Comparison between Pre-HEC and Post-HEC Impact on Research Output

For an in-depth analysis of the history of research output originating from Pakistan, a comparison between 5 years prior to HEC and 5 years after HEC was formed will reveal a true picture of impact of HEC on the research output of the country.

For these five years, **3,260** articles were published whereas during the five-year period of 2002-2007, which is a post-HEC period, **8,224** articles were published. This reflects a staggering increase of over **152%** since HEC started to revamp the tertiary education in Pakistan.

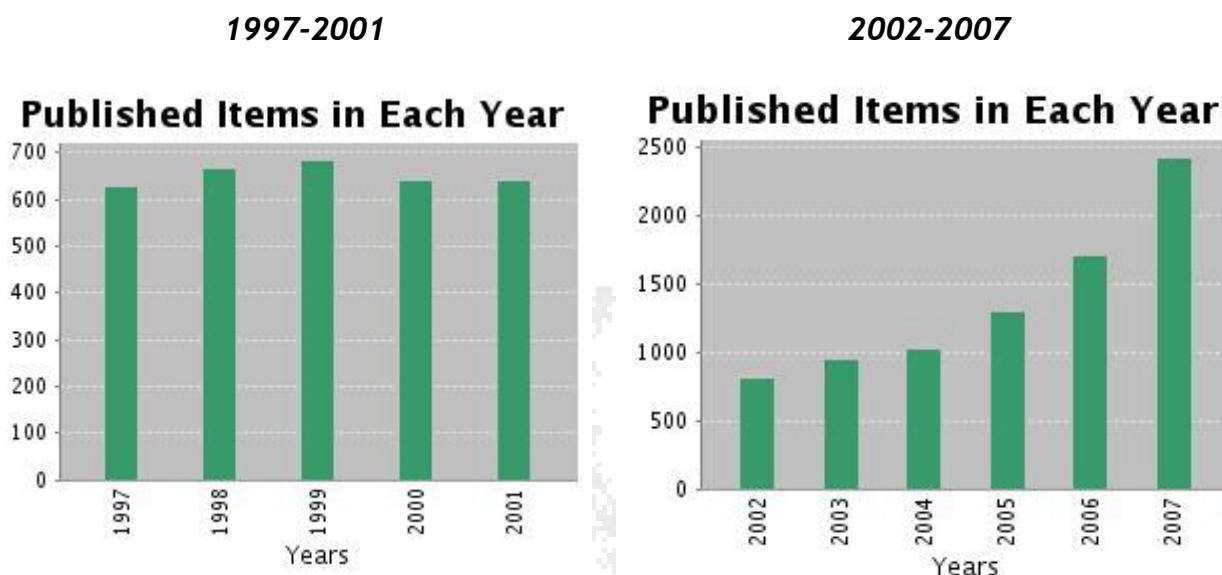


Fig. A-5

1.3 Top 14 Research Areas

	Subject Area	2007	2006	2005	Total
1.	Chemistry	626	614	490	1730
2.	Physics	517	377	214	1108
3.	Biology	501	397	331	1229
4.	Biotechnology	106	70	59	235
5.	Agriculture	145	67	33	245
6.	Medical	532	367	378	1277
7.	Food Sciences	88	57	36	181
8.	Environmental Sciences	112	109	84	305
9.	Engineering	307	179	114	600
10.	Mathematics	112	87	31	230
11.	Computer Science & Information Technology	101	60	49	210
12.	Psychology	17	8	7	32
13.	Social Science	8	33	25	66
14.	Geosciences	23	11	4	38

PUBLIC SECTOR UNIVERSITIES ANALYSIS

1- NWFP REGION

	University Name	2007	2006	2005	Total
1.	University of Peshawar, Peshawar	76	57	44	177
2.	NWFP Agriculture University, Peshawar	15	14	10	39
3.	Ayub Medical College, Abbottabad		1	1	2
4.	NWFP University of Engineering and Technology, Peshawar	7	7	2	16
5.	Hazara University, Dodhial, Mansehra	2	5	1	8
6.	Kohat University of Science and Technology, Kohat		2		1
7.	Malakand University	5	1	2	8
8.	Khyber Medical University	11	4	3	18

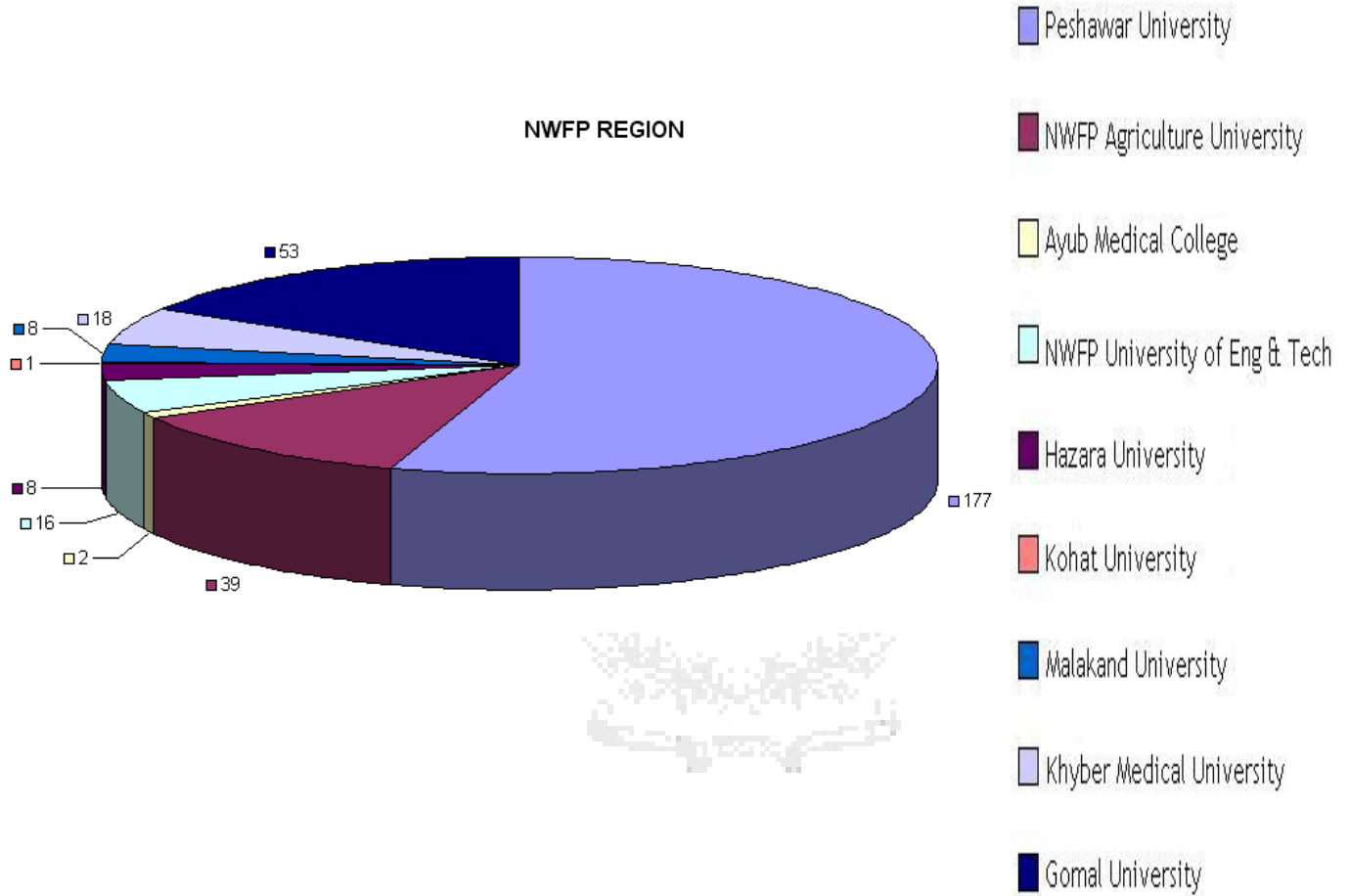
9. Gomal University, D.I. Khan

12

22

19

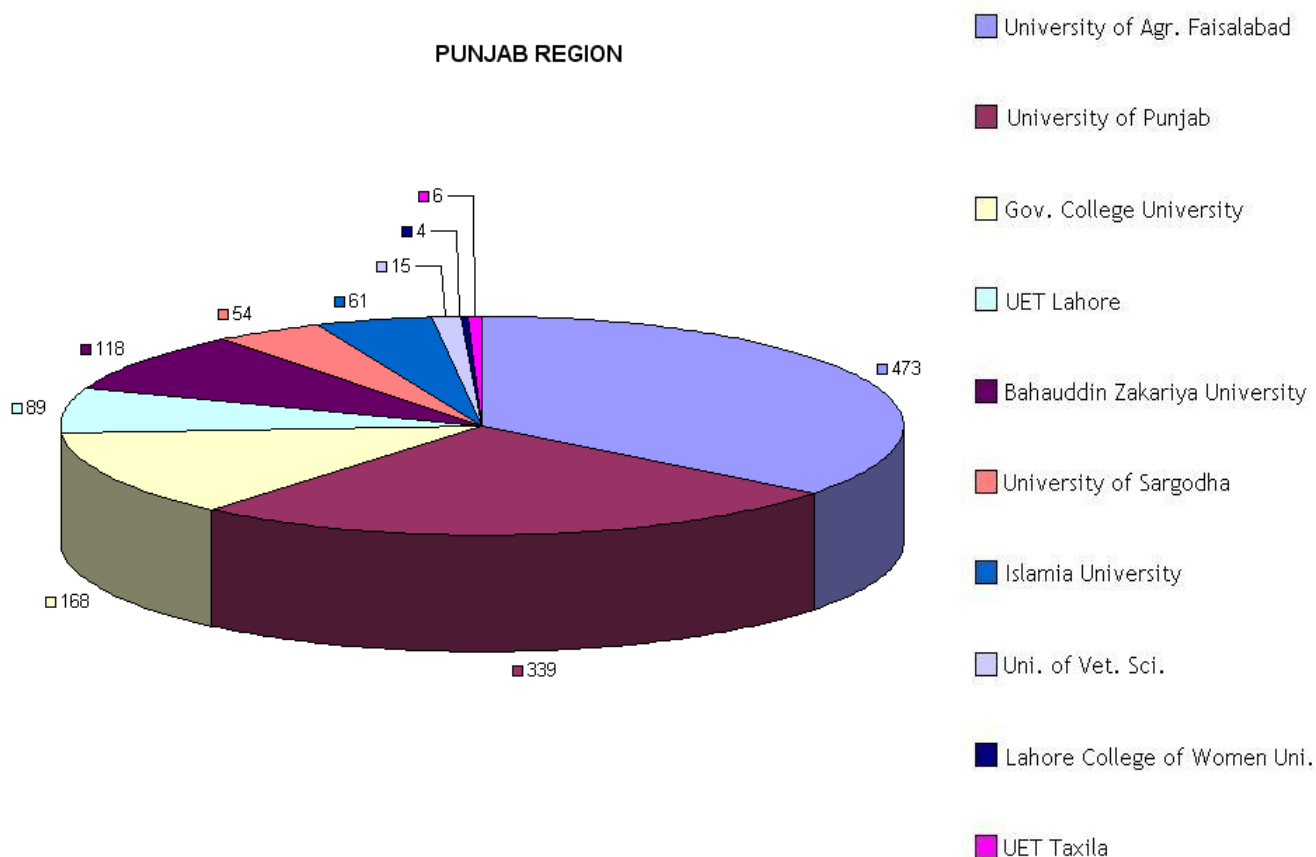
53
322
(Grand
Total)



2- PUNJAB REGION

	University Name	2007	2006	2005	Total
1.	University of Agriculture, Faisalabad	254	152	67	473
2.	University of the Punjab, Lahore	168	92	79	339
3.	Government College University	93	51	24	168
4.	University of Engineering & Technology, Lahore	52	25	12	89

5.	Bahauddin Zakariya University, Multan	46	52	20	118
6.	University of Sargodha, Sargodha	40	14		54
7.	Islamia University, Bahawalpur	22	23	16	61
8.	University of Veterinary & Animal Sciences, Lahore	11	4		15
9.	Lahore College for Women University, Lahore	4			4
10.	University of Engineering & Technology, Taxila	2	4		6
					1327 (Grand Total)

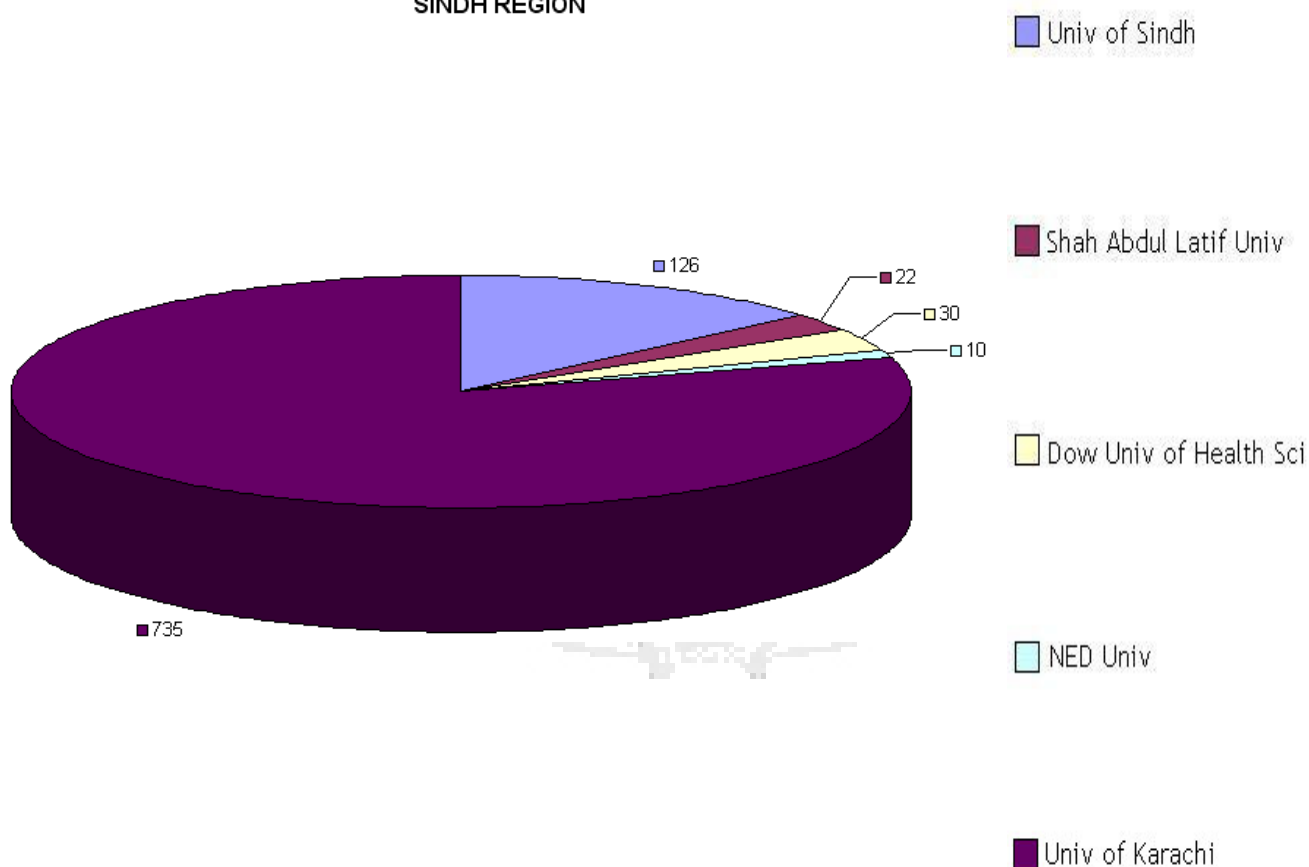


3- SINDH REGION

	University Name	2007	2006	2005	Total
1.	University of Sindh, Jamshoro	59	42	25	126
2.	Shah Abdul Latif University, Khairpur	1	11	10	22

3.	Dow University of Health Sciences, Karachi	13	11	6	30
4.	NED University of Engineering & Technology, Karachi	8		2	10
5.	University of Karachi, Karachi	276	221	238	735
					923 (Grand Total)

SINDH REGION



4- BALOCHISTAN REGION

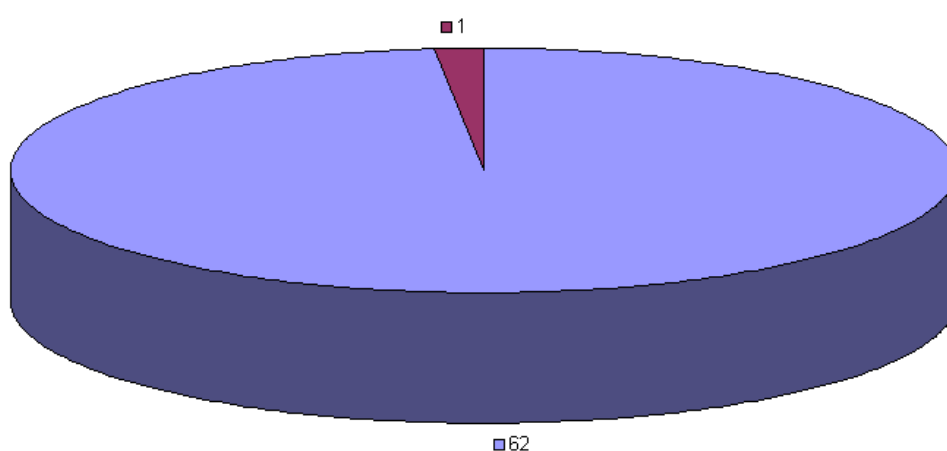
	University Name	2007	2006	2005	Total
1.	University of Balochistan, Quetta	27	18	17	62
2.	Balochistan University of Information Technology & Management Sciences, Quetta			1	1
					63 (Grand Total)

Total)

Univ of Balochistan

BALUCHISTAN REGION

BUITMS



5- ISLAMABAD REGION

	University Name	2007	2006	2005	Total
1.	Allama Iqbal Open University, Islamabad	10	7	7	24
2.	Comsats Institute of Information Technology	122	62	27	211
3.	International Islamic University, Islamabad	5		2	7
4.	National University of Sciences & Technology, Rawalpindi (NUST)	36	16	11	63
5.	Pakistan Institute of Engineering & Applied Sciences (PIEAS)	54	31	13	98
6.	Quaid-i-Azam University, Islamabad	390	322	167	879
7.	University of Arid Agriculture, Rawalpindi	49	21	7	77
8.	Air University, Islamabad			2	2
9.	Bahria University		1		1

**1361
(Grand
Total)**

ISLAMABAD REGION

