

# Identifying the “Teaching and Research” Criteria Gaps in the Universities Ranking Systems: A comparative Analysis of HEC (Pakistan) with Quacquarelli Symonds (QS) & Times Higher Education (THE) Ranking Systems

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**Abstract:** Nowadays, universities are competing with each other through international ranking. Ranking criteria are primarily focused on teaching and research because teaching and research are essential to make institutes globalized and visible. Higher Education Commission (HEC) possess certain criteria to rank the Pakistan’s higher education institutes at national level but an observation reveals a gap existing between national and international criteria. Pakistan’s higher education institutes are continuously struggling to meet the international standards but not fully achieved because of this existing gap. This paper explores those gaps that cause barriers for the Pakistani Higher education institutes to meet international ranking. This research is focused on the teaching and research aspects of the higher education institutes. This paper compares the teaching and research criteria of HEC ranking with teaching and research criteria of QS and THE because HEC adopt the research and teaching based criteria from QS and THE ranking. Finding shows that HEC continuously put effort to adapt and implement international ranking criteria but some parameters are still avoided. Such as: peer endorsements and reputational surveys on research and teaching. Results of the paper recommended that HEC needs to revise the research and teaching criteria that meet the international standards.

**Key words:** Higher education commission (HEC); Quacquarelli Symonds (QS); Times higher education (THE); Research; Teaching.

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## 1. Introduction

Ranking is a well-known method, that presenting the relative standup of whole organizations through corresponding methodology and procedures (Sadlak, 2011). Academic ranking is one of the major factor for Potential candidates, carrier path and job orientations (Chen, Zhu and Jia, 2021). Rankings can be key starting points to recognize institutions with which to collaborate and partner. (Sadlak, 2011). Global ranking is becoming one of top focused area of universities at international level. The Researchers and authors are focusing on the internationalization of Higher Education Institution (HEI) through quality standards to gain the competitive benefit (Roga, Lapina and Mürsepp, 2015). Universities ranking status change time to time. The research and teaching competencies are main drivers that moves universities ranking status from bottom to top (Chen, Zhu and Jia, 2021). An academic ranking has some criteria that measured the academic quality. Ranking is the list of the best colleges, universities, or departments in a field of study, according to their supposed quality (Fatima et al. 2021). **The THE - QS World University Rankings were considered to show a multi-faceted vision of the strengths of the world's leading universities. The ranking currently assesses around 600 universities in the world and ranks the top 400. The purpose of the THE - QS World University Rankings is to distinguish universities according to their capabilities at global level (Huang, 2011). Higher education commission of Pakistan (HEC) plays a key role for advancement and quality research by providing the universities new knowledge, research services, employment of highly qualified academic faculty, scholarship, announcing faculty development program, different salary package, short and long period appointments, incentive on quality research, funding for the projects (Bashir et al , 2011).“In Pakistan, programs and registrations have been poorly conceived in their association to the labor market and future manpower requirements. Pakistani educational institutions absence in skilled teachers and handful teaching and physical resources” (Noreen and Hussain, 2019). Higher education in developed world are more serious in respect to research and teaching. They use research as an important part of their tasks, faculty members of higher education institutions have consistently evidenced research productivity however universities in the developing world have retained strong teaching functions and weak research functions (Nadeem, 2011).**

## 2. Research Objectives

These research paper asses the gaps existed in the ranking criteria of teaching and research in HEC ranking Pakistan, the gaps can be identified through compare the HEC ranking with International QS and THE ranking system. The scope of this paper is to identify those gaps in HEC ranking system that make hindrance to achieve the international standards. The paper is only focuses on the research and teaching criteria. The results of the paper are more effective in a manner that HEC can revise their teaching and research criteria's and achieve international standards of ranking.

## 3. Literature Review

### 3.1 Internationalization of Higher Education

Due to technological advancement and high competition, higher education institutions adopt various tools and techniques in respect the betterment of the quality of their institute. The new moods of development are adopted by higher education institutions to cope up the international market. Now day's universities are not only focus on the product development but more conscious in the significant environmental factors that make their product stronger and computable (Padlee et al., 2020).

The higher education institutions can improve their quality through improve teaching styles and provide student support services, introduce research oriented environment, offering scholarships and accommodation to the students, offers courses according to market demand and organizing job fairs (Roga, Lapina and Mürsepp , 2015).

The study shows that quality of higher education institutions can be perceived through two indicators first; 'Ratio of the foreign students' is more focusing indicator in the global ranking because as the ratio of foreign students increases the reputation and the status of higher education institutes automates upgrade in order provide global standards and facilitates. Second; 'customer satisfaction' it is very difficult to produce the environment and faculty according to student's intentions because sometime student's expectations are more than reality and if any higher education institute set the balance between the expectations and facilities it absolutely grows (Olcay and Bulu, M,2017).

### 3.2 Ranking

The aim of ranking is offering knowledgeable choices that enable a student to growing their carrier (Noreen and Hussain, 2019). Ranking tables provides: information about the current reputation of higher education institutions, strong competition among higher education institutions, facts about performance of higher education institutions, academic programs and resources of financial support (Sadlak, 2011). Ranking, also called league table and report Card (RC), because universities set their goals and adjectives according to the set criteria of the ranking (Noreen and Hussain, 2019).

Ranking systems supports in institutional decision making such as: verification of degree according to rankings, highlighting top higher education institutions on global level, co- relation between teaching and research, variety in faculty, design valuable strategies and plans for the betterment of the institute and funding issues (Sadlak, 2011). Higher education institutions must be judged on the basis of adoption of the selected variables. The adoption of variables can be measured through score or weight fixed by ranking authorities (Fatima et al. 2021).

### 3.3 THE-QS Ranking

The Times Higher Education World University Rankings, along with the QS World University are considered as three most dominant international university rankings. The data of THE-QS rankings is measured through survey conducted by Thomson Reuters (Times Higher Education World University Rankings). In THE-QS ranking half portion of data is collected through reviews and surveys from stakeholders. The teaching quality is measured through average ratio of enrolled student over faculty (Lindblad, 2008).The THE - QS World University Rankings were considered to explore the potentials of the world's leading universities. The complete rankings are comprising on six different indicators:

1. Academic Peer Review: This indicator is measured through global online survey
2. Employer Review: it is also based on global online survey
3. Faculty Student Ratio: This indicator is measured through evaluate the ratio of enrolled students over the number of faculty

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4. Citation: This indicator is used to measure the effectiveness of the organization in research. Citation score is measured through Scopus, the world's largest abstract and citation database of research literature
5. International Faculty: This indicator evaluates through measure the number of international faculty
6. International students: This indicator evaluate through measure the number of international students (THE - QS World University Rankings).

### 3.4 HEC Ranking

Rankings tables measure the performance of universities. Higher Education institutions benefited from the rankings in order to implement successful strategic positioning and planning, hire skilled manpower, betterment of quality, activate resource allocation system, proper utilization of findings (Sadlak, 2011). Research is most focusing area in HEC (Pakistan) ranking and Pakistani higher education institutions to continuously improve their standard in term of quality and research. As the quality of higher education improves, effectiveness creates to meet the international standard and compete globally (Sadlak, 2011). HEC-Pakistan is the first country in the Islamic world that has initialized ranking criteria, methodology, grounded on QS (world level) Ranking. This initiative of QS ranking was taken up by HEC with aim to foster an environment to take a part in international ranking (COMSATS).

HEC starts its first academic ranking in 2006, second issued in 2012 and third one is published in 2014. HEC measure the quality of higher education institutions in three areas: growth, access and ranking in Pakistan and offer a comparison between them. HEC announced ranking of all public and private universities in 2002. The first ranking methodology was established by the Quality Assurance Committee of the HEC in 2006. In 2006 ranking methodology classified into five parameters: students, facilities, finances, faculty and research). On the basis of gathered data and comparing with international ranking the parameters are changed in 2012 and again in 2014. In 2012 five parameters are categorized in three parameters. The first is QA and enhancement, second is teaching quality and third is research. In 2014 some other parameters are added in the ranking such as: finance and facilities and community services or social integration (Halai, 2013).

### 3.5 Research and Teaching

Teachers are considered as a precious personality in the higher education institutions that perform major role in the quality control of the organization. Top ranked Universities hire the effective faculty members as an analyst to improve their quality and standard (An Anthology of “Best Practices” in Teacher Education, 2007). Teaching and research is the core area in higher education. Research gathered the knowledge goods and services. However, Teaching produce the goods and services through its managerial, economic, social and technical capabilities.

Research is just collecting information about some people, things, or particular state of affairs of some organizations (Nadeem, 2011:42). Teacher quality characterizes recognized atmosphere to progress the operative of the institute (An Anthology of “Best Practices” in Teacher Education, 2007). Teaching and research are considered two wheels of a bike: Higher education institute commercialize themselves

through best research capabilities and these research capabilities are produced by research oriented teachers and students (Nadeem, 2011). Teaching quality can be evaluating through various indicators such as: teacher effectiveness / field relevancy, competency in teaching and attitude and students learning outcome, (Pavlina, Zorica and Pongrac, 2011) Universities research capability can be measure through commercialization, industrial linkages, and funding and organizing research groups (Carlsson, Kettis and Söderholm).

*Table.1 Teaching and Research Criteria of QS Ranking*

Teaching		Research
1	<b>Overall Student Satisfaction</b> <i>(To measure the student satisfaction through statistics from the National Student Satisfaction Survey).</i>	<b>Academic peer endorsements</b> <i>(Responses from academic experts in relevant field identify the leading universities in their area of expertise).</i>
2	<b>Faculty with PhD</b>	<b>Published papers</b>
3	<b>Completion</b> <i>(It is the ratio of students enrolled who succeed in graduating).</i>	<b>Prolific academic experts</b> <i>(Measuring the number of staff who have received global distinction in their area of expertise).</i>
4	<b>Satisfaction with teaching</b> <i>(Survey to Questions the students that they are satisfied with the teaching).</i>	<b>Citation</b>
5	<b>Further study</b> <i>(The ratio of students who choose to pursue further study).</i>	
6	<b>Faculty student ratio</b> <i>(The ratio of one faculty member for every ten students).</i>	

*Table.2 Teaching and Research Criteria of THE Ranking*

Teaching		Research
1	<b>Reputational survey – teaching</b> <i>(It observed the image of institutions in teaching).</i>	<b>Reputational survey – Research</b> <i>(University’s reputation for research excellence among its peers, based on the responses to annual).</i>
2	<b>PhD awards per academic</b> <i>(Number of doctorate degrees)</i>	<b>Research income</b> <i>(Income generated through innovations, inventions and consultancy).</i>
3	<b>Staff-to-student ratio</b>	<b>Published papers</b>
4	<b>Doctorate-to-bachelor’s ratio</b>	<b>Citation</b>
5	<b>Institutional income</b> <i>(Income is scaled against staff numbers and normalized for purchasing-power parity).</i>	

*Table.3 Teaching and Research Criteria of HEC Ranking*

	Teaching	Research
1	Full time faculty to total faculty	Patents
2	Full time PhD faculty to full time total faculty.	Commercialization
3	Full time teacher student ratio <i>(It is the ratio of Total regular faculty and proportional part time faculty).</i>	Published papers
4	Selectivity: enrollment ratio	Industrial research <i>(Joint research projects).</i>
5	Number of trainings	Publication in ISI impact factor journal
6	Faculty having terminal degrees from other institutions	Ratio of active PhD students to total active enrolled students
7	National and international awards won by full time faculty members	Citation
8	Fresh PhD faculty over total fresh recruitment of faculty	H Index <i>(ISI web of knowledge will be benchmark and records (research output) extracted by HEC Digital Library will be used).</i>
9		Research Journals <i>(Number of W, X, Y, Z Journals Published by the University).</i>
10		Internet Bandwidth <i>(Average utilization of Internet bandwidth by the universities acquired through PERN and other ISPs will be used).</i>
11		Digital Library utilization <i>(Facility of digital library).</i>
12		Number of Conferences
13		Research grants
14		Travel Grants
15		Total PhD Output
16		Total PhD Output per full time faculty <i>(Total PhD output per full time faculty during year).</i>

#### 4. Sample Divergence

Sample is derived from of HEC ranking, QS ranking and THE ranking. Quantitative data is collected from methodology of teaching and research criteria of the national and international rankings through internet surfing.

#### 5. Methodology

This study is based on secondary data. Quantitative methodology is used to collect secondary data. Quantitative data is collected from various sources mentioned below:

- <https://www.topuniversities.com/university-rankings>
- <https://hec.gov.pk/english/universities/Pages/AJK/rank.aspx>
- <https://www.timeshighereducation.com/world-university-rankings>

- <https://hec.gov.pk/english/services/universities/Ranking/2010/Pages/Category-Wise-Rankings.aspx>

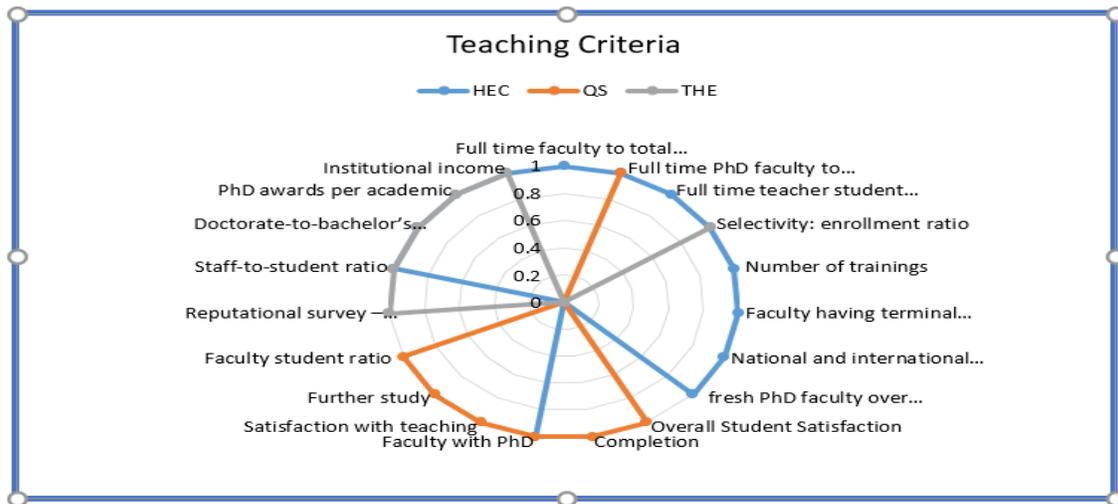
6. Data Analysis and Results

Secondary data is collected from research and teaching criteria of QS, THE and HEC (Pakistan) rankings.

*Table.4 Descriptive statistics of national and international ranking teaching criteria*

Descriptive Statistics			
Sr.#	Criteria	Mean	Standard Deviation
1	Full time to total faculty	.3333	.57735
2	Full time PhD to total faculty	.6667	.57735
3	Teacher student ratio	.3333	.57735
4	Selectivity	.6667	.57735
5	Trainings	.3333	.57735
6	Terminal degrees	.3333	.57735
7	National and international awards	.3333	.57735
8	Fresh PhD	.3333	.57735
9	Student satisfaction	.3333	.57735
10	Completion	.3333	.57735
11	Satisfaction with teachers	.3333	.57735
12	Further study	.3333	.57735
13	Faculty Student Ratio	.3333	.57735
14	Teaching Reputational Survey	.6667	.57735
15	Institutional Income	.6667	.57735

Table.4 Shows that from fifteen teaching criteria only four criteria have highest mean value. It shows that four criteria namely: full time PhD to total faculty, selectivity, teaching reputational survey and institutional income are same in national and international ranking.



*Fig.1 Radar Chart of national and international ranking teaching criteria*

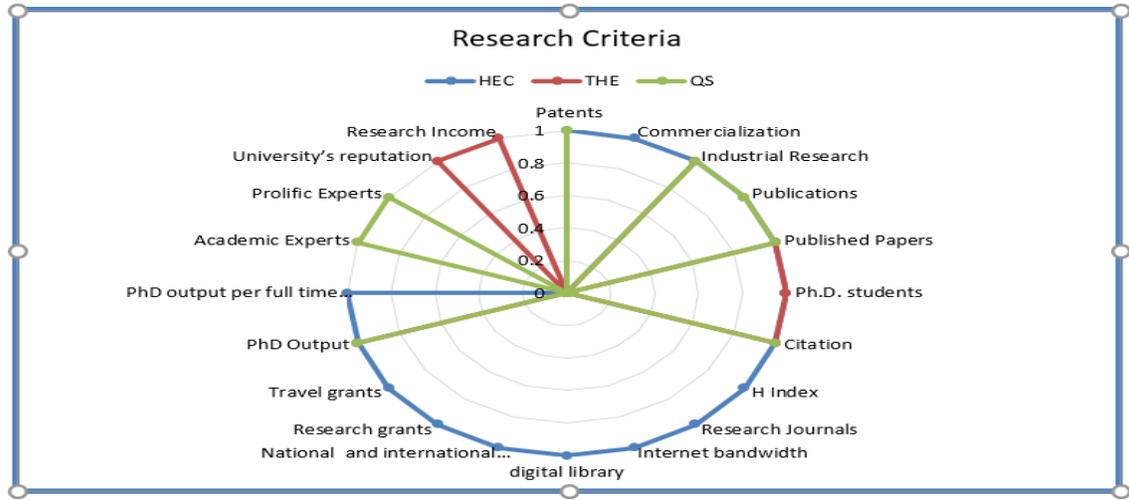
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Table.4 and Fig.1 shows that there are fifteen variables in teaching criteria in respect to three rankings namely: QS ranking, THE ranking and HEC ranking. The radar chart show that four criteria are comparatively same: i) QS ranking and HEC ranking measure the ratio of Full time PhD faculty over total faculty however THE ranking measure Doctorate-to-bachelor’s ratio and PhD awards per academic ratio; ii) Selectivity: HEC and THE both measure the enrollment ratio of the students ; iii) Reputational survey about the teaching or teaching satisfaction criteria is measure in THE and QS ranking through surveys ; iv) HEC and THE measured the income generated by institute . However, the other eleven criteria are comparatively different in national and international rankings.

*Table.5 Descriptive statistics of national and international ranking Research criteria*

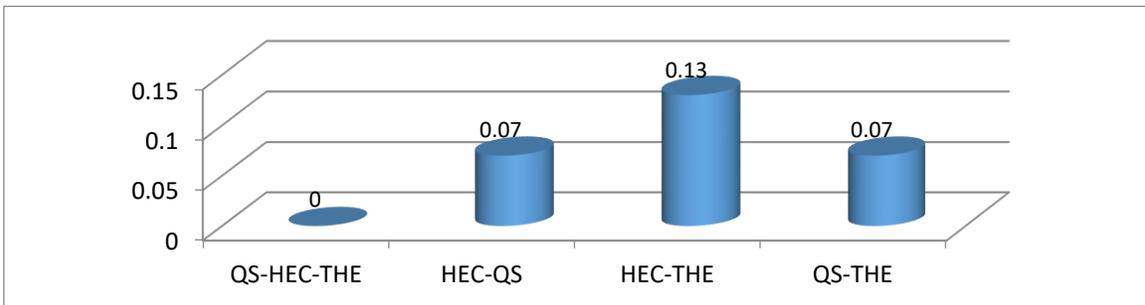
Descriptive Statistics			
Sr.#	Criteria	Mean	Standard Deviation
1	Patents	.6667	.57735
2	Commercialization	.3333	.57735
3	Industrial Research	1.0000	0.00000
4	Publications	.6667	.57735
5	Published Papers	1.0000	0.00000
6	Ph.D. students	.6667	.57735
7	Citation	1.0000	0.00000
8	H Index	.3333	.57735
9	Research Journals	.3333	.57735
10	Internet bandwidth	.3333	.57735
11	digital library	.3333	.57735
12	National and international Conferences	.3333	.57735
13	Research grants	.3333	.57735
14	Travel grants	.3333	.57735
15	PhD Output	1.0000	0.00000
16	PhD output per full time faculty	.3333	.57735
17	Academic Experts	.3333	.57735
18	Prolific Experts	.3333	.57735
19	University’s reputation	.3333	.57735
20	Research Income	.3333	.57735

Table.5 Shows that from twenty research criteria only four criteria have highest mean value. It shows that four criteria namely: industrial research, published papers, citation and PhD output are same in national and international ranking.



*Fig.2 Radar Chart of national and international ranking research criteria*

Table.5 and Fig.2 shows that there are twenty variables in research criteria in respect to three rankings namely: QS ranking, THE ranking and HEC ranking. The radar chart show that seven criteria are comparatively same: i) the number of patents is measured in QS and HEC ranking but HEC measure this criteria in research category however QS ranking measure patents ration in innovation category) Industrial research is measured in all three rankings but there mood is change QS ranking measure indicator of industrial research that measure the joint research projects with industry HEC ranking measure industrial research to measure the number of university and industry linkages however THE ranking measure industry income through innovations, inventions and consultancy) Publication criteria is measured as Publications in ISI impact factor Journals[2013] per full time faculty by HEC and research journal publications that have at least one international co-author and reward higher volume in QS ranking;. Iv) Number of papers published by the university is evaluated in all rankings; v) Number of enrolled PhD student’s ratio is measured by HEC and THE ranking; vi) citation is measured by all three rankings; vii) All three rankings measure the total PhD output ration in the universities. Other thirteen criteria are different in national and international rankings.



*Fig.3 Bar Charts of Compared mean of national and international ranking teaching criteria*

fig.3 show the mean value of ranking comparison of teaching criteria in bar charts. The results show that in teaching criteria HEC followed most of THE criteria rather than QS. However, the

mean value of HEC-QS and QS-THE are same. There are no any teaching criteria that can be repeated all three ranking.

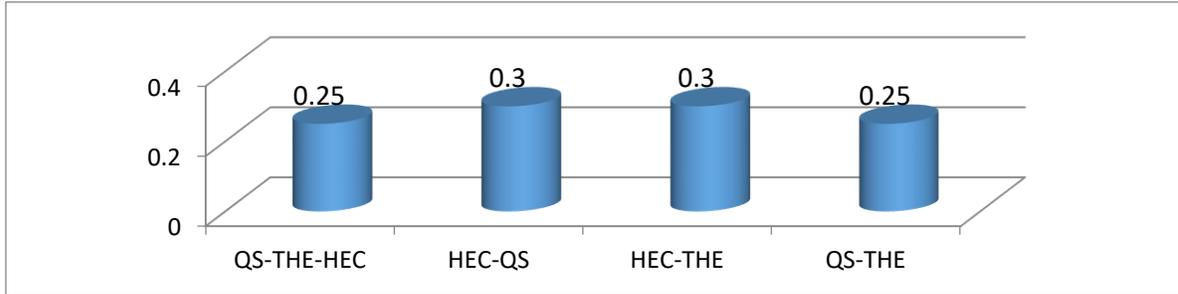


Fig.4 Bar Charts of Compared mean of national and international ranking research criteria.

Fig.4 show the mean value of ranking comparison of research criteria in bar charts. The results show that in research criteria HEC adopt some criteria from QS and some from THE. However, the comparing mean value of QS-THE and THE-QS-HEC is same that some criteria are repeated in all three rankings.

### 7. Conclusion and Suggestions

The paper compares the HEC ranking teaching and research criteria with QS and THE rankings. Results shows that HEC measure more number of criteria than QS and THE but still until the quality and the standard of Pakistani higher education institutions is not meet international standards'. The results of this study can be validated through the literature suggest by a Research paper of Noreen and Hussain in 2017. According to authors International standard that universities applied to maintain their ranking are research and teaching. During the last couple of decades, however, an increased focus has been observed on ranking of universities. Ranking of universities has also been served as an evaluation tool specially in the field of research and teaching. To avoided some of teaching and research criteria that possess international standards such as: academic peer endorsements, prolific academic experts, reputational survey of research, research income, overall student satisfaction, completion, and satisfaction with teaching, further study, faculty student ratio and reputational survey of teaching. Various types of surveys are conducted to measure most of these criteria however HEC does not collect survey based data and it is the one of reason that make hindrance for the Pakistani Higher education institutions to be globalized.

Ranking systems organize various criteria to compete the ranking systems. These criteria re more focusing on the research and teaching. The grooming of research culture increases the competition among the universities. Research suggests that ranking is a systematic way to create a competition among the universities. Universities can compete through adopting updated courses and advanced teaching methods.

“In striving to achieve international academic standards, HEC has taken several initiatives for uplifting higher education institutions (HEIs) of Pakistan at par with international universities by strengthening their quality. One of the measures taken by HEC to strengthen the quality of HEIs in Pakistan was initiation of ranking of universities at national level. Initiation of ranking by HEC

is intended to enhance quality of teaching, research and innovation”. The results of this study also shows the same results that HEC needs to be revised research and teaching criteria in order to compete at international level.

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