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# Research & Development Practices Across Pakistan: An Evaluation Study on Affiliated Institutions

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**Abstract** *Higher education plays a vital role in developing the knowledge economy and producing skilled workers to empower human resources for the country. Like many other developing countries, Pakistan is struggling hard to improve the quality of higher education for sustainable development and participation in global progress. Since the last decade, Higher Education Commission Pakistan is committed to upgrading the quality of education, and for this purpose, HEC has designed Minimum Quality Standards (MQS) to assure quality for affiliated institutions. The main objective of the study was to evaluate R&D practices in affiliated institutions of Pakistan. The study was descriptive in nature, and a questionnaire based on Minimum Quality Standards was used to collect data from faculty members (n-168) of 28 affiliated institutions by using multistage sampling. The results indicated that affiliated colleges of two provinces, Punjab and Khyber Pohutukawa, were better in research and development practices than the institutions of Sindh and Baluchistan.*

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## Introduction

Quality Assurance, as a generic term, is being used for all forms of external quality monitoring, evaluation and review. Harvey (2008) defines "Quality Assurance has collision on the educational system". This is a systematic process to review and determine the program's standards, objectives and outcomes according to preset criteria. The purpose of this review process is to improve the planning and execution of the program. It is also known as a tool in higher education for program assessment (Malik & Ameen, 2020). The quality of these educational programs further establishes the performance of higher education that ultimately play its role in the economic development of the country. Especially the developing countries like Pakistan are struggling hard to improve quality in higher education to support the economy. A well-established quality assurance program increases employment opportunities, develops the education and training of future employees, facilitates an enabling learning environment, harnesses future leaders. Therefore, it fuels the engine of economic and social development at the regional, national and international levels (S. Ayaz, Rashid, & Ramzan, 2020;Mahmood, Akhtar, & Butt, 2015). As educational institutions are considered the only knowledge houses that can develop a knowledge economy by producing skilled and desirable human resources. With this vision, the world has reformed educational institutions, and the chemistry of the knowledge they offer has been changed according to the socio-economic needs of national and international communities (Murad & Aly, 2021). Thus, the primary focus of education on teaching has gradually transformed into research and development as well as service to the community. Higher education thus brings a great impact on the economy as it has emerged as one of the key factors to promote the socio-economic growth of society through teaching

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and research. Thus, the role and significance of higher education in the country are crystal clear. For the development of human beings in society and sustainable survival, higher education is instrumental. For maintaining balance in society, higher education has no substitute. It helps societies grow on equality, with no discrimination of gender, religion, caste and creed. It actually enhances the quality of a society based on value (Horn, 2010; Materu, 2007; Mirza, 2015).

The currently emerging inclination towards higher education in Pakistan has given rise to the number of students. Affiliated colleges have also started BS programs to facilitate the accelerating number of students. The quantitative expansion has, however, raised serious questions of quality in higher education (A. AYAZ & SHARJEEL, 2020). In qualitative terms, it is the ultimate responsibility of higher education institutions to build the nation by developing intellectual capital, enhancing creativity and ultimately creating entrepreneurs to support the economy of the country. However, due to a number of reasons, the quality of education is too poor to meet these expectations and international standards of knowledge, skill and attitude (Sadiq & Akhter, 2020). The affiliated colleges and at places even the affiliating universities hardly come up to the international standards in terms of skilled faculty, physical infrastructure, learning resources, academic facilities and availability of learning aids resulting to produce poor quality of graduates are hardly meeting the expectations of the national labor market (Hawkins, 2014; Parveen, Rashid, Iqbal, & Khan, 2011; Qureshi; Sethi & Javaid, 2017).

The Higher Education Commission has prepared a plan of minimum quality standards manual for affiliated institutions in Pakistan. The manual also contains guidelines for carrying out the institution's evaluation (Batool & Qureshi, 2007; Mishra, 2007). The main focus of this plan is to advance the quality of education and discourage the trend of fake institutions, bogus and substandard institutions in which a lot of students have been wasting their time, money, and resources. Ten revised minimum quality standards were developed in 2018 under the TESP project. However, feedback from international agencies has not been encouraging as World Bank Report No 47 (2011) highlights that the quality of the affiliated institutions in Pakistan is not satisfactory. The report also pointed out the quality of the current model of affiliation for institutions. This is an important point to consider that why the majority of the colleges failed to perform and some others did not get the system to be an obstacle in the way of their outstanding performance? One general factor for improved performers was their high-quality leadership and faculty as well as good administration at the institution level. Even the current studies show a big difference in the quality of Affiliated Colleges (e.g., HEC and World Bank, TESP, 2014). It was observed by Higher Education Commission that the improvement of affiliated colleges and institutes is obligatory to maintain quality in higher education as a large number of students are enrolled in these affiliated institutes. Therefore, Higher Education Commission took many steps to improve the quality of these colleges through various short trainings, guidelines and evaluation modules. However, it needs to be well understood that there are various interacting factors that decide the quality of education that include, among others, the quality of the leadership of the college, faculty staff, curricula being followed, facilities such as internet, computers, labs, library, student amenities and classrooms (Ahmad & Yasmeen; Batool, Rashid, & Riaz, 2013).

Higher Education Commission has taken up the issues of Affiliated Colleges as a challenge and included it in Tertiary Education Support Program (TESP) as a Disbursement Linked Indicator (DLI 4). Acad. Division of Higher Education Commission has given a Manual of Guidelines based on Minimum Quality Standards (MQS) to be followed by the Affiliating universities for Quality Assurance. However, these Standards are initially for the purpose of conceding affiliation to colleges, similar to the Eligibility Requirements and Standards for Accreditation followed by the Middle States Commission on Higher Education, USA.

Recent HEC vision 2025 focuses more on making the higher education institutions serve as "engine of socio-economic development of Pakistan" and aims to bring structural changes that can help produce qualified graduates fully recognized and accepted for the national and international world of work (Hou, Zhang, Justiniano, Lu, & Jun 2020; Parveen et al., 2011). One of the ways to translate the vision 2025 into


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reality is considered the improvement in the quality of higher education. However, critical review of higher education reveals that the standards of the quality of higher education in Pakistan need to be improved significantly to achieve the goals of competitiveness with international standards and to create the foundations of a Knowledge Economy and Compatibility(Fatima, Humayun, Anwar, & Shafiq, 2018; Van der Walt, 2013).

## Current Research Study

There is no pragmatic indigenous study has been found during a review of literature that has yet investigated the issues of quality assurance and effectiveness of affiliated institutions in Pakistan. Undeniably, a huge part of our graduates is being qualified in affiliated institutions in Pakistan. It would be deficient rather inappropriate if the policy is not being helped by the condition analysis of affiliated institutions. Pakistan is a resource constraint country in terms of economics. In such a situation, the role of affiliated institutions can never be neglected in future. Higher Education Commission is focused on improving the quality of affiliated institutions. However, quality improvement needs evaluation studies and feedback from stakeholders. This study would be of great value in this regard to support policymakers in general and Higher Education Commission specific. This study focuses on one of the minimum quality standards of Quality assurance by the higher education commission Pakistan, i.e., research and development (R&D) practices in affiliated institutions of Pakistan. HEC is increasing the affiliation of private institutions in Pakistan regarding quality assurance. Higher Education Commission is also trying to investigate issues of quality assurance of affiliated institutions in Pakistan.

## Objectives of Study

The study intends to:

1. Critically review the issues and challenges related to Minimum Quality Standards developed for the quality assurance of affiliated colleges in Pakistan.
2. Compare the quality among four provinces on the standard "research and development (R&D) practices "in affiliated colleges based on the refined Minimum Quality Standards developed by Higher Education Commission Pakistan.
3. Recommend improvement strategies for the quality of research and development in affiliated colleges.

## Research Questions

A study was conducted to answer the following questions:

1. What are the major issues and challenges of Minimum Quality Standards developed for the quality assurance of affiliated colleges in Pakistan?
2. Which province is leading in practising research and development in the domain of research and development (R&D) in affiliated colleges based on the refined Minimum Quality Standards developed by Higher Education Commission?
3. What strategies can work to improve the quality of research and development practices in affiliated colleges?

## Method and Procedure

The purpose of this study was to investigate research and development (R&D) practices for the quality assurance of affiliated institutions in Pakistan. The study was descriptive in nature, while the survey method was used to gather information from respondents. All the principals and faculty members of Affiliated Colleges in Pakistan were the populations of the study. There are 2357 colleges in total registered under the affiliation system of different degree-awarding institutions of four provinces of Pakistan, i.e., Punjab, Sindh, KPK, and Baluchistan. A multistage sampling procedure was used to collect data from respondents. Initially, a stratified sampling method was used to select *n-35* institutions (universities *n-7* & colleges *n-28*). Secondly, the census method was used to collect data from the principals n-35 working in the selected institution. Lastly, a convenient sampling method was used to select faculty members *n-140* from these institutions. The convenient method was used due to COVID-19 situations, and only willing and available faculty members were selected. The total respondents of the study were *n-168.* Table 1 shows the sample selection procedure.

Table 1. Sample Selection

| Stage 1 Selection of Institutions by using a stratified sampling method | | |
|---|---|---|
| Provinces | Affiliating University | Affiliated College |
| Punjab | 04 | 16 |
| Sindh | 01 | 04 |
| KP | 01 | 04 |
| Baluchistan | 01 | 04 |
| Total | 07 | 28 |
| Stage 2 Selection of Respondents (Principals) by using a census sampling method | | |
| Principals | 07 | 28 |
| Total | | 28 |
| Stage 3 Selection of Respondents (faculty members) by using a convenient sampling method | | |
| Faculty Members | 28 | 140 |
| Total Respondents | | 168 |

The questionnaire was used to determine the effectiveness of research and development practices for quality assurance in affiliated colleges in Pakistan. The questionnaire was developed from the minimum quality standards document. After adopting the validation protocol of the tool, it was administered properly.

Prior consent was taken from the head of the institution. Although due to COVID 19 restrictions, researchers face problems in getting information from the affiliated colleges. After evaluating the research and development practices from the affiliated colleges, data were tabulated and analyzed by using SPSS-22. The collected data were analyzed to find out research and development (R&D) practices of affiliated and affiliating colleges with the help of appropriate statistical formulas (percentage, mean score ANOVA, and t-test).

## Results of the Study

On the basis of the analysis of the study following results were drawn:

Table 2. Research and Development

| Statements | Provinces Punjab | | Sindh | | KPK | | Baluchistan | |
|---|---|---|---|---|---|---|---|---|
| | $\bar{x}$ | σ | $\bar{x}$ | σ | $\bar{x}$ | σ | $\bar{x}$ | σ |
| The college has developed strong links to various national organizations for collaborative research. | 3.79 | 1.187 | 2.7 | 1.261 | 3.6 | 1.095 | 3.9 | 0.718 |
| The college has diversified its sources of income through various means other than official grants and students' fees. | 3.2 | 1.06 | 2.2 | 0.768 | 3.4 | 0.754 | 2.85 | 1.137 |
| The college extends services such as laboratory, accommodation, workshop room, grounds & building for income generation. | 3.76 | 1.058 | 2.35 | 0.745 | 4 | 0.649 | 2.65 | 0.813 |
| The college promotes an environment for conducting applied research. | 3.46 | 1.043 | 2.6 | 1.046 | 3.85 | 0.489 | 2.6 | 1.188 |

| Statements | Provinces Punjab | | Sindh | | KPK | | Baluchistan | |
|---|---|---|---|---|---|---|---|---|
| | $\bar{x}$ | σ | $\bar{x}$ | σ | $\bar{x}$ | σ | $\bar{x}$ | σ |
| The college has included courses in academic programs to learn research skills. | 3.24 | 1.183 | 2.55 | 1.099 | 3.45 | 0.999 | 2.3 | 1.129 |
| The college encourages the students/faculty to the publication of their completed research projects. | 3.48 | 1.125 | 3.25 | 1.118 | 3.05 | 1.05 | 2.85 | 0.671 |
| The college has been publishing research journal/s to share knowledge and dissemination innovative ideas. | 2.84 | 0.999 | 2.8 | 1.281 | 3.4 | 0.94 | 2.4 | 0.883 |
| The college organizes research workshops, seminars and national/international conferences for promoting R&D. | 3.77 | 1.091 | 3.1 | 0.852 | 3.8 | 0.616 | 2.85 | 1.04 |
| The college maintains a discipline-wise Alumni records. | 3.81 | 0.828 | 2.75 | 1.118 | 3.5 | 0.761 | 2.75 | 0.967 |
| The college organizes regular job fairs for students | 3.7 | 1.205 | 3.05 | 0.887 | 4.2 | 0.616 | 3.05 | 0.759 |
| The college has established a policy related to intellectual property and the ethics of scientific research. | 3.61 | 1.131 | 2.6 | 0.94 | 4.3 | 0.571 | 3.15 | 0.933 |
| The college supports scientific research by providing material and technological support. | 3.19 | 1.08 | 2.75 | 0.716 | 4.05 | 0.686 | 2.35 | 0.875 |
| The college has a well-documented record in both hard and soft form of all the research reports, theses and research papers & publications produced by the college. | 3.51 | 1.006 | 3.2 | 0.616 | 3.8 | 0.616 | 2.7 | 0.733 |

The results of table 2 on Research and Development were concluded by one-way ANOVA. The teacher's responses were observed towards the statement, "The college has developed strong links to various national organizations for collaborative research" the mean value of province Punjab was (3.79) with a standard deviation (1.187), and the mean value of Sindh province was (2.7) with standard deviation (1.261). While the mean value of KPK toward said statement was (3.6) with a standard deviation (1.095), and the mean value of Baluchistan towards this statement was (3.9) with a standard deviation (0.718). It concluded that KPK province had the highest mean value as compared to all other provinces. Punjab mean value was also good in this regard. It was also observed towards the statement that the mean value of Sindh was very low. It was observed that Baluchistan also had the lowest mean value towards this statement but was better than Sindh mean value. The mean values of the statement "the college has diversified its sources of income through various means other than official grants and students' fee" was recorded as the Punjab province mean value was (3.2) with a standard deviation (1.06) while the mean value of Sindh province was recorded as (2.2) with standard deviation (0.768). Accordingly, the mean value of KPK toward said statement was (3.4) with a standard deviation (0.754), and the mean value of Baluchistan towards this statement was (2.85) with a standard deviation (1.137). Through mean values calculation, it was observed that the mean

value of KPK rank high as compared to all provinces mean values. In this regard, Punjab existed second in rank. While it concluded that Sindh had the lowest mean value toward this statement and Baluchistan rank second in lowest mean values respectively.

The responses recorded towards the statement "The college extends services such as laboratory, accommodation, workshop room, grounds & building for income generation." the mean value of province Punjab was (3.76) with a standard deviation (1.058), and the mean value of Sindh province was (2.35) with standard deviation (0.745). While the mean value of KPK toward said statement was (4.00) with standard deviation (0.649), and the mean value of Baluchistan towards this statement was (2.65) with standard deviation (0.813). It was explored that the mean value of KPK was greater as compared to all other provinces mean values. In this regard, the Punjab province mean value existed in second in mean values rank, but it was observed that there was a very rare difference in Punjab and KPK mean values. It observed that Sindh had the lowest mean value towards this statement.

The responses of teachers were recorded towards the statement "The college promotes an environment for conducting applied research" the mean value of province Punjab was (3.46) with a standard deviation (1.043), and the mean value of Sindh province was (2.6) with standard deviation (1.046). While the mean value of KPK toward said statement was (3.85) with a standard deviation (0.489), and the mean value of Baluchistan towards this statement was (2.6) with a standard deviation (1.188). It concluded that the mean value of KPK was high than all other provinces mean values. While the Punjab province means was also good towards this factor. Baluchistan and Sindh province mean values observed same and very poor towards this statement.

The teachers respond towards the statement, "The college has included courses in academic programs to learn research skills" the mean value of province Punjab was (3.24) with a standard deviation (1.183), and the mean value of Sindh province was (2.55) with a standard deviation (1.099). While the mean value of KPK toward said statement was (3.45) with a standard deviation (0.999), and the mean value of Baluchistan towards this statement was (2.3) with a standard deviation (1.129). It observed that the mean value of KPK was high than all other provinces mean values. In this regard, the mean value of Punjab existed in second, but there was a very low difference in both mean values; they were alike the same. It was concluded that the mean value of Baluchistan province was very poor as compared to all other provinces mean values, but Sindh means the value was also poor in this regard.

The respondents respond towards the statement, "The college encourages the students/faculty for publication of their completed research projects" the mean value of province Punjab was (3.48) with a standard deviation (1.125), and the mean value of Sindh province was (3.25) with standard deviation (1.118). While the mean value of KPK toward said statement was (3.05) with a standard deviation (1.05), and the mean value of Baluchistan towards this statement was (2.85) with a standard deviation (0.671). Through mean values results, it was observed that the mean value of Punjab was better than all other provinces to mean values. With this, the mean value of Sindh also observed good, and there was a very low mean difference in Punjab and Sindh mean values. It was explored that Baluchistan means the value was very low towards this statement, and KPK province mean value was some better than Baluchistan mean value, but both were poor in this regard.

The responses of teachers were recorded towards the statement, "The college has been publishing research journal/s to share knowledge and dissemination of innovative ideas" the mean value of province Punjab was (2.84) with a standard deviation (0.999), and the mean value of Sindh province was (2.8) with standard deviation (1.281). While the mean value of KPK toward said statement was (3.4) with a standard deviation (0.94), and the mean value of Baluchistan towards this statement was (2.4) with a standard deviation (0.883). It was explored that the mean value of KPK was high than all other provinces mean values. In this regard, the mean value of Punjab existed as second in rank, but there was a very low difference in Punjab and Sindh mean values. It was explored that Baluchistan means the value was very poor in this regard.

Teachers' opinions were recorded towards the statement, "The college organizes research workshops, seminars and national/international conferences for promoting R&D" the mean value of province Punjab was (3.77) with a standard deviation (1.091) and the mean value of Sindh province was (3.1) with standard deviation (0.852). While the mean value of KPK toward said statement was (3.8) with a standard deviation (0.616), and the mean value of Baluchistan towards this statement was (2.85) with a standard deviation (1.04). It concluded that the mean value of KPK was greater than all other provinces mean values. Punjab mean observed second in high mean value rank with little difference from Punjab mean value. Baluchistan means value observed as very poor, and Sindh province mean value was good. In this way, KPK means value ranked first towards this statement.

The responses of teachers were recorded towards the statement "The college maintains discipline-wise Alumni record." the mean value of province Punjab was (3.81) with a standard deviation (0.828), and the mean value of Sindh province was (2.75) with a standard deviation (1.118). While the mean value of KPK toward said statement was (3.5) with standard deviation (0.761), and the mean value of Baluchistan towards this statement was (2.75) with standard deviation (0.967). It was explored that the mean value of Punjab was high than all other provinces mean values. In this regard, the mean value of KPK existed as second in rank, but there was a very low difference in Punjab, and KPK mean values. It was explored that Sindh and Baluchistan provinces mean values were the same and very poor.

Teachers' opinions were recorded towards the statement, "The college has established a policy related to intellectual property and ethics of scientific research" the mean value of province Punjab was (3.7) with a standard deviation (1.205), and the mean value of Sindh province was (3.05) with standard deviation (0.887). While the mean value of KPK toward said statement was (4.2) with a standard deviation (0.616), and the mean value of Baluchistan towards this statement was (3.05) with a standard deviation (0.759). It concluded that the mean value of KPK was greater than all other provinces mean values. Punjab means observed second in high mean value rank with little difference from KPK mean value. Province Sindh and Baluchistan mean the values observed same and very poor towards this statement.

The responses of teachers were recorded towards the statement "The college has established a policy related to intellectual property and ethics of scientific research." the mean value of province Punjab was (3.61) with a standard deviation (1.131), and the mean value of Sindh province was (2.6) with standard deviation (0.94). While the mean value of KPK toward said statement was (4.3) with a standard deviation (0.571), and the mean value of Baluchistan towards this statement was (3.15) with standard deviation (0.933). It was explored that the mean value of KPK was high than all other provinces mean values. In this regard, the mean value of Punjab existed as second in rank, but there was a very low difference in Punjab and KPK mean values. It was explored that Sindh means the value was very poor in this regard and Baluchistan mean value was some better from Sindh province.

Teachers' opinions were recorded towards the statement, "The college supports scientific research through providing material and technological support." the mean value of province Punjab was (3.19) with a standard deviation (1.08), and the mean value of Sindh province was (2.75) with standard deviation (0.716). While the mean value of KPK toward said statement was (4.05) with a standard deviation (0.686), and the mean value of Baluchistan towards this statement was (2.35) with a standard deviation (0.875). It concluded that the mean value of KPK was greater than all other provinces mean values. Punjab mean observed second in high mean value rank with little difference from Punjab mean value. Baluchistan mean value observed very poor and Sindh province mean value also poor but some good from Baluchistan mean value towards this statement.

The responses of teachers were recorded towards the statement "The college has a well-documented record in both hard and soft form of all the research reports, theses and research papers & publications produced by the college" the mean value of province Punjab was (3.51) with standard deviation (1.006) and the mean value of Sindh province was (3.2) with standard deviation (0.616). While, the mean value of KPK

toward said statement was (3.8) with standard deviation (0.616) and the mean value of Baluchistan towards this statement was (2.7) with standard deviation (0.733). It was explored that the mean value of KPK was high than all other provinces mean values. In this regard the mean value of Punjab existed in second in rank but there was the very low difference in Punjab, and KPK mean values. It was explored that Baluchistan provinces mean values were very poor and Sindh mean value was also poor towards the statement.

Table 3. Post Hoc Test (Research and Development)

Multiple Comparisons

| (I) Province | (J) Province | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| | | | | | Lower Bound | Upper Bound |
| Punjab | Sindh | .72788* | .09731 | .000 | .4731 | .9827 |
| | KPK | -.23365 | .10641 | .134 | -.5136 | .0463 |
| | Balochistan | .68942* | .10007 | .000 | .4270 | .9518 |
| Sindh | Punjab | -.72788* | .09731 | .000 | -.9827 | -.4731 |
| | KPK | -.96154* | .08952 | .000 | -1.2026 | -.7205 |
| | Balochistan | -.03846 | .08188 | .965 | -.2585 | .1816 |
| KPK | Punjab | .23365 | .10641 | .134 | -.0463 | .5136 |
| | Sindh | .96154* | .08952 | .000 | .7205 | 1.2026 |
| | Balochistan | .92308* | .09251 | .000 | .6743 | 1.1719 |
| Balochistan | Punjab | -.68942* | .10007 | .000 | -.9518 | -.4270 |
| | Sindh | .03846 | .08188 | .965 | -.1816 | .2585 |
| | KPK | -.92308* | .09251 | .000 | -1.1719 | -.6743 |

*. *The mean difference is significant at the 0.05 level.*

Dependent Variable: RD
Games-Howell

Through Post Hoc Test, multiple comparisons of provinces were drawn of the factor Research and Development. Through Games-Howell Post Hoc Test, it was found that Punjab province had signification relation with KPK (.134). The mean difference of Punjab and KPK was very low (-.23365) as compared to other provinces, Punjab and Sindh's mean difference was (-.23365), which was observed very high as compared to all other provinces, Punjab and Baluchistan difference was (.68942), which observed high. Through the Games-Howell Post Hoc Test, it was observed that the mean difference of Sindh with Punjab was (-.72788), which means the Sindh province was less followed the factor Research and development. Sindh's means difference with KPK was much high as compared to other provinces' mean difference (-.96154), which means Sindh was less followed by this factor as compared to others. The mean difference between Sindh and Balochistan was very low (-.03846), which means Sindh and Balochistan co-relate with each other and significant as (.965). Games-Howell Post Hoc Test showed the results of KPK mean difference and significant level. KPK significant with Punjab as (.134), which means both provinces had close relation to follow this factor. On the other hand, KPK means difference with Balochistan was high (.92308) and so on, the mean difference of KPK with Sindh was much high (.96154). It was observed that the mean difference of Sindh was high as compared to Punjab province. With multiple comparisons of provinces toward Research and Development, the mean difference between Balochistan and Punjab was (-.68942), which was high, and the mean difference between Balochistan and Sindh was not so high (.03846) and had significant close relation as (.965). The mean difference of Balochistan with KPK was also very high as -.92308). So, it was concluded that KPK ranks the best in this factor as compared to other provinces. Balochistan and Sindh's performance was very low towards it.

Table 4. Summary of the standard (Research and Development)

| ANOVA Descriptive | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
| | | | | | Lower Bound | Upper Bound | | |
| Punjab | 80 | 3.4894 | .71495 | .07993 | 3.3303 | 3.6485 | .08 | 4.85 |
| Sindh | 20 | 2.7615 | .24819 | .05550 | 2.6454 | 2.8777 | 2.38 | 3.38 |
| KPK | 20 | 3.7231 | .31410 | .07024 | 3.5761 | 3.8701 | 3.15 | 4.31 |
| Balochistan | 20 | 2.8000 | .26926 | .06021 | 2.6740 | 2.9260 | 2.38 | 3.23 |
| Total | 140 | 3.3203 | .66784 | .05644 | 3.2087 | 3.4319 | .08 | 4.85 |

The results of the standard Research and Development drawn through ANOVA Descriptive. It was found that the mean score of Punjab province was (3.4894) and the standard deviation was (.71495). But it was found that the mean of KPK (3.7231) with standard deviation (.31410) was much high and closely related with Punjab mean. It was observed that the mean of Balochistan (2.8000) with a standard deviation (.26926) was low as compared to all other provinces. On the other hand, the mean value of Sindh (2.7615) and standard deviation (.24819) was much low than Balochistan's mean and all other provinces' mean values. It was concluded that KPK rank first and Punjab ranks second, and Sindh rank lasts for the factor Research and Development.

## Discussion and Conclusions

The standard "research and development" was analyzed through different aspects; data were obtained through teachers' opinions. Results of the study clearly indicated that the colleges had developed strong links to various national organizations for collaborative research. It was observed that the mean score of Baluchistan was high than other provinces, and the mean of Sindh was very poor. Results towards the statement "The college has diversified its sources of income through various means other than official grants and student's fee". It was observed that the mean score of KPK was higher than other provinces, and the mean of Sindh was very poor. Khan and Rehman Khattak (2014) investigated a similar kind of result in their study. The results of the province towards the statement "The college extends services such as laboratory, accommodations, workshop room, grounds and building for income generations". It was observed that the mean score of KPK was higher than other provinces, and the mean of Sindh was the lowest. Towards the statement "The college promotes an environment for conducting applied research",. It was observed that the mean score of KPK was higher than other provinces, and the mean of Sindh and Balochistan were lowest. The results of the province towards the statement "The college has included courses in academic programs to learn research skills". It was observed that the mean score of KPK was higher than other provinces, and the mean of Baluchistan was the lowest. Towards the statement "The college encourages the students/faculty for publication of their completed research projects",. It was observed that the mean score of Punjab was higher than other provinces, and the mean of Balochistan was very poor. The results of the province towards the statement "The college has been publishing research journal/s to share knowledge and dissemination of innovative ideas" the mean of KPK was high than other provinces, and the mean of Balochistan was very poor. Towards the statement "The college organizes research workshops, seminars and national/international conferences for promoting R & D",. It was observed that the mean score of KPK was high than other provinces, and the mean of Baluchistan was very poor. The results of the province towards the statement "The college maintains discipline-wise Alumni record". It was observed that the mean score of Punjab was high than other provinces, and the mean of Sindh and Baluchistan were very poor. The results support the finds of Junejo, Memon, and Mohammad (2018). Towards the statement "The college organizes regular job fairs for students",. It was observed that the mean score of KPK was high than other provinces, and the mean of Sindh and Baluchistan were very poor. The results of the province towards the statement "The college has established a policy related to intellectual

property and ethics of scientific research". It was observed that the mean score of KPK was high than other provinces and the mean of Sindh was very poor. Towards the statement "The college supports scientific research through providing material and technological support",. The results support the findings of Memon, Sajid, and Qureshi (2008). It was observed that the mean score of KPK was high than other provinces, and the mean of Balochistan was very poor. The results of the province towards the statement "The college has a well-documented record in both hard and soft form of all the research reports, theses and research papers and publications produced by the college". It was observed that the mean score of Punjab was high than other provinces, and the mean of Balochistan was very poor. With multiple comparisons of provinces toward Research and Development, it was concluded that KPK rank first and Punjab ranks second and Sindh rank last.

## Recommendations

Following are the recommendation to improve the practices for the quality of research and development in affiliated institutes of the country:

1. According to the new policy of HEC, most of the affiliated colleges in the public sector are offering four years BS programs. Hence, affiliated colleges now require major restructuring and clear roles and responsibilities of various stakeholders, and after the 18th amendment, new regulatory authorities must take responsibility for addressing the gap between what is desired and what is available.
2. Affiliating universities review their affiliating process and make new parameters for affiliation, as well as ensure regular and efficient monitoring systems for affiliating colleges. The universities expand their regulatory and academic bodies with a reasonable representation of affiliated colleges to ensure research and development practices.
3. Quality Enhancement Cells of the affiliating universities may take the role of Quality Assurance Agency (QAA) at HEC for affiliated colleges to ensure that the policies regarding the enhancement of the research practices throughout the country.
4. Along with other facilities, the faculty must be provided with multiple opportunities to excel in their research skills and to become innovative. The opportunities may include trainings on research methods, tool development and data analysis. Faculty may also be empowered with financial support for research projects, travel, conference and publication grants as this could be the only way for them to transform the theory into practice and understand their new role in the knowledge economy of the 21st century.
5. Affiliated colleges must recruit highly qualified teachers who not only holds research degree in their academic carrier and are actively engaged in research.

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