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Research Culture at Public Universities in Pakistan: Academics' Perspective

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The study was designed to explore research culture at public universities in Pakistan. Faculty members of general public sector universities were approached for data collection by using a questionnaire. By adopting multistage cluster sampling method, 382 faculty members were selected from six delimited universities of Punjab, Pakistan. Cronbach Alpha value (0.961) showed high level of reliability. The collected data was analyzed by using various statistical tests with the help of Statistical Package of Social Sciences (SPSS). Teachers' opinions were divided and close to neutral value but respondents were vaguely accepting that research culture at public universities was improving. Teachers had positive perception about supervisory practices, available physical facilities, management support, dissemination of research and policies for improving research culture at universities. Whereas, respondents believed that human resources capacity building activities to develop research skills, collaboration and funding were less than the requirements of the universities to establish a rich research culture. There was no significant difference among the perception of teachers about research culture by gender and age. It is recommended that there was need to conduct trainings for researchers, develop academia-industry linkage, update laboratories and libraries, revise policies; and provide consultancy services to the private sector for earning funds.

1. Introduction

The sustainability of a research culture at universities requires a holistic and forward-thinking approach. A thriving research culture at universities is the lifeblood of intellectual progress and societal advancement. Universities conduct researches in order to examine societal issues. In order to address unanswered questions and unresolved problems, the research aims to foster an inquiry-based mindset in both students and researchers. Good research resolves the critical problems, addresses the questions, creates knowledge and gives solutions of industrial problems (Ravichandran, 2018). The modern universities give top priority to the research and solution of the problems of their relevant industries. Importance of research can be bee seen in curriculum, program designs, criteria of appointments and rewards and funding plans in the universities of technological advanced countries in the world (Ryan & Goldingay, 2022). Ideal research culture exists in result of excellent organizational culture. Research climate demands mutual respect of researchers, constructive feedback of supervisors and encouragement from managers and policy makers. Collaborative work of academia and industry demands psychologically safe environment where researchers can work with confidence (Hasan & Kashif, 2021).

Research culture is not just the publication of research papers but to develop a value system in which system can nourish and bring researchers and stakeholders close to each other. Research culture is the name of knowledge creation, sharing and development rather than publishing research papers in journals (Kashif et al., 2022). Previously from last two decades, it is noted that change in leadership and resource allocation have developing and speeding up the research culture in the Pakistan. Number of universities and PhD scholars increased enormously in last two decades (Naseem et al., 2019). It is also a strong attribute of research culture to have an effective management and communication. Appropriate resources, trainings for faculty and collaboration are very important for research culture. Universities in Pakistan have limited facilities but supervisors are doing best to improve the research culture. Geographical limitations are also a major challenge faced by universities in Pakistan(Naseem et al., 2019). Research policies, active management, funding, benefits and incentives, research councils and committees, conducive working environment, infrastructure and physical facilities, local, international and inter university collaboration were the major factors that contributed a major role in developing research culture at universities (Mapa, 2017).

Conducting research, innovation and quality education are the prime functions of the universities. Higher education institutes have placed emphasis to conduct industrial based research to solve problems of the stakeholders, community and industry. They have also developed policies and programs to solve industrial solution through collaborative researches (Bourke & Loveridge, 2017). Universities have been facing many problems in developing research friendly environment. Faculty members believed that academic work load, financial limitations, multiple designations are lack of mentoring the main problems that researchers have faced while conducting and publishing research papers. It was also concluded that collaboration may reinforce and improve the research capability and help a lot to establish research friendly environment (Vecaldo et al., 2019). Proper management and monitoring of the performance of faculty members and supervisors expands the culture of research at universities. Career pathway of researchers is also a major stimulator of research productivity

(Henry et al., 2020). Higher education commission (HEC) in Pakistan working positively to address such issues and to maintain the quality of research in Pakistan (Fatima et al., 2020). Higher education commission provided a lot of opportunities to develop national and international collaboration and to solve local and industrial problems in Pakistan (Ashraf, 2019).Scarcity of financial resources, adopted policies and lack of government interest were the major problems faced by the universities in Pakistan (Ali et al., 2018). Gender bigotry, political involvement, favoritism, partially equipped laboratories, scarcity of high tech equipment and weak collaboration are the major issues in the universities of Pakistan that are effecting research culture (Murtaza & Hui, 2021). Policies developed to upgrade the system of education and to develop rich culture in Pakistan cannot achieve their goals because of political instability and involvement (Ibad, 2017).

Public universities in developed areas of Pakistan with more experience had high level of performance as compared to other universities. Geographical and gender-based diversity exists in Pakistan. Universities in developed areas of Pakistan and male have high level of performance and achievements as compared to others (Naseem et al., 2019). Universities are considered a hub of research and teaching (Ali et al., 2018). Research culture plays a vital role in shaping the overall academic environment at universities. A strong and rich research culture foster innovation, enhances the quality of scholarly work, and contributes to the performance of the institute. Quality of research and productivity increased the ranking of universities (Batool, 2018). However, despite this, the research culture at universities remained underexplored in the academic literature. The situation of research culture at the universities in Pakistan is not much satisfactory. There is a need to conduct research on this specific issue. Therefore, this research paper aims to provide a comprehensive insight of existing research culture at public universities in Pakistan.

1.1 Research Objectives

Following are the objectives of the research study;

1. To explore the existing research culture at public universities in Pakistan.
2. To know the perception of teachers about research culture at universities by gender, qualification, age, faculty, region, department and university.
3. To recommend suggestions to improve the research culture at universities in Pakistan.

2. Literature Review

Universities in advanced countries have developed strong research culture and conduct researches leading to innovations. In this modern world universities are playing effective role in promoting culture of research and innovation to strengthen the economy of the countries. It is the need of time to have to strong research culture to meet the day to day changing of this transforming world. Universities are developing research supporting infrastructure, developing collaboration, hiring visionary leadership and faculty, maintaining strong communication system, arranging research funding and incentives for researchers to develop strong research culture (Selingo et al., 2018). Universities provide an environment which enhance students' well-being. Universities develop such a culture in which students can groom in a holistic manner. Organizational culture of the universities engage all the students in such a that students

can play their active role in society (Trivedi & Prakasha, 2021).

Research managers in higher education are appointed to develop vibrant and productive research climate for the researchers in universities (Rossouw, 2020). Managing research at universities is a challenging job. There is need to develop policies for the autonomy and support of universities to develop research culture at universities (Thien, 2021). Competent leaders and managers with strong leadership skills are the basic requirement of the research universities. Such leadership has skills to lead the subordinates to achieve the desired goals of the universities. Usually educational managers remain busy in meetings, paper work and protocol visits (Balyer & Ozvural, 2021). Policies, regulations, norms and traditions contributed much in establishing research culture at universities. Universities designed many policies and legal documents to improve and enhance university research (Thien, 2021). Stakeholders and relevant industries were not satisfied from the current policies and plans of the universities. Political interference has destroyed the credibility of the higher education institutes adversely (Ibad, 2017). It was also reported that the policies and regulations remained ineffective and policies were not implemented with true spirit. With the addition of all new policies and regulation the progress of research and implementation of policies remained limited because of long standing norms and conventional methods of research (Thien, 2021).

Universities in advanced countries manage human resource capacity to improve research skills of the researchers (Thien, 2021). Higher education institutes of advance countries manage, share knowledge and conduct activities to train professionals for successful research and innovation activities. The research professionals are trained to conduct research and innovation activities that can meet the new trends of the market and solve the problems of the industry (Rodríguez & Espinoza, 2017). All the research professionals organized themselves according to the criteria established by the international quality system (Strauka, 2020). The new era of technology has brought many changing in the society which demands up to date knowledge and professionals with high technical skills. Trainings and workshops are needed to be conducted to make academicians able to keep pace with transforming world (Castro-Sanchez, 2021). Training, counseling and guidance is the need of every educational professional. Well trained and highly skilled professionals are the need of time (Khan et al., 2018b). Research work is getting importance with passage of time and trained research professionals are the need of time to improve the quality of education and research (Rojas & Espejo, 2020). Usually research students had weak technological and methodological competencies (Argandona et al., 2021). Education system in Pakistan is lacking appropriate training and technical support for the students. Technical support for the researchers is very necessary for conducting research in real sense to solve the problems of the community and industry rather than conducting research for the sake of research (Lakhotia, 2021). The research supervisors in universities develop research competencies of the research scholars. The universities need to arrange trainings and workshops to balance the skills of the supervisors so that they can guide the students to meet the demands of the industry (Petrie et al., 2015). The role of the supervisor is to explore problems and award topics that were not being researched previously. The supervisors who are expert in supervision of industrial researches should know the application of students' research outcomes. Universities have been facing scarcity of experienced supervisors who have industrial experience (Taylor & Humphrey, 2020).

Investment on physical infrastructure is very necessary to conduct research activities (Thien, 2021). Equipment and laboratories are the basic needs of the research universities. Laboratories and equipment help the institutes to conduct collaborative research and universities can generate income by providing facilities to private sector (Medina, 2018). Balyer and Ozvural (2021) concluded that standardized physical infrastructure and highly skilled academic professionals are extremely important for research universities. Huenneke et al. (2017) stated that universities which had weak physical infrastructure and limited facilities in laboratories faced many challenges in conducting research and applied researches were affected badly. Curriculum of mostly universities is not settled according to the needs of the industry. There is no tracking system for the university graduates that is creating very huge mismatch between supply and demand of the industry. Same as universities in Pakistan are lacking in conducting research leading to innovations because of poor collaboration between academia and industry (Fatima et al., 2020).

Function of research and innovation activities depends on the availability of research funding. But availability of sufficient funding is the major problem for the researchers (Thien, 2021). Majority of the respondents stated that research universities receive grants and funds from public sector and have no other source of funding or financial assistance (Balyer & Ozvural, 2021). The government of Pakistan is allocating less than 4% of GDP on education sector which is below the ratio recommended by UNESCO for education and literacy. In the result of limited funds induction of highly skilled teachers, provision of physical infrastructure, trainings and facilities in institutes are affected badly. The scarcity of funds affects the performance of all institutes that provides basic facilities especially health and education (Khan et al., 2018b). The performance of research publications is remarkable since last two decades after establishment of HEC. Research is not just publication of research papers but to solve the problems of the community and industry. Universities need to arrange platforms to disseminate research results to the relevant industries and forums so that research studies can play effective role in their relevant industries (Haq & Faridi, 2021).

3. Research Methodology

The study was descriptive in nature and quantitative method was adopted to explore the existing research culture at universities. A questionnaire was used for data collection because it is more reliable and economical to apply (Cohen, et al., 2017). The main objective of the study was to explore the existing research culture at public universities in Pakistan. The respondents of the research study were the PhD faculty members from the faculty of sciences and social sciences that were supervising research scholars at M.Phil and PhD level. It was very difficult to collect data from all the universities so the study was delimited to general public sector universities in Punjab, Pakistan. Multistage cluster sampling method consisted on four stages was used to select sample of the study from the population. Questionnaire consisted on five-point Likert Scale was developed for university teachers. Tool was divided in eight factors and consisted on 63 items. Survey method was used for data collection and questionnaire was administered to record responses. The faculty members were asked to submit responses on five-point Liker Scale from strongly disagree to strongly agree. Total 507 university teachers were contacted; 403 questionnaires were received back among them 382

were used for data analysis. The Cronbach Alpha of questionnaire about research culture scale of 63 items was 0.96 which shows high reliability of the tool. Teachers' perception about agreement and disagreement was analyzed after calculating frequencies and percentage by using Statistical Package of Social Sciences (SPSS). To compare the perception of teachers t-test and One Way ANOVA were applied by using SPSS. Statistical significance value p-value was taken to understand the difference of opinion.

4. Results

Table No 1: Factors Wise Teachers' Perception about Research Culture

Sr. No.	Factors	Responses (%)					Mean	SD
		SD	DA	U	A	SA		
1	Supervisory Practices	16.0	11.8	11.7	37.6	22.9	3.40	0.83
2	Physical Facilities	16.3	22.2	12.6	31.3	17.6	3.12	0.76
3	Management Support	16.8	22.4	13.8	26.8	20.2	3.11	0.94
4	Dissemination of Research	17.8	20.2	14.3	31.1	16.6	3.09	0.56
5	Policies	16.7	21.2	17.6	27.3	17.2	3.07	0.85
6	Human Resources Capacity	19.5	22.4	15.9	27.9	14.3	2.95	0.79
7	Collaboration	24.8	25.1	16.2	22.2	11.7	2.71	0.91
8	Funding	28.2	23.2	14.1	23.1	11.4	2.66	0.70
Overall Values		19.5	21.1	14.5	28.4	16.5	3.01	0.80

Table No 1 depicts factors wise overall perception of teachers about research culture at universities. Majority of the respondents (60.5%) believed that supervisory practices to develop research culture at universities were up to mark; 27.8% disagreed and 11.7% were not sure. More than half respondents (55.3%) respondents reported that available physical facilities were enough to conduct research activities in universities; 38.5% disagreed and 12.6% were undecided. Forty seven percent respondents believed that management of the university was supportive for developing research culture, 39.2% had different opinion and 13.8% were not sure about the statement. Nearly half of the respondents (47.7%) stated that universities properly disseminate the research results; thirty eight percent disagreed and 14.3% were not sure about it. It was perceived by 44.5% respondents that policies were research friendly; 37.9 disagreed and 17.6% were undecided. Findings showed that 42.2% respondents reported that human resources capacity building activities were conducted in the universities to enhance research skills of the teachers; 41.9% disagreed and 15.9% were undecided. Half of the respondents (49.9%) reported that there was poor collaboration and academia industry linkage at universities to support research activities; one third (33.9%) respondents had different opinion and 16.2% were undecided. More than half of the respondents (51.4%) stated that funding for research at universities was not enough; 34.5% had different opinion and 14.1% were undecided. Overall values showed that 44.9% respondents were satisfied from the research culture at universities; 40.6% respondents had different opinion and 14.5% were undecided.

Overall mean score 3.01 in Table No 1 shows the minimal positive perception of university teachers about research culture at universities. Mean value 3.40 positive perception of faculty members about supervisory practices for research work at universities. University teachers' perception was slightly positive about availability of physical facilities for research

at universities (M=3.12), management support for conducting research (M=3.11), dissemination of research (M=3.09) and policies (M=3.07). University teachers had negative perception about human resources capacity building activities, collaboration for enhancing research (M=2.71) and funding for research (M=2.66) at public universities in Pakistan.

Table No 2: Comparison of Teachers' Perception about Research Culture at Universities

Variables	Groups	N	Mean	SD	t	Sig.
Gender	Male	283	2.9477	.63275	-.705	.481
	Female	99	2.9994	.61372		
Qualification	PhD	337	2.9896	.62450	2.446	.015
	Post Doc.	45	2.7476	.61516		
Age	30-45 Years	220	2.9737	.62092	.459	.647
	46-60 Years	162	2.9439	.63782		
Faculty	Sciences	283	2.9989	.62948	2.000	.046
	Social Sciences	99	2.8530	.61204		

Table No 2 shows the overall perception of faculty members about research culture at universities. Significance value .481 shows that there was no significance difference among the perception of male and female teachers about research culture at universities as the significance value was greater than .05. Significance value .015 was less than .05 which depicted that there was a significance difference among the opinion of teachers having PhD and post Doctorate degree. Post Doctorate teachers (M=2.7476, SD=.61516) believed that research culture was not encouraging as compared to the perception of teachers having PhD degree (M=2.9896, SD=.6245). Mean value of PhD (M=2.9896) and Post Doctorate (M=2.7476) teachers were below neutral value 3 which showed negative perception. Significant value .647 was greater than .05 which depicted that there was no significant difference of opinion among the perception of teachers having different age about research culture. Mean values showed that the perception of teachers having age below 45 years (M=2.9737) and above 45 years (M=2.9439) was less than neutral value 3 which depicted those teachers had slightly negative perception about research culture at universities. Significance value .046 depicted that university teachers from faculties of sciences and social sciences had significantly different opinion about research culture at universities. Mean scores of faculty of science (M=2.9989, S.D=62948) and faculty of social sciences (M=2.8530, S.D=.61204) were below neutral value 3 which depicted that perception of teachers of both faculties was slightly negative about research culture at public universities in Pakistan.

Table No 3: Comparison of Teachers' Perception about Research Culture by Region

Region	N	Mean	SD	F-Value	P-Value
Northern Punjab	98	3.1172	.68160	4.250	.015
Central Punjab	168	2.8794	.60513		
Southern Punjab	125	2.9597	.60032		
Total	382	2.9854	.62902		

Table No 3 demonstrates the comparison of teachers' perception by designation about research culture at universities. Significance value .015 was smaller than .05 which depicted

that there was a significant difference among the perception of teachers about research culture at universities. Mean value of Northern Punjab (M=3.1172, S.D=.68160) depicted that teachers from universities of northern Punjab had slightly positive perception about research culture. Whereas, mean values of central Punjab (M=2.8794, S.D=.60513) and southern Punjab (M=2.9597, S.D=.60032) were below neutral value 3 which showed slightly negative perception of teachers about research culture at universities. Overall mean value (M=2.9854, S.D=.62902) showed the slightly negative perception of teachers about research culture at universities.

Table No 4: Difference of Teachers' Perception about Research Culture by Region

Sr. No.	Dependent Variable	Independent Group (I)	Independent Group (J)	Mean Difference	Std. Error	N	F	Sig.
1	Research Culture	Northern Punjab	Central Punjab	.23781*	.08157	382	4.250	.010

Table No 4 shows the comparison of teachers' perception about research culture at universities by region. Significance value .010 was smaller than .05 which depicted that research culture in the universities of northern Punjab was significantly high as compared to the universities of central Punjab.

Table No 5: Comparison of Teachers' Perception about Research Culture by Department

Department	N	Mean	SD	F-Value	P-Value
Economics	34	3.0258	.67158	2.173	.036
Education	35	2.8222	.61538		
Psychology	14	2.6623	.56121		
Mass Communication	15	2.5358	.46711		
Botany	47	3.0699	.66679		
Zoology	59	3.0044	.60860		
Physics	79	3.0336	.62691		
Chemistry	99	2.9593	.61155		
Total	382	2.8892	.60364		

Table No 5 demonstrates the comparison of teachers' perception by departments about research culture at universities. Significance value .036 was greater than .05 which depicted that there was significance difference among the perception of teachers about research culture at universities by departments. Mean values of the department of Economics (M=3.0258), Botany (M=3.0699), Zoology (M=3.0044) and Physics (M=3.0336) were above neutral value 3 which depicted those teachers had lightly positive perception about research culture at universities. Whereas, mean values of Education (M=2.8222), Psychology (M=2.6623), Mass Communication (M=2.5358) and Chemistry (M=2.9593) were below neutral value 3 which showed negative perception of teachers about research culture at universities. Overall mean value (M=2.8892) depicted those teachers of all departments showed negative perception about research culture at universities.

Table No 6: Comparison of Teachers' Perception about Research Culture by University

Sr. No.	Dependent Variable	Independent Group (I)	Independent Group (J)	Mean Difference	Std. Error	No.	F	Sig.
1	Research Culture	UNI 1 SP	UNI 6 NP	.49458*	.15503	382	7.366	.019
2		UNI 4 NP	UNI 2 SP	.41541*	.10228			.001
			UNI 3 CP	.34238*	.09366			.004
			UNI 5 CP	.49999*	.10585			.000
			UNI 6 NP	.68972*	.15049			.000

Table No 6 demonstrates the comparison of teachers' perception about research culture at universities. Teachers of University 1SP perceived that research culture was high in the university as compared to university 6NP (p=.019). Significance values showed that research culture was significantly high in university 1SP as compared to university 6NP. The second section of the table shows that research culture was significantly high in university 4NP as compared to university 2SP (.001), university 3 CP (.004), university 5CP (.000) and university 6NP (.000).

4.1 Discussion

Perspectives of higher education institutes are changing day by day with the change of demands of the society dramatically. The main purpose of the establishment of higher education commission was to enhance the research culture (Ali et al., 2018). University teachers had positive perception about supervisory practices at universities. Reguant et al. (2018) reported that research supervisors had complete understanding about research competencies and were fully aware of their role for motivating and raising awareness about research skills. Majority of universities had developed supervisory framework whereas as some of the universities had issues and challenges to develop active research culture (Luca et al., 2013). Universities are playing effective role in developing nations by providing students education that can resolve the issues of relevant industry. Universities are working positively on the provision of physical facilities to the students for quality education (Ullah & Ahmad, 2020). The current research study concluded that teachers had slightly positive perception about the availability of physical facilities to conduct researches and develop research culture at universities. Tatlah et al. (2015) concluded same results and stated that majority of the respondents were of the view that books in libraries, available research journals, manuals, use of science labs, equipment of science laboratories and computer labs were available in the universities. It was also stated that HEC has been working positively for the provision of physical facilities to develop research environment and culture at universities in Pakistan. Another researcher concluded that lack of physical resources and shortages of high tech equipment were the major problem in conducting industrial and applied researches (Naoreen & Adeeb, 2014). University management had a key role in developing research culture at universities. The present research study explored that university teachers has slightly positive perception about management support for researchers to conduct research activities at universities. Kok and McDonald (2017) stated that success of research universities depends on

the skills and knowledge ability of the educational managers. University managers who had clear goals, vision and support their researchers had positive correlation with the research productivity. University managers took positive measures and develop strategies to motivate researchers, monitor their performance, lead researchers in difficulties, resolve issues and facilitate the researchers to resolve problems through collaboration. Mostly managers tries their best to develop positive research culture at universities (Chan, 2021). Research universities share the results of the research studies and knowledge generated in the universities to the relevant industry and society to resolve the issues and problems. Usually, universities publish research journals to share the research results. Results of the present study depicted those teachers had nominal positive perception about the dissemination of research work at public universities. Universities and research agencies usually publish research results in research journals and ignore other sources of dissemination of research results. Research papers, thesis, monographs and research reports are easily available on websites and users have open access to these researches.

Results explored those educational institutions, universities, libraries and library associations showed low progress in developing green open access in Pakistan. There is a need to develop open access policies, setup institutional repositories and develop high tech libraries in Pakistani universities and research institutes (Sheikh, 2020). Developing research friendly policies to address the needs of university, society and industry is a difficult task. Policies should be developed in keeping it mind the local problems and issues but unfortunately policy makers in Pakistan borrow policies without bearing in mind the local problems (Khawar & Arif, 2019). In this present study university teachers had slightly positive perception about the research policies at universities. Ibad (2017) also stated that policies of universities need to be revised and necessary amendments should be made to improve the culture of research. Same as Khan et al. (2020) stated that policies needed to be revised for fund generation, innovation and commercialization at universities. University teachers had slightly negative perception about the human resources capacity building activities to improve research skills of the faculty members. Ahmad et al. (2018) argued that majority of the universities had no clearly defined policy of human resources capacity building. Employees once selected for job rarely found a chance for training and development. Recently HEC took initiatives to conduct trainings of university employees through The Indigenous On-Campus Training Program and Tertiary Education Support Program for management. Mostly universities focused on capacity building through internationalization and moving researchers to enhance their research experience by working at international level. There is a requirement to invest on capacity building and research that is relevant to local context by developing skills of local research community (Lee & Kuzhabekova, 2019). The rich research culture at universities based on strong academia industry collaboration. Teachers in the universities of Pakistan had negative perception about the collaboration to develop research culture at universities. Ambreen and Aftab (2015) stated that industries in the western countries had developed strong collaboration between academia and industry but situation in Pakistan is far behind in developing collaboration. There is a need to develop strong policies about academia industry linkage, technology transfer and patenting rights to promote strong collaboration. The researches explored that international collaboration had a wide impact and was proved more affective to solve problems as compared to local

collaboration (Sabah et al., 2019). Collaboration had a wide impact on the knowledge, skills of the young research scholars and capacity to manage researches independently (Mydin et al., 2021). Universities in Pakistan received funding from government. Teachers had negative perception about funding for research at universities in Pakistan. Lack of adequate funding from government is a major hurdle in developing research culture at universities in Pakistan (Ibad, 2017). Universities in Pakistan face lack of funds that directly affects the research performance at universities. Bureaucratic barriers in sanction of research funds affected the research productivity and performance badly at universities. The mechanism of securing funds is time taking and weak which affects the research performance adversely (Pham & Hayden, 2019).

Overall teachers' perception about research culture at universities in Pakistan was very close to neutral value 3. Teachers' perception was slightly positive about research culture at universities in Pakistan. Research needed to be extended beyond publications to developments and innovations to solve the industrial and societal problems (Mlitwa, 2016). Universities have enough resources to develop research culture at universities (Tucker & Tilt, 2019). Environmental, institutional and personal factors are the major factors that are affecting research culture at public universities in Pakistan (Iqbal et al., 2018). Knowledge creation and sharing is the main role of universities. University managers, teachers and researchers are playing the role of a change agent universities to develop research culture (Loaiza et al., 2016). Mostly research scholars in universities conducting academic researches just to fulfill academic or job requirements (Fatima et al., 2020). Research culture was very poor in Pakistan but since last two decades after the establishment of HEC research culture is developing positively in Pakistan (Ansari et al., 2016). Lack of trainings, funds, geographical limitations, and implementation problems of policies are affecting the research at universities in Pakistan (Khan et al., 2018). Teachers' perceptions by gender and age about the research culture were not much different. Faculty members having post doctorate qualification and teachers from the faculty of social sciences were not satisfied from the research culture at public universities in Pakistan. The results of the study show that research culture in universities of northern Punjab is high as compared to other regions that are underdeveloped. Naseem reported same results that the public universities with high experience have high level of performance as compared to other universities. The results shows that geographical and gender diversity also have a wide impact on the performance of the universities in Pakistan. Universities in developed regions produced more PhDs as compared to the universities underdeveloped regions. Results also shows that male have more opportunities as compared to the females. No doubt after the establishment of HEC research culture is developing at universities in Pakistan but mostly researchers conducting academic and basic researches just to meet the degree requirements without keeping in mind the solution of industrial or societal problems. Industrial researches and applied researches leading to innovations are the most missing factor at the public universities in Pakistan.

5. Implications and Conclusion

The current research study has significant practical implications for the improvement and advancement of the academic landscape in the country. The findings of the study explore

the strengths and weaknesses of the existing research culture, providing valuable insights for policymakers and university administrators. By implementing these practical implications, such as formulation of research friendly policies, promoting collaboration, improving infrastructure, conducting trainings, and increasing research funding, universities can effectively nurture a vibrant research culture. The findings shows that supervisory practices, available physical facilities, management support, dissemination of research and policies were promoting the research culture at universities but at the same time human resources capacity building activities to develop research skills, collaboration and funding were less than the requirements of the universities. Overall, the teachers' opinions were divided and were vaguely accepting that research culture at public universities was improving. Views of university teachers having different gender and age were not significantly different from each other about research culture at universities in Pakistan. Teachers' opinion about existing research culture was vaguely positive about research culture. Teachers from the universities of northern Punjab, UNI 1 of southern Punjab and UN I northern Punjab believed that research culture at universities was satisfying and improving Overall it was concluded that there was need to improve research culture in Pakistan to solve local societal and industrial problems to develop a knowledge-based economy. Effective plans, high tech equipment, technology, research friendly policies, capacity building activities, collaboration and funding needed to be improved to develop rich culture at public universities in Pakistan.

5.1 Recommendations

Following recommendations are developed to improve research culture at universities.

1. Trainings and workshops should be conducted to improve the research skills of young and inexperienced research scholars.
2. Policies should be revised to keep researchers motivated to solve local industrial and societal problems.
3. Strong collaboration between universities, departments and industry should be developed so that researchers can share the problems and resolve local issues.
4. Updated laboratories, libraries and high tech equipment should be provided in the universities so that researches cannot be affected.
5. Universities should start consultancy and provide services to the private sector to earn funds for the development of universities.

5.2 Future Research

The future research can be conducted on the innovation capability and innovation culture at public universities in Pakistan. The culture of innovation can be measured through performance of innovations at universities.

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