

IMPACT OF SCHOLARSHIPS ON PRODUCTIVITY WITH MODERATING ROLE OF ENABLING ENVIRONMENT IN THE UNIVERSITIES OF KHYBERPAKHTUNKHWA

¹Muhammad Farooq, ²Prof. Dr. Farzand Ali Jan

ABSTRACT

Keywords:

Scholarships,
Enabling
Environment,
Productivity,
University
policies, HEC
Scholarships.

This research study investigates the effect of Scholarships on Academic productivity (Productivity) by taking the interaction (moderating) role of Enabling Environment (EE) in the universities of Khyber Pakhtunkhwa. For the stated purpose, 27 public sector universities from KP were taken as the target population. An equal proportionate sampling technique in the first phase was adopted to select 378 respondents out of the total population. In the second phase, a simple random sampling technique was adopted to select 14 respondents from each institute. The study employed normality tests, correlation analysis, and regression analysis on primary data collected through questionnaires. Before going into major data collection, a pilot study was conducted and the validity of the questionnaire was confirmed by collecting data from 30 respondents who were not part of the major sample. Regression tests were performed to check out the effect of independent variable and moderators on productivity. It is concluded that scholarships and EE have a significant effect on productivity. It was observed that by including the moderator in the model, the interaction term accounted for 26.8% variation with significant effect hence the moderator significantly moderates the relationship between scholarships and productivity. The study has practical implications in terms of giving suggestions to improve policies, bringing transparency in funds allocation, improvement in infrastructure and physical environment including support by the administration. HR strengthening and university international linkages were taken as the novel determinants of productivity hence the study has academic implications too.

INTRODUCTION

Institutions and scholars both are valuable determinants of academic productivity. Scholars are not only concerned with academic productivity but they also bring prestige and honour to their institutions by getting more knowledge and becoming more professional in their

¹ PhD Scholar, Qurtaba University of Science & IT, Peshawar, Pakistan. farooq03555@gmail.com
(Corresponding Author)

² Professor, BRAINS Institute, Peshawar, Pakistan. sevdam90@hotmail.com

professionalism. Milagros et al., (2017) conducted a study on a sample of 803 participants and found that academic factors like scholarships have positive impact on productivity. In their study they defined the scholarship productivity as the number of publications which a scholar made and the total number of citations of that publication. According to them productivity has now become the traditional term and scholarships should not only be linked with productivity but their impact should be checked on the wellbeing of a scholar. It was hypothesized that identity of a scholarship provides a sense of mission to the faculty however academic alignment i.e., proper recognition and support from the institution is also very necessary. They discussed in their study that academic alignment is very necessary and it is only possible if scholarship compatibility is ensured between the scholar and the institutions. On the other hand, reducing the barriers and supporting people by improving the policies also leads to improved productivity. As from the perspective of trade, a research study which was done in Czech Republic indicated that reducing the barriers to service trades will lead to more productivity (Arnold et al., 2011). It means that improving policies to support people for innovation will lead to improved level of productivity. Yang et al, (2021) concluded that in order to ensure efficiency at work and occupational health of workers, the organization needs to pay close attention on the working conditions and environment in the context of outdoor work. Hence working environment is of key importance for employee productivity. Institutional pressure in the form of strict regulations by the government resulted into normative pressure which in turn results into the production of automotive parts as per the safety standards. In the same organization due to mimetic pressure the organization was able to produce efficient automotive parts with comparatively lower costs (Srivastava et al., 2021). Hence an organizational pressure has a role on the performance of employees.

According to Pakistan's Higher Education Commission (HEC) annual report, (2020-21) HEC has taken numerous steps towards the establishment of academic progress. These efforts include the keen interest of HEC in the development of research and innovation practices, international collaborations, academia linkages, human resource development and capacity building of the current faculty working in higher education institutes. During the academic year 2020-21 about 218 different scholarships were offered by the HEC almost in every field of education at PhD level and subsequently 158 PhD students were graduated. Similarly, the research publications have been multiplied five times to the figure of 26500 from that of 2014-15 which was only five thousand and three hundred at that time. Total number of three new Offices of the Research, Innovation and commercialization (ORICs) were established in

universities through the collaboration of HEC due to which the figure now reached to seventy-two ORIC centers in universities. It further claims of funding almost 106 research projects under the National Research Program for universities (NRPU) due to which travel grants were issued, about 468 research seminars, conferences and workshops were arranged. Two hundred and six Quality Assurance Cells (QECs) were made functional, under which quality of higher education is monitored (HEC, 2022).

Through HEC, the Government of Pakistan adopted a set of initiatives both short term and long term that includes provision of scholarships at national and international level to enhance the capacity of faculty (Awodiji et al., 2022). In their comparative study they reached to a conclusion that Pakistan's staff development policies through HEC are superior as compared to Nigeria however job performance of Nigerian teachers as compared to their counterparts in Pakistan is higher due to adoption of staff development policies. So factors like policy implementation or funding could be the reason for that.

This study aims to find out the effects of these efforts made by the HEC towards the development of academia especially in the field of Management Sciences keeping in view the moderating role of enabling environment.

LITERATURE REVIEW

Role of Scholarship on Productivity

In the study conducted by Herman et al., (2014) two methods of scholarly impact was tabulated i.e. both by measurement and conceptualization. They argued that whether we measure the impact of a scholarly research through a conceptualization or by measurement, there are two ways of doing so, the one common approach is to see them through the lens of academics only i.e. conceptualizing the impact through counting the number of publications in "A" rated journals or we can measure the impact by counting the number of citations through multiple measures. They have opposed this traditional view of measuring the scholarly impact and offered a new pluralistic approach in which the impact of a scholar can be measured by multiple stakeholders which will not only include academics but may include students of different levels, executives, policy makers, NGOs and media etc. This type of view takes multiple indicators to measure the productivity rather than only counting the number of citations. While measurement factors can be weighted as per the discretion of individual different stakeholder differently this allows fair measurement of productivity. Although they have made their effort to introduce this fair view of measuring the scholar's

impact but they have suggested that it is still in a formative stage and needs lot of improvement especially in the development of measurement and conceptual underpinnings.

Noorhapizah and Amhar (2020) conducted a study to investigate the impact of government scholarships, R&D practices and technical training on quality education over the time period of twenty six (26) years in ten countries of South Asia. They observed that there exists a positive association between government awarded scholarships and quality of education. The government scholarships have been declared as the key contributor towards the quality of education by them. Chinese government has awarded scholarships through their National Scholarship Program to students for studying abroad in order to pursue their higher degrees (Jiang, Mok & Shen, 2020). They examined the impact of overseas doctoral study on employment of Ph.D returnees in local academic job market and found that more than 20% of PhD returnees make their place in the top universities of their native countries. They further argued that returnees having higher research productivity instead of international learning experience are more likely to make their way into alma mater (Top Universities) of China. However, they concluded that PhD returnees bring more positive impacts in nurturing international research collaboration leading to more international publications and eventually ends into job placement in the top universities of China.

Novotný et al., (2021) studied international scholarships with reference to different theories through which these scholarships can be understood. The scholarship was offered by Czechia to developing countries and is named as “Development-oriented International Scholarships Programmes (DISPs). The study made several assumptions and parameters like career development after return, completion of students’ studies, competitive training environment in the donor country, students’ return rate, graduation rate and its influencing factors etc. They found that statistically there was a positive and significant relationship between human development and distribution of financial costs. Secondly eighty percent of the awarded students showed better study results as compared to their schoolmates in the home country. The scholarship awarded students were also found highly capable and motivational as compared to their class fellows in the native country. Thirdly, the study proclaimed that in comparison to native country of students the scholarship program was highly effective in providing quality education to students. However, they express a concern about brain drain as more than fifty percent of the scholarship holders did not return to their homeland after completion of their studies.

So from this discussion it is deduced that by increasing the number of scholarship more people will be engaged in research work and knowledge creation will be supported which as a result will have a positive impact on society in the form of learning new insights, minimizing time to create and avoid mistakes made in the past which will lead to improved productivity.

H1: Scholarships have a significant positive impact on productivity.

Enabling Environment and Productivity

No doubt it is worldwide acceptable that there is a significant role of universities and academic institutions in the development of any nation through the promotion of research practices (Uzoka, 2008). According to Zhang (2014) university policies regarding promotion and performance evaluation compelled most of the staff (81.7% of the whole sample) to get engaged in research activities. He argued that most of the staff for their motivation towards involvement in research activities wants to be respected and they want their contribution and responsibility to be acknowledged i.e. they want enabling/supportive environment from the universities/institutions.

Gogokhia and Berulava (2020) studied the effect of business environment reforms on innovation and productivity in transition economies. A Business Environment Reforms (BER) index was constructed by taking constraints which the firm faces and several dimensions of business environment. The lower score on the index meant a fairly clear business environment and a better stimulus towards investments in innovations. The findings of the study suggested that for productive and innovative performance of a firm, BER is the significant and positive external determinant for it.

Enabling work environment is not only important for economic productivity but at the same time it's a very important factor towards individual's productivity as evident by the experimental study conducted by Yang et al, (2021) on six Chinese men exposed to extremely cold weather. As per findings of the study an increase in workload from moderate to high will speed up the fatigue. The high work intensity in extremely cold weather leads to increased manual dexterity, loss of short-term memory and reduced judgment response rate. However, the better working conditions for the avoidance of harmful effects of cold weather creates options for re-warming rests and fair job rotation as a result employee feels refreshed. Hence environment plays a significant role in affecting the physical wellbeing of an individual.

H2: *There is a positive and significant impact of Enabling Environment on university's productivity.*

The Moderating Role of Enabling Environment

A study conducted for investigating the role of working conditions on improving the quality of education stressed on the fact that in order to improve the quality of education there is an immense need of improving the working conditions (Budiharso & Tarman, 2020). According to them key controlling factors to impart quality education to students in an educational institute are the teachers and principals. If they are not provided with constructive working conditions they will get distressed as a result the quality of education will be compromised. On the contrary if working conditions are kept positive the organization will be able to retain employees, better level of employability will be observed and quality of education shall be improved.

Yang, Tseng and Chen (2012) conducted a study regarding environmental regulations and its impact on induced R&D and productivity in Taiwan. They found that stringent environmental regulations will induce more R&D and the outcome of this R&D expenditure is improved industrial productivity. According to them environmentally induced R&D practices as compared to regular R&D practices has however a less efficient impact on productivity. They suggested, if we are succeeded in designing sound environmental regulations it can create a win-win situation for all stakeholders.

H3: *Enabling Environment moderates the relationship between Scholarships and productivity.*

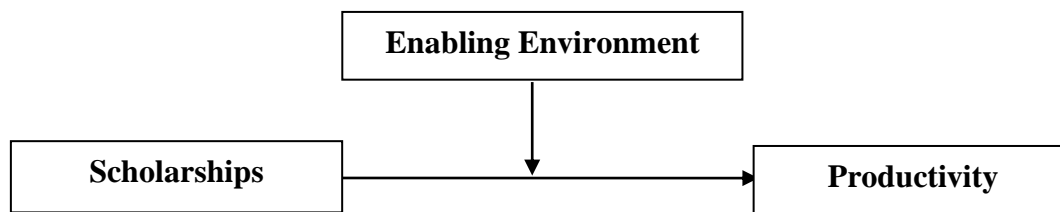


Figure 1: Conceptual Framework

METHODOLOGY

In this study a quantitative research technique (Deductive approach has been adopted). This design includes analytical methods to investigate the research problem such that the data for measuring the variables has been obtained through questionnaires by coding the response given against each question into numeric values. For finding out the association in between the variables a correlation matrix based on quantitative data has been obtained. The nature and intensity of effect was measured through regression analysis.

Sample and Data Collection Procedure

The data was collected from research faculty members, research students of M.Phil & PhD level of public sector universities recognized by HEC within the vicinity of KP. Sample was drawn out of the population in light of the famous book of Research methods for business (Sekaran & Bougie, 2016). As per HEC annual report, (2019-20) the total number of faculty working in the public and private universities of KPK is 6817. Sekaran & Bougie (2016) provided a table which gives the appropriate sample size against the size of population. As per this table and keeping in view the size of our target population for the study which was close to 7000, the appropriate sample for the study is 365. In this study sampling was done in two phases. In the first phase proportionate equal sampling technique was adopted to select 378 respondents from the public sector university in entire KP. Keeping in view our sampling method i.e. proportionate equal sampling technique we have selected equal respondents i.e. 14 from all the twenty seven public sector universities of KP.

In the second phase these fourteen respondents in each university were selected randomly through simple random sampling technique and the sample was drawn based on the following calculations.

Total public sector universities of KP (A) = 27

No of respondents to be selected from one institute (B) = 14

Total sample = A X B = 378

Measurement Instruments

Questionnaire on Enabling Environment was adapted from Tue (2020) who used 21 items scale. The questions for measuring productivity were extracted from the questionnaire used by Berber and Kurul (2009) who used 12 items scale. Most of the questions were based on five points likert scale. The study adopted non experimental design as it fulfills the requirement for this design.

RESULTS

According to Thabane et al (2010) data for pilot study must not be taken from those respondents who are part of the actual sample so list of these 30 respondents were recorded and later on during distribution of questionnaire to the main sample these respondents were excluded accordingly. For pilot study thirty questionnaires (Six in each district) were distributed in five different districts of Khyber Pakhtunkhwa i.e. Peshawar, Charsadda, Mardan, Swabi and Swat.

Reliability Statistics of the instrument was obtained by calculating the Cronbach's Alpha value for each of the section excluding the questions of opinion ratings. For high reliability, the Cronbach's alpha value should be greater than the threshold value i.e. 0.70 for a particular questionnaire (Saunders, Lewis and Thorn hill, 2009). In our case reliability statistics for the questionnaire on scholarships and EE is .719 and for productivity its value was .820 as the value is well beyond the standard value hence this questionnaire is deemed very reliable for collection of data from the respondents.

Demographic classification of the sample was such that most employees i.e. 82.3% of the sample was between the age group 25yrs to 45yrs and majority (67.2%) were having experience of 1 to 10 years. 322 respondents were male and 56 were females most (356 out of 378) of which were PhD degree holders.

Correlation Analysis

Correlation analysis tells us the strength of association between two variables.

Table 1 Correlation Matrix

	Scholarships	EE	Productivity
Scholarships	1		
EE	.277**	1	
Productivity	.650**	.292**	1

** . Correlation is significant at the 0.01 level (2-tailed).

The correlation value between independent variable "Scholarships" and moderating variable EE is .277 which shows that both of these variables are positively associated to each other and this result is significant at $P < 0.01$. Similarly, correlation value between EE and Productivity is 0.292 which is also positive and significant at $P < 0.01$. The strongest observed value of correlation in this study is between our independent variable Scholarships and dependent variable productivity i.e. $R = 0.650$ which means that both of these variables are positively and strongly associated. All the values obtained for correlation are significant at $P < 0.01$.

Regression Analysis

Before going to run the regression analysis, test of normality was conducted and the values for skewness and kurtosis for all the three variables were within the defined range ± 2 and ± 7 respectively. Secondly, the value of variance inflation factor (VIF) was used to detect the issue of multicollinearity collinearity statistics. According to O'Brien (2007) the value of VIF below 3 indicates no multicollinearity. In this case the VIF value for all three variables was

below 2 hence falls under the acceptable range and the issue of multicollinearity is eliminated.

Lastly the proposed sample size for this study was 365 but due to proportionate sampling technique the actual sample from which the data was collected became 378 which were quite enough to carry out the regression analysis. Regression analysis was carried out after this to test the hypotheses of this study.

This hypothesis tests if scholarships carry significant effect on academic productivity. Simple linear regression was conducted to investigate the said relationship. Output results of this regression tests are given below.

Table 2 Regression results for Hypothesis H1

Hypothesis	Regression weights	Beta	t	p-value	Result
H1	Scholarships →Productivity	.638	16.57	0.000*	Supported

R = .650

R-square = .422

F(1, 98.097) =274.82, P<0.05

Note: predictor(s): Scholarship, Dependent variable: Productivity, *p < 0.05

Table 2 shows the path coefficients and fitness of model regarding the relationship between dependent variable (Productivity) and independent variable (Scholarship). It is evident that Scholarships significantly predict productivity (F 1, 98.097) =274.82, P<0.05). The R value .650 shows that there is positive association between these two variables. The R-square value .422 indicates that this model explains 42.2% of overall variation in productivity by Scholarships.

The results revealed that scholarships have a significant impact on productivity (B = .638, t = 16.57, p = 0.000), hence the H1 is supported. The beta value .638 shows that by bringing one unit change in the independent variable i.e. Scholarships, a positive change of .638 units will be brought in the dependent variable i.e. productivity. The t-value is 16.57 which is well above +2 while the corresponding p-value is 0.000 hence indicating high level of significance and as a result the null hypothesis is strongly rejected while alternate hypothesis is accepted.

Furthermore, it is evident from the output of Table 3 that Enabling Environment significantly contributes towards overall productivity. Simple linear regression was conducted to investigate this relationship. An output result of the regression test is given below.

Table 3 Regression results for Hypothesis H2

Hypothesis	Regression weights	Beta	t	p-value	Result
H2	Enabling Environment → Productivity	.508	5.919	0.000*	Supported

R = .292

R-square = .085

F(1, 155.325) = 35.036, P = 0.000 < 0.05

Note: predictor(s): Enabling Environment, Dependent variable: Productivity, *p < 0.05

Table 3 shows that provision of Enabling Environment significantly predict better productivity $F(1, 155.325) = 35.036, P = 0.000 < 0.05$. As the value of F-statistics is 35.036 which is higher than +2.5 hence it is deduced that the overall model is significant for variation in dependent variable caused by the independent variable. The R value is .292 which indicates that there is positive association between the predictor and independent variable. The R-square value is .085 which shows that this model explains 8.5% of overall variation in productivity due to provision of Enabling Environment.

In connection to this, the coefficients were also assessed to determine the influence intensity of independent variable on the dependent variable. H2 tends to evaluate whether provision of Enabling Environment implemented in universities has an impact on productivity. The results revealed that provision of Enabling Environment have a significant impact on productivity of universities ($B = .508, t = 5.919, p = 0.000$), hence the H2 is supported. From the coefficient tables we have beta value (Unstandardized Beta Coefficient) for independent variable (provision of Enabling Environment) which in this case is .508. This means that by bringing one unit change in the independent variable i.e. provision of Enabling Environment in universities, the positive change of .508 units will be brought in the dependent variable i.e. productivity. The t-values 5.919 and p-value 0.000 i.e. $P < 0.01$ indicates high level of significance resulting into rejection of the null hypothesis.

Based on the values given in Table 3 and the discussion made subsequently it is concluded that provision of Enabling Environment within university will significantly and positively improve its productivity as evident by Wan and Jhang, (2023) and Siegal, et al., (2003) who argued that governments if formulate supportive policies and organizations if look into internal factors like reward system, employee placement and cultural issues, feasible environment shall be ensure which will result in better productivity.

Lastly, the moderation effect of EE on the relationship between scholarships and productivity was tested by taking the regression of interaction term with independent variable.

Table 4 Effect of interaction term (M X IV) on the Dependent variable

Hypothesis	Regression weights	Beta	t	p-value	Result
H3	IV * M → Productivity	.268	48.29	0.000*	Supported

R = .960
R-square = .922
F(1, 156.557) = 1473.986, P = 0.000 < 0.05
Note: predictor(s): IV*M, Dependent variable: Productivity, *p < 0.05

Table 4 reveals R-square value is .922 which indicates that this model explains 92.2% of variation in productivity due to the interaction term. But we need to check whether this variation or effect of independent variables is significant? Hence the F-statistics i.e F(1, 156.557) = 1473.986, P = 0.000 < 0.05 confirms the significance of overall model. Here the value of F-statistics is 1473.986 which is well above +2.5 and its corresponding p-value is 0.000 so the P < 0.01 and therefore the model is confirmed for its significance.

H3 tends to evaluate if Enabling Environment moderates the relationship between Scholarships and Productivity. The third predictor taken under this regression equation is the interaction term which is the product of independent variable and moderator. The results revealed that the interaction term (IV * M) has a significant impact on productivity of universities (B = .268, t = 48.29, p = 0.000), hence the H3 is also supported at 99% confidence level because the p-value obtained here is less than 0.001.

Based on the values given in Table 4 and the discussion made subsequently it is concluded that scholarships and provision of Enabling Environment plays a significant and positive impact on productivity. Most importantly this test confirms that the moderator (Enabling Environment) significantly moderates the relationship between scholarships and productivity within the universities of KP. It is obvious from the unstandardized coefficient of interaction term that due to provision of enabling environment the impact of scholarships is positively boosted on productivity.

Discussion

From the very first test performed, we found that HEC scholarships have a very significant impact on productivity. The hypothesis was accepted at P < 0.01 i.e. 99% confidence level. These results are aligned with previous studies as found by Larivière, (2013) who while investigating the effect of excellence scholarships on productivity concluded that as compared to unfunded students the funded students publish more papers. Similarly the results are confirmed by Carter, et al., (2019) who argued that there will be significant increase in academic productivity of internal medical residents if they are supported with scholarships during their residency. Similarly, Nafukho, et al., (2019) also reached the same results while

investigating the research productivity of faculty in public universities in Kenya. They found that funding allocated to research are significantly associated with research productivity of faculty.

Furthermore, impact of enabling environment on productivity was tested in hypothesis H2 and this impact was also found significant at $P < 0.01$. The finding was in line with previous research studies i.e. Xu et al, (2022) concluded that if feasible government policies are needed to improve productivity. Similarly Wan and Jhang, (2023) argued that government should allocate subsidies to R&D so that productivity could be achieved. Siegel et al, (2003) are of the view that productivity depends on organizational practices and organizations should keep focus on their reward system, staffing/compensation practices, and cultural barriers to enable their environment for growth in productivity.

The main model found significant effect of Scholarships on productivity, significant effect of EE on productivity and along with these two significant effects the effect of interaction term was also found significant. Hence it was found that the moderator EE moderated the relationship between scholarships and productivity. The summarized results are given below in Table 5.

Table 5 Result summary of all the hypotheses

Hypothesis	Regression weights	Beta	t	p-value	Result
H1	Scholarships → Productivity	.638	16.57	0.000*	Supported
H2	Enabling Environment → Productivity	.508	5.919	0.000*	Supported
H3	IV * M → Productivity	.268	48.29	0.000*	Supported

The entire hypotheses formulated in this study were supported and the relationships were found significant. It can be concluded that Scholarships have significant and positive impact on productivity.

However, some alarming results were also obtained for instance, none of the entire respondents published any book as a principal author at international level whilst only four respondents published book as principal author at national level. So from the pool of twenty seven universities these results are not satisfactory. On the other hand, rate of publications of research papers was not that much embarrassing.

Moreover, from the results it is concluded that despite individual significant effect of Scholarships and EE on productivity they also possess combined effect on it. The study

revealed that the interaction term i.e. (IV * M) significantly impacts the dependent variable. Thus it is finally concluded that the moderator of this study significantly moderates the relationship between Scholarships and Productivity. In other words there exists moderating effect of EE on the relationship between Scholarship and Productivity.

Recommendations

Based on the discussion of this study there are some recommendations for administration of universities and policy makers who directly makes decision regarding the wellbeing of higher educational institutes. Following are these recommendations.

Special consideration must be given to the physical environment of universities as this has been found a very important aspect of enabling environment that can boost productivity and normally this aspect of EE is undermined.

Based on the results of this study none in the entire KP published any book as a principal author at international level, similarly only four books have been published at national level. So, keeping in view this alarming situation HEC must need to take initiatives like making it mandatory for faculty to publish a book at least at national level in order to be promoted to higher ranks and in this connection, incentives may be given. Secondly, other monetary rewards like increased pay as compared to others may be given to the one with such publications. In this connection, modern research techniques shall be adapted as the conventional system is either outdated or not practical. Moreover, universities need to teach research as a mandatory subject even for the award of master degrees because strong foundation and knowledge of research can lead to better output.

Moreover, the findings of this study politically support is thought to be the most highlighting factor, which can affect availing of research from the government. So, administration of university may provide environment free of negative interference both from internal and external politics. In addition to this HEC may revise their guidelines and ensure transparent awards of funded researches to universities especially to the deprived ones so that equity is ensured.

Mostly students are not interested to opt for research if they are given the choice between research and course work, this is because of unawareness about the importance of research, no funding for research at junior level, family obligations and unsatisfactory guidance / supervision (Razzaq, 2019). So lastly, we also recommend that keeping in view the significant effect of EE both as an individual variable and as a moderating variable, the universities and HEC administration must state policies that can ensure good working

environment to the faculty both in terms of provision of physical infrastructure and guided research under experts.

Implications of the study

This study derives fruitful results by having remedies to the questions in hand already discussed in the recommendations section of this thesis. Further classification of implication of this study is given below.

Pakistan is not listed even in the top twenty research collaborative countries (Haq & Faridi, 2021). Only two universities i.e. Comsats University Islamabad and Quaid-e-Azam University were found to be the most productive universities of Pakistan in terms of research publications. This study is beneficial in terms of providing the concrete solutions to the problems in form of suggestions / recommendations that to improve productivity policies related to enabling environment and research publications at international level may be revised in the context of Pakistan so that local researchers tend towards publishing more productive research.

The findings of the study in hand are also helpful for universities in terms of improvement in environment by suggesting that improvement in physical environment (Provision of infrastructure and equipment support) and minimizing of political interference can lead to a better output.

Limitations

The target population for this study is only limited to research scholars and faculty members of the public and private universities of KPK.

The theoretical relationship with productivity is not only limited to two variables i.e. scholarships and EE there might be other variables like job stress, organizational commitment, organizational citizenship behavior and organizational justice etc. that can affect employees productivity hence these determinants are not taken into account.

The sampling technique adopted was although in line with the instructions and sample size was as per required minimum criteria but in thousands of faculties the sample size of 378 might be having less representation of the whole. So once again generalizing the results to the whole sector of public and private universities of Pakistan will be contentious.

Future Directions

Future researchers might keep the limitations of this study in mind while carrying out their research in the same field. The following is recommended for future research.

- The EE may be looked into more precise and detailed manner by keeping its perimeters other than those already taken in this study.
- The study may be extended to both private and public sector universities with larger samples in order to be able to generalize the results with more confidence.
- The future studies are encouraged to verify the findings of this study in other national background.

REFERENCES

- Arnold, J. M., Javorcik, B. S., & Mattoo, A. (2011). Does services liberalization benefit manufacturing firms?: Evidence from the Czech Republic. *Journal of International Economics*, 85(1), 136-146.
- Awodiji, O. A., Ijaiya, N. Y., & Ahmad, M. (2022). A Comparison of Staff Development Policies and Practices and Teachers' Job Performance in Nigerian and Pakistani Universities. *International Journal of African Higher Education*, 9(2), 102-123.
- Berber, R., & Kurul, N. (2009). The Motivating factors for productivity in R&D: Preliminary results of a survey in some engineering schools in Turkey. In *PICMET'09-2009 Portland International Conference on Management of Engineering & Technology* (pp. 1508-1515).
- Budiharso, T., & Tarman, B. (2020). Improving Quality Education through Better Working Conditions of Academic Institutes. *Journal of Ethnic and Cultural Studies*, 7(1), 99-115.
- Carter, A. E., Anderson, T. S., Rodriguez, K. L., Hruska, K. L., Zimmer, S. M., Spagnoletti, C. L., & Fine, M. J. (2019). A program to support scholarship during internal medicine residency training: impact on academic productivity and resident experiences. *Teaching and learning in medicine*, 31(5), 552-565.
- Gogokhia, T., & Berulava, G. (2020). Business environment reforms, innovation and firm productivity in transition economies. *Eurasian Business Review*, 1-25.
- Higher Education Commission. (2022) Annual Report 2020-2021. <https://www.hec.gov.pk/english/news/AnnualReports/Annual%20Report%202020-21.pdf>
- Herman, A., Debra, L.S., Elena, P.A; and Thomas, G.C. (2014) "Scholarly Impact: A Pluralist Conceptualization". *Academy of Management Learning & Education*, 13(4), 623-639.
- Jiang, J., Mok, K. H., & Shen, W. (2020). Riding over the National and Global Disequilibria: International Learning and Academic Career Development of Chinese Ph. D. Returnees. *Higher Education Policy*, 1-24.
- Larivière, V. (2013). PhD students' excellence scholarships and their relationship with research productivity, scientific impact, and degree completion. *Canadian journal of higher education*, 43(2), 27-41.
- Milagros, P.R., Enrique, M., James, J; and Tony, L,. (2017). "The Higher-Ed Organizational-Scholar Tension: How Scholarship Compatibility and the Alignment of Organizational and Faculty Skills, Values and Support Affects Scholar's Performance and Well-Being". *Frontiers in psychology*
- Nafukho, F. M., Wekullo, C. S., & Muyia, M. H. (2019). Examining research productivity of faculty in selected leading public universities in Kenya. *International Journal of Educational Development*, 66, 44-51.

- Noorhapizah, N., & Amhar, A. (2020). Investigating the role of governmental scholarships, technical training and R&D in the provision of better-quality education in Asia. *Cypriot Journal of Educational Sciences*, 15(6), 1672-1684.
- Novotný, J., Horký-Hlucháň, O., Němečková, T., Feřtová, M., & Jungwiertová, L. (2021). Why do theories matter? The Czech scholarships programme for students from developing countries examined through different theoretical lenses. *International Journal of Educational Development*, 80, 102-307.
- O'brien, R. M. (2007). A caution regarding rules of thumb for variance inflation factors. *Quality & quantity*, 41, 673-690.
- Razzaq, T. (2019). Major challenges in research productivity of social sciences in Pakistani academia. *Int. J. Recent Adv. Multidisciplinary. Res*, 6, 4957-4963.
- Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research methods for business students*. Pearson education.
- Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill building approach*. John Wiley & Sons.
- Siegel, D. S., Waldman, D., & Link, A. (2003). Assessing the impact of organizational practices on the relative productivity of university technology transfer offices: an exploratory study. *Research policy*, 32(1), 27-48.
- Srivastava, M., Narayanamurthy, G., Moser, R., Pereira, V., & Paille, P. (2021). Supplier's response to institutional pressure in uncertain environment: Implications for cleaner production. *Journal of Cleaner Production*, 286, 124954.
- Thabane, L., Ma, J., Chu, R., Cheng, J., Ismaila, A., Rios, L. P., ... & Goldsmith, C. H. (2010). A tutorial on pilot studies: the what, why and how. *BMC medical research methodology*, 10(1), 1.
- Tue, N. D. (2020). Financial Constraint on R&D Activities in Vietnamese Universities—an Empirical Research. *Organizations and Markets in Emerging Economies*, 11(21), 222-243.
- Uzoka, F. M. E. (2008). A fuzzy-enhanced multicriteria decision analysis model for evaluating university Academics' research output. *Information Knowledge Systems Management*, 7(3), 273-299.
- Wan, J., & Zhang, J. (2023). R&D subsidies, income taxes, and growth through cycles. *Economic Theory*, 1-40.
- Xu, X., Chen, X., Zhu, Y., & Zhu, Y. (2022). The Effect of R&D Input on Operating Income of Chinese Wastewater Treatment Companies with Patent Performance as a Mediating Variable. *Water* 14(6), 836.
- Yang, L., Wu, J., Hu, Z., Gao, F., & Hu, X. (2021). Effects of workload on human cognitive performance of exposure to extremely cold environment. *Physiology & Behavior*, 230, 113296.
- Yang, C. H., Tseng, Y. H., & Chen, C. P. (2012). Environmental regulations, induced R&D, and productivity: Evidence from Taiwan's manufacturing industries. *Resource and Energy Economics*, 34(4), 514-532.
- Zhang, X. (2014). *Factors that Motivate Academic Staff to Conduct Research and Influence Research Productivity in Chinese Project 211 Universities* (Doctoral dissertation, University of Canberra).