

# EFFECTIVENESS OF ORIC IN INNOVATION OF RESEARCH AT PUBLIC SECTOR UNIVERSITIES OF KHYBER PAKHTUNKHWA, PAKISTAN

**Allah Noor Khan**, Institute of Education & Research, Gomal University Dera Ismail Khan, KP, Pakistan.

**Muhammad Niamat Ullah**, Professor/Director, Institute of Social Sciences Gomal University, Dera Ismail Khan

**Shehla Sheikh**, Institute of Education & Research, Gomal University Dera Ismail Khan, KP, Pakistan.

**Fahimda Bibi**, Institute of Education & Research, Gomal University Dera Ismail Khan, KP, Pakistan.

**Mazhar Gul**, Institute of Education & Research, Gomal University Dera Ismail Khan, KP, Pakistan.

**Muhammad Aslam Khan**, Qurtuba University of Science & Technology, Dera Ismail Khan

**Abstract-** The study is a narrative research in nature and it aims to see the role of ORIC in innovation and commercialization of research at public sector universities of Khyber Pakhtunkhwa. It also finds out which strategies are being adopted and what challenges are being faced in innovation and commercialization of research related to natural and social sciences. Directors ORIC of all public sector universities of Khyber Pakhtunkhwa, Pakistan constituted the population of the study. The total seven universities were taken as sample of the study from the entire population by applying a simple random sampling technique. A semi structured interview was used to collect data from the seven respondents. The responses of the interviewed respondents were presented in a gist. The study encapsulates that ORIC works on promoting research culture in the universities, it also focuses on innovation in research and its forte is to commercialize the products of innovative research in light of the need of the market. The study concludes that up till now the role of ORIC is not effective in its soul aim of its establishment in the universities. It faces challenges and it needs to be made fully utilized for bringing innovation in research and then research based – products need to be commercialized through proper systemic way following its role in the universities of advanced countries.

**Keywords:** Effectiveness, ORIC, Innovation, Commercialization, Research, Public Sector Universities

## I. INTRODUCTION

ORIC were established in the universities of public sector of Pakistan with the aim to serve as a focal centre for covering all types of activities related to promoting research from developing proposal process to products and its commercialization under the auspices of a single umbrella. It focuses on provision of strategic support as well as operational support to research activities encompassing transformation of knowledge into products. The community will be facilitated through streamlined initiatives of its endeavors. (HEC, Pakistan). Ashwin (2012) found that ORICs provide research-based facilities in Higher Education Institutions (HEIs) and polish research activities via research confidence, training, meetings, and other research-related activities at HEIs level. Altbach (2013) explained that ORIC is functional in each university to work on research commercialization or entrepreneurship, research development as well as operation; and innovation to put the university in the list of high ranking universities. Mubora kshoeva (2015) asserted that ORIC in public sector universities assist in creating new jobs, research commercialization, markets, services, and products to develop the research and educational setup of universities so that all public universities may able to compete for international universities like Oxford, Cambridge, and so on. Kerr (2001) revealed that the key aim of universities is to promote academic scenario and create/disseminate knowledge.

It needs to set up of appropriate laboratories, libraries and other physical facilities which allow teaching learning process and research related activities. The universities may be facilitated with full time academia holding doctoral degrees and experience in research related activities in order to boost the innovation in teaching & research. Jung and Horta (2013) stated that ORIC in each university plays a significant role in securing funds for contractual research, generating revenues from technology transfer and research commercialization. Muborakshoeva (2015) investigated that ORIC is securing investments for development by creating jobs as well as internships. ORIC activities are mostly revolved around the important factors about research so that the impact of research activities may be ensured in society and economy by focusing research funding, invention, product development; and reaching to market, etc.

## II. LITERATURE REVIEW

Taylor (2017) found that the key mission of ORIC office is to promote the scholarly and research activities in the university to ensure the quality of education where the students of such higher institutions may

able to face the challenges of the day; and innovation, scholarships within a specialized profession or specialized program and discovery are the main tasks of ORICs in HEIs. Ullah.R and Dost (2017) asserted that ORICs foster research collaborations with the main internal and external partners; ORICs always strengthen the current research infrastructure and provide developed support services; and ORICs conduct as well as ensure regular workshops, seminars, and training for emerging students and researchers at Higher Education Institutions (HEIs) level. Issa and Tesfaye (2020) talked on that the successful change of research bureaus into industrial process and the production of knowledge at university level are the results of research commercialization. Commercialization process has a significant role in the interaction and cooperation among the research bureaus attached to the government, higher education centers, financial firms, entrepreneurs, industrial companies, academic individuals, investors, and so on. Wathanakom, Khlaisang and Songkram (2020) revealed that proper procedure have to be adopted for setting research cycles at university and industry levels for which commercialization and innovation of research along with technological enhancement in line with industries added values and wealth are highly essential and mandatory. Das (2020) asserted that the process of commercialization in research results in academic sector encompasses three phases: (i). Implementation stage of the research, (ii). Transference stage of the acquired results, and (iii). The research including assessment for commercialization, registration and legal maintenance of results; furthermore, innovative facets of research are perceived as quite essential and vital elements as well as dimensions of the research. Bracio and Szarucki (2019) explained that it's very important to commercialize research at Higher Education Institution (HEIs) levels by seriously focusing the managerial, cultural, economic, organizational and academic factors as well as the internal entrepreneurship in both universities and industries. The commercialization of technological innovation is one of the main factors in the technological based growth of universities, organizations or industries; competitiveness and survival of higher education institutions and organizations.

Ravi and Janodia (2021) described that commercialization is the way of transforming knowledge, ideas and inventions into greater wealth prosperity and wealth for businessmen, individuals and society. HEC aims to facilitate and motivate the HEIs for making research the first priority for future knowledge economy and sustainable economic growth; due to this reason, ORIC are established in all Higher Education Institutions (Universities). Baron (2020) demonstrated that provision of operational and strategic support to all research based programs or activities in the university is the task and responsibility of ORIC in order to facilitate the researchers in the universities by ensuring and focusing on pure knowledge (turning invention) into innovation. The research programs in universities are developed, enhanced, managed and expanded with the link to research activities directly to economic, social and educational priorities of the university on the behalf of better process of innovation and commercialization. RehmatUllah and Dost (2017) explained that research activities can be quite enhanced promoted and developed as well as innovated with the help of ORICs; for ORICs actively arrange seminars, conferences, workshops, symposiums, and training for the development and innovation of research in the university or higher education institutions. Hülbeck, Lehmann and Starnecker, (2013) revealed that the most important area to focus on developing and promoting University-Industry Government (UIG) linkage is technology management in Higher Education. The efforts of Higher Education Institutions of technology management improvement or enhancement capacities in ORICs never occur in isolation, nevertheless, each university requires to invest in capabilities improvement within the linkage of skills, information and exchange of products with the external environment that comprises other manufacturers, suppliers and buyers, service firms, consultants and so many institutions that deal in finance, technological support, and skills.

Bok (2009) stated that industries in Pakistan are bitter having no experiences to work with local academia for the enhancement of technology and industries complain regarding the graduates poor schooling or their poor quality of education; hence there is serious need of interaction between the universities and industries to overcome the problems and ensure development for which activities and proper functioning of ORICs are highly essential and mandatory. Todeva (2013) pointed out that the only solution is to strengthen ORICs in all public sector universities so that strong association between university and industry may be maintained and both the universities as well as industries in Khyber Pakhtunkhwa may increasingly grow day by day for which ORICs may play a vital role in this area. Hülbeck, Lehmann and Starnecker (2013) pointed out that the most sensitive problem and challenge in Pakistan is technology transfer in innovative management. ORICs may be highly responsive to drive technology in all stages and resolve the problems with high confidence and innovation spirit. Commercialization process involves steps i.e. production, distribution, marketing, sales support of

customer is required for getting success in the whole commercialization. It requires a marketing plan; determine how the product will be delivered and how the hurdles will be strategically handled for its success. (Commercialization, 2014). The commercialization demands lop-sided information licensing and selling contracts. Inventors know well than potential manufacturing firms about the patent. Here too much cost and transaction involved by bringing the inventors and manufacturers together. Due to these reasons, only limited patents are sold or licensed, these are commercialized by the inventors themselves in their own firms. The inventors also worry whether the patent will be acceptable. The same idea is supported by the studies of Arabsheibani et al. (2000) and Fraser and Greene (2006).

### Objectives of the study

1. To explore innovation in research activities and its commercialization in Public Sector Universities of Khyber Pakhtunkhwa.
2. To know the challenges faced by ORIC in the innovation and commercialization of research work.
3. To examine the strategies for covering challenges faced by ORIC in public sector universities.
4. To compare the natural and social sciences regarding innovation in research work in the public sector universities of Khyber Pakhtunkhwa.

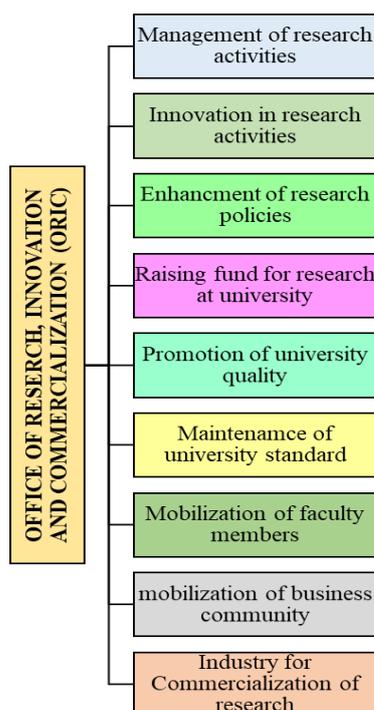
### Research questions

1. What is the status of innovation and commercialization in research activities in Public Sector Universities of Khyber Pakhtunkhwa?
2. What challenges are faced by ORIC in the innovation and commercialization of research work in public sector universities of Khyber Pakhtunkhwa?
3. What are the strategies for covering the challenges faced by ORIC in public sector universities?
4. Is there any significant difference between social sciences and natural sciences regarding innovation in public sector universities of Khyber Pakhtunkhwa?

### Significance of the study

Office of Research, Innovation, and Commercialization (ORIC) manages research activities at the university level. The study may reveal ground reality and actual status of this office. It may reveal the real challenges in innovation of research and may pinpoint the need of strategies of smooth running of this office. It may also reveal difference about innovation in research related to natural as well as social science.

### Conceptual Framework



### III. RESEARCH METHODOLOGY

The design of the study is qualitative in nature and narrative research was conducted to see the perceptions of directors of ORIC regarding its actual status, its challenges facing in bringing innovation, strategies need to be adopted for bringing innovation ,commercialization and the difference in social and natural science in regard to its innovation. All public sector universities of Khyber Pakhtunkhwa constituted the populations of the study. The total seven universities namely University of Peshawar, Hazara University, University of Science & Technology Bannu, Gomal University, Malakand University, and KUST were taken as sample from the entire population through simple random sampling technique. A semi structured interview comprising of four basic items related to the status of ORIC, its challenges, strategies need to be adopted and difference in social and natural science discipline. The investigator personally met majority of respondents and two were interviewed through WhatsApp video call for collecting the data. The effort was of success nature and 100% of respondents gave proper feedback to the questions related to ORIC's function in innovating and maintaining research at university level. The respondents were freely allowed to talk on in response to the items regarding the performance of ORIC. The responses were briefly summed up and presented in a narrative summary form.

### IV. RESULTS & FINDINGS OF THE STUDY:

Most of the respondents revealed during their interviews in the current study that research system is improving now with the support of HEC by pressurizing ORIC sections in all Public Sector Universities of KP for transforming universities to drive high impact innovation, research and entrepreneurship as well as in making Public Sector Universities a powerhouse of high growth innovation. In the light of the results shown in the current study, it was also revealed that HEC has taken many vital initiatives resulting meaningful and useful outcomes and outputs but for a developing country like Pakistan, research needs further priorities to solve societal challenges and problems.

ORICs mostly face challenges like contribution in economic development, policy factors, trust gap and generation of funds, the absenteeism of the innovation governance framework with technology-friendly policies in KP Public Sector Universities. Some were of the view that Innovation is still a dream in KP universities except the works of some individual scientists. Universities are not paying any attention to devise a plan for research innovation. Most of the ORICs face two pronged problems one from administration and it is not helping the ORIC with financial resources to provide seed money for launching projects and similarly it is not providing human resources and these are mandatory for disposal of business. Moreover no mobility facilitation is given to ORIC staff and researchers to explore industry for their potential research products/ideas. Faculty of social science is not interested in applied research and does not want to be a part of applied research. Similarly the industry has no trust in academic and is not willing to work with academia. Natural sciences are more mature in applied research and its faculty is more interested to work in applied side because of working more in experimental side. The social scientists are more concerned with traditional research because of lack of facilities in applied research and lack of interdisciplinary research tendencies. Work for innovation in natural sciences is more than in social. The study suggests that universities may be allowed funds in comparison to the research grants earned, patents achieved and research articles published. ORIC registration must be made mandatory for all the universities. Research grants on applied research may be funded in natural and physical sciences and engineering and information technology. The government may arrange specifically for industry academia linkages and interactions.

### V. DISCUSSION

The study concludes that HEC since its establishment 2002 has taken many vital initiatives resulting meaningful and useful outcomes and outputs but for a developing country like Pakistan, research needs further priorities to solve societal challenges and problems. Commercialization and innovation of research needs special attention for linking Higher Education Institutions(HEIs) with industries to ensure better economy but still HEIs in Pakistan confront so many challenges i.e. weak-linkage between industry and academia, top-down approach, culture of bureaucracy, high power distance, and poor research collaboration. The overall research management is not satisfactory as compared to advanced countries because the physical infrastructure for experimental research such as better facilities, advanced labs and equipment to conduct research at international level and high quality in developing country like Pakistan is still facing so many challenges and problems. Delay in budget release and procurement procedures (to purchase equipment) or transfer of fund and limited ORIC staff or leadership is a big challenge where innovation and commercialization are badly affected as there is need to recruit such individuals who have

management skills and experiences of industry as well. Lack of science and technology is another big issue for higher education institutions; and without science and technology, innovation and commercialization are almost impossible.

ORICs may freely and duly exercise all responsibilities and power by adopting the rules and regulations of HEC for the development and innovation of research further commercialization of products in each public-sector university of Khyber Pakhtunkhwa, Cortese (2003) wrote that ORICs in all international universities in advanced countries like America, United Kingdom, France, and Norway organize seminars, workshops, conferences and training programs for the development and innovation of research due to which all such universities provide quality education produce quality scholars, philosophers, doctors, engineers, critics, poets, lawyers, administrators, bankers and educationists e.g. Oxford University, Cambridge University and so on. Lin (2004) pointed out that ORICs in international universities highly focus on funding, opportunities, social and economic priorities of the university to ensure innovation and development in research activities in its true sense. Bercovitz & Feldman (2006) reported that ORICs in developed universities in developed countries like USA and UK highly encourage and enhance their universities' entrepreneurial environment to strengthen university-industry relationships and expand partnerships with the public as well as private sector universities, organizations, national and international donors; and all other organization pertaining community and society, etc. Bastalich (2010) elaborated that ORICs involve in establishing links among university, community, and industry to carry out different projects. The public sector universities in Khyber Pakhtunkhwa, Pakistan have faced the challenge of "absenteeism of innovation governance of framework with technology-friendly policies; and these universities produce an educationally poor quality graduate who can't perform well for the industries or factories, hence it is the responsibility of ORICs to assist the university regarding producing quality educationists and scholars, who may be able to adjust in industries or any other fields by showing better performance in this modern and technological era.

## VI. CONCLUSIONS

It was concluded that ORICs in public sector universities of Khyber Pakhtunkhwa, Pakistan is confronted with challenges like the contribution of economic development, trust gap, policy factors and generation of funds for which HEC is doing its best from the time to time. It was also concluded that HEC may conduct numbers of seminars, workshops, conferences, symposiums and training under the umbrella of experienced and talented researchers and men of fields having expertise in ORIC activities and responsibilities so that development, as well as quality innovation and improvement, may be ensured in all activities pertaining ORICs especially funding, research innovation, trust gap, policies and priorities about ORICs in all public sector universities of Khyber Pakhtunkhwa, Pakistan. ORICs of all public sector universities may adopt the formula the advanced international universities to bring quality and innovative developed changes in research activities at Higher Education Institutions (HEIs) level. It was highlighted that all public sector universities of Khyber Pakhtunkhwa need to produce quality graduates with the innovative concepts of innovative research and development as in this technological span of 2020, the industries need highly quality educated, caliber and creative graduates to ensure the progress and development of industry at national and international level. It was pointed out that technology transfer in innovation management is a serious challenge and problem in Pakistan especially Khyber Pakhtunkhwa for which ORICs need to play a significant role to eradicate the issue and solve the problem. The universities may give financial incentive in whole process from innovation in research, developing products and then its process of commercialization. ORICs may promote faculty recruitment, entrepreneurship, commercialization activities, and technology transfer that could support and improve the universities' economy. ORICs may ensure its support and strategic research policies as well as directions of universities in Khyber Pakhtunkhwa. The industries complain about the poor schooling of graduates or the universities producing graduates with low quality of education that badly influence industry and hinder its development; therefore, it's the responsibility of ORIC in the universities to help in producing better graduates to aware them about innovative research and quality education in the modern, advanced and technological era.

## VII. ACKNOWLEDGEMENT

I would like to express my special gratitude to my research colleague Dr. Shehla Sheikh (Lecturer, IER, Gomal University Dera Ismail Khan, KP, Pakistan for her sincere support in completion of this task. I am highly grateful to Fahimda Bibi (Lecturer, IER, Gomal University for her sincere efforts in searching out latest literature along with latest references. I salute to the efforts of Mazhar Gul for providing me

research based help whenever I needed in this research paper. Prof. Dr. Aslam Khan guided us to work for the promotion of research culture across the province in public sector universities of Khyber Pakhtunkhwa.

#### REFERENCES

- [1] Arabsheibani, G., de Meza, D., Maloney, J. and Pearson, B., 2000, "And a Vision Appeared to Them of Great Profit: Evidence of Self-Deception Among the Self-Employed", *Economics Letters*, 67, 35-44.
- [2] Altbach, P. G. (2013). Advancing the national and global knowledge economy: the role of research universities in developing countries. *Studies in higher education*, 38(3), 316-330.
- [3] Ashwin, P. (2012). How often are theories developed through empirical research into higher education?. *Studies in Higher Education*, 37(8), 941-955.
- [4] Baron, M. (2017). Open innovation capacity of the polish universities. *Journal of the Knowledge Economy*, 1-23.
- [5] Bastalich, W. (2010). Knowledge economy and research innovation. *Studies in Higher Education*, 35(7), 845-857.
- [6] Bercovitz, J., & Feldman, M. (2006). Entrepreneurial universities and technology transfer: A conceptual framework for understanding knowledge-based economic development. *The Journal of Technology Transfer*, 31(1), 175-188.
- [7] Bok, D. (2009). *Universities in the marketplace: The commercialization of higher education* (Vol. 49). Princeton university press.
- [8] Bracio, K., & Szarucki, M. (2019). Commercialization of innovations through internationalization: a systematic literature review. *Business: Theory and Practice*, 20, 417-431.
- [9] Commercialization (2014) Investopedia dictionary .retrieved from <http://www.invetopedia.com/terms/c/comme>
- [10] Cortese, A. D. (2003). The critical role of higher education in creating a sustainable future. *Planning for higher education*, 31(3), 15-22.
- [11] Das, R. C. (2020). Interplays among R&D spending, patent and income growth: new empirical evidence from the panel of countries and groups. *Journal of Innovation and Entrepreneurship*, 9(1), 1-22.
- [12] Hülsbeck, M., Lehmann, E. E., & Starnecker, A. (2013). Performance of technology transfer offices in Germany. *The journal of technology transfer*, 38(3), 199-215.
- [13] . Issa, E. H., & Tesfaye, Z. Z. (2020). Entrepreneurial intent among prospective graduates of higher education institution: an exploratory investigation in Kafa, Sheka, and Bench-Maji Zones, SNNPR, Ethiopia. *Journal of Innovation and Entrepreneurship*, 9(1), 1-19.
- [14] Jung, J., & Horta, H. (2013). Higher Education Research in Asia: a Publication and Co-Publication Analysis. *Higher Education Quarterly*, 67(4), 398-419.
- [15] Kerr, C. (2001). *The uses of the university*. Harvard University Press.
- [16] Lin, T. C. (2004). The role of higher education in economic development: an empirical study of Taiwan case. *Journal of Asian Economics*, 15(2), 355-371
- [17] Muborakshoeva, M. (2015). Impediments to enhancing research within universities in developing context: The case of Pakistani universities. *Journal of International and Comparative Education (JICE)*, 1-13.
- [18] Ravi, R., & Janodia, D.M. (2021). Factors affecting technology transfer and commercialization of university research in India: a Cross-sectional Study. *Journal of the Knowledge Economy*,.....
- [19] Todeva, E. (2013). Governance of Innovation and Intermediation in Triple Helix Interactions. *Industry and Higher Education*, 27(4), 263-278.
- [20] RehUllah, R., & Dost, M. (2017). *Technology Management in Higher Education Manual for ORICs; Step by Step Operational Guidelines for Office of Research, Innovation, and Commercialization (ORIC) in the Universities of Pakistan by South Asia Triple Helix Association (SATHA)*, 1-37.
- [21] Wathanakom, N., Khlaisang, J., & Songkram, N. (2020). The study of the causal relationship between innovativeness and entrepreneurial intention among undergraduate students. *Journal of Innovation and Entrepreneurship*, 9(1), 1-13.
- [22] <http://www.hec.gov.pk/InsideHEC/Divisions/RND/ORI/Pages/WelcomeORIC.aspx>
- [23] Fraser, S. and Greene, F.J., 2006, "The Effects of Experience on Entrepreneurial Optimism and Uncertainty", *Economica*, 73, 169-192. Gupta, T. (2015). *The Perils of Commercialization of Higher Education* Mewar Institute of Management, Vasundhara, Ghaziabad, India