Revamping Higher Education Research in Pakistan

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Abstract

The world economy has shifted from export of natural resources to Knowledge-Based Economy (KBE) at present. The addition of hi-tech knowledge to finished products has provided impetus to many crippling economies. The role of higher education is very vital in realising this KBE. This is evident from the role that the US and European universities have assumed as business incubators and income generators through intensive industry-university liaison. However, the higher education institutes in Pakistan are still teaching-focussed. The need is to revamp higher education institutions by identifying the impediments in higher education research and exploring ways and means for improving it. The data for this study was collected from 655 faculty members selected from six universities through an open-ended questionnaire. For increasing reliability in the findings, a short semi-structured interview was conducted with 20 research experts. The questionnaire data was quantitatively analysed using percentages while the interviews were thematically analysed for drawing conclusions.

Keywords: Knowledge-based Economy, Higher Education Research, Publication, Output.

Introduction[**]

It is said that an American scholar vows two loyalties. One loyalty is to his/her university and the second is to the scientific society of his relevant field.[1] This sense of loyalties empowers US professors to explore new ideas and knowledge relevant to their fields. It is this ability to collect, analyse and interpret new information which has produced the concept

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[**] This research is funded under a Higher Education Commission, Pakistan project awarded to the author as Principal Investigator. Further, the authors acknowledge the intellectual feedback and suggestions of Khalid Rahman, Director General Institute of Policy Studies Islamabad-Pakistan in refining and improving this research.

[1] Waldo G Leland, "Methods of Promoting Research, from the Point of View of Societies, Academies, and Councils," *Proceedings of the American Philosophical Society* 77, no. 4 (1937): 611–16.

of knowledge economy at present.[2] The influence of conventional inputs of land, labour and capital has been reduced in driving economies at present and is shifted to knowledge capital, the powerful tool in determining world economy.[3] Knowledge based economy requires a renewed focus on utilizing knowledge and ideas through intensive research to create new and innovative products.[4]

The universities at present strongly stress on research output as compared to academic assignments.[5] The research conducted by universities helps in the refinement of knowledge and efficient use of technology. Even, the research scientists take classes to share their ideas and research with students and to explore different dimensions of research topics. This further helps in developing a positive attitude in students towards research activities.[6] Involving students in research facilitates greater understanding of knowledge, increases academic performance in examination and prepares students for higher studies. But the most sustaining part of this involvement is the satisfaction of self-esteem and intellectual enhancement.[7]

Moreover, the universities are expected to conduct research and then transmit the new knowledge and ideas through teaching and its applications.[8] It is one of the basic functions of university to promote teaching, research productivity and transfer of knowledge. Further, the universities bear responsibility to ensure professional competence to its graduates in research and project management.[9]

The role of universities is very vital in realizing Knowledge-Based economy (KBE).[10] In this regard, there is a need to encourage

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[2] Alan Jenkins, *Reshaping Teaching in Higher Education: Linking Teaching with Research* (Psychology Press, 2003).
[3] Maribel Guerrero, James A Cunningham, and David Urbano, "Economic Impact of Entrepreneurial Universities' Activities: An Exploratory Study of the United Kingdom," *Research Policy* 44, no. 3 (2015): 748–64.
[4] Ibid.
[5] Lindsay Gething and Boonseng Leelarthaepin, "Strategies for Promoting Research Participation among Nurses Employed as Academics in the University Sector," *Nurse Education Today* 20, no. 2 (2000): 147–54.
[6] Natalia V Kozlova and Inna V Atamanova, "The Development of Undergraduates Motivation for Research Work," *Procedia-Social and Behavioral Sciences* 93 (2013): 498–502.
[7] Ibid.
[8] Stefano Boffo et al., "The Evaluation of Research in European Universities," *European Journal of Education* 34, no. 3 (1999): 325–34.
[9] Shina Olayiwola, "Alternative Model of Funding for Academic Research in Nigerian Universities," *Higher Education Quarterly* 64, no. 2 (2010): 149–60.
[10] David Audretsch, "Entrepreneurship Research," *Management Decision* 50, no. 5 (2012): 755–64.

universities to engage in research for making an economic impact.[11] No country can realize real progress and development without establishing a sound system of higher education backed by intensive research endeavour.[12] However, the quality of Higher Education Research (HER) in Pakistan is still below expectations.[13] The research productivity in terms of research papers has increased over recent years, but is still below the required research potential (Table 1).

Table 1

Papers Published in Thomson Reuters IF Journals (2013-15)

Name of University	**2013**	**2014**	**2015**
COMSATS	726	947	1237
Quaid-i-Azam University	832	982	999
ARID Agriculture	174	197	158
Muhammad Ali Jinnah University	28	37	44
National University of Science and Technology	326	432	554
Iqra University	15	14	16
Total	**2101**	**2609**	**3008**

Source: Thomson Reuters Web of Science (2016)

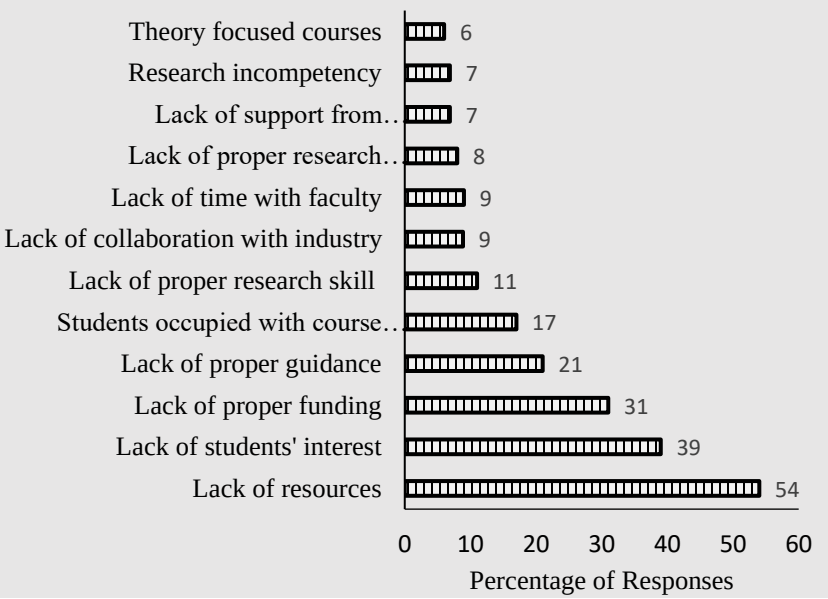
The universities in Pakistan supported by Higher Education Commission of Pakistan are putting efforts for improving the quality of research. However, there are several impediments to HER. The present study aimed at identifying these impediments in higher education research and exploring various options for improving the quality of HER. This will help in generating new licenses and patents besides creating more job opportunities, professional development of teachers, and increasing collaboration with the industries.[14]

[11] Guerrero, Cunningham, and Urbano, "Economic Impact of Entrepreneurial Universities' Activities: An Exploratory Study of the United Kingdom." *Research Policy,* Volume 44, Issue 3, April 2015 pp. 748–764.
[12] Olayiwola, "Alternative Model of Funding for Academic Research in Nigerian Universities." *Higher Education Quarterly,* volume 64, issue 2, April 2010.
[13] Fayyaz Ahmad Faize and Samreen Idrees, "Undergraduate Research Is Getting Harder-Not for Pakistani Students," *European Scientific Journal, ESJ* 10, no. 1 (2014).
[14] Guerrero, Cunningham, and Urbano, "Economic Impact of Entrepreneurial Universities' Activities: An Exploratory Study of the United Kingdom." *Research Policy,* Volume 44, Issue 3, April 2015 pp. 748–764.

Data Analysis and Empirical Findings[15]

A) Problems Identified Through Questionnaire: The data from the open-ended questionnaire are illustrated in figure 1. One of the major problems identified by faculty members was the unavailability of resources (54per cent) for carrying research activity. The resources include lab equipment, literature, lab facilities etc. The second problem identified by participants was lack of students' interest in research work (39per cent). Another problem is lack of proper funding/research grant (31per cent), which is also linked with lack of resources. The funding agencies are less in Pakistan and the necessary financial support to researchers is very meagre. 17per cent participants expressed that students' preoccupation with heavy course work also contributes to poor state of research. Perhaps, this also accounts for students' lack of interest in research activities. Another problem identified was the lack of proper research guidance/supervision (21per cent) which is responsible for poor state of research. Some other problems with smaller percentages are also illustrated in the figure.

Figure 1. Problems Identified by Faculty Members in Higher Education Research



[15] The data for empirical findings was collected through an open-ended questionnaire from 655 faculty members randomly selected from six universities in Rawalpindi-Islamabad. The items were open ended and the responses of the faculty members were categorised, counted and then converted into percentages. For improving reliability in the findings, a semi structured interview with 20 experts was also included. The criteria for selecting experts included senior professors with over 20 years' experience and more than 30 research publications. The interviews were coded carefully to identify key themes.

B) Problems Identified Through Interview Data: The interview data collected from the experts were further used to understand the research problems from a broader perspective. The following themes were identified which also support the findings obtained from the faculty's questionnaire. Pseudonyms were used instead of actual names in this study.

1. The participants expressed that the faculty members in universities lack time to do research. The faculty mentor cannot monitor or supervise their students towards research-based activities due to time constraint. This is also supported by previous research.[16] Most of the teachers have heavy teaching load besides meeting the course requirements. Ahmad, one senior professor remarked, "our universities are teaching focussed and thus the teachers are given more courses besides administrative responsibilities". The situation is further aggravated by large number of students in universities. Usually, the number of students is greater in UG classes and the faculty has to struggle in meeting the course requirements covering a specific number of assignments, quizzes, monthly exams, term projects, other semester activities, class counsellorship, final examinations etc. The research by Huerta also supported the same findings and further reported that the evaluation techniques and teachers' unfamiliarity with integrating research into teaching keep them away from doing research-based activities.[17]

2. The scarcity of funds and resources is another major problem in improving research. The same is reported by different researches. [18,19]. The universities are dependent on external sources for funding research projects which are very competitive. The participants opined that most of the faculty members do not get funds for their projects due to scarcity of funds with the universities and funding agencies. Aima, a senior professor in social sciences said, "Some time back, it was not difficult to get project funding. Now the senior professors cannot get funds due to increase in number of PhDs during last few years". On the other hand, Raheem, a participant reported to have completed more than 10 funded projects, said, "we

[16] Feryal Alayont et al., "Challenges in Promoting Undergraduate Research in the Mathematical Sciences," *Inv Lve*, 2014, 265.
[17] Juan Carlos Huerta, "Challenges To, and Suggestions For, Merging Research and Teaching in Undergraduate Regional Public Universities," *PS: Political Science & Politics* 48, no. 1 (2015): 58–60.
[18] Susan Nixon, "Undergraduate Research: Theory or Practice?," *Radiography* 5, no. 4 (1999): 237–49.
[19] Judith A Vessey and Rosanna F DeMarco, "The Undergraduate Research Fellows Program: A Unique Model to Promote Engagement in Research," *Journal of Professional Nursing* 24, no. 6 (2008): 358–63.

have to search for funding opportunities in the local industries rather than looking for government organizations to fund research project". Combining the responses of participants about the lacking resources, some were related to logistic support like printing facility, access to digital library, fast speed internet, availability of research associates/assistants etc.

3. The participants also expressed their reservations about the support from administration. One of the participants said, "there is no proper system of rewards and incentives for research participation. So, the faculty is least bothered about research". If research in higher education has to be improved, then the university administration should encourage faculty-led projects through various schemes, incentives and resources.[20]

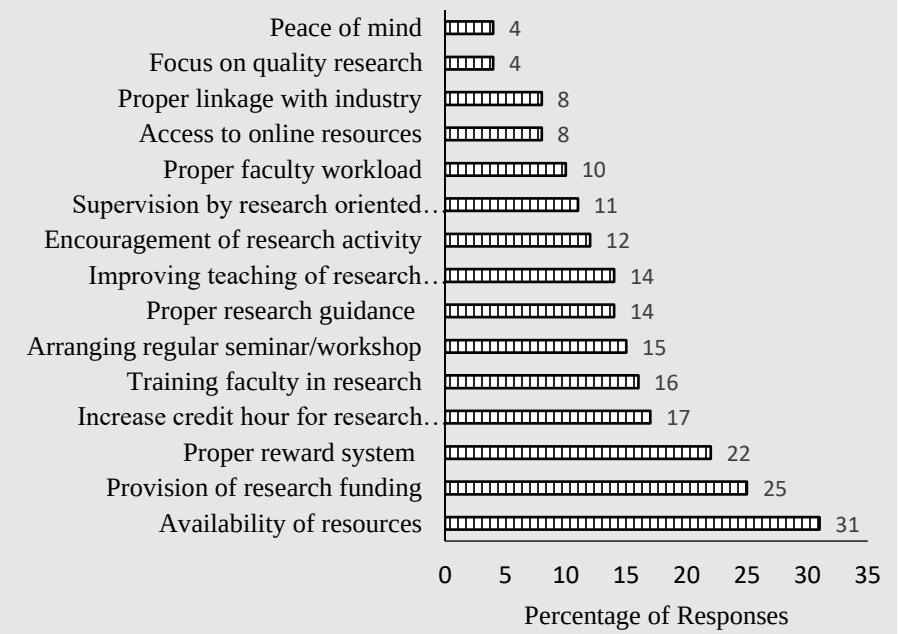
4. Another problem highlighted by the participants was lack of interest in research related activities by faculty members. The lack of interest by students was already identified through the questionnaire. The experts identified that some of them had family commitments, others weremore focused on teaching while some had no interest in any and just wanted to pass time and get salary. Previous research reported that the reason faculty members avoid involvement in research is the lack of confidence in research skills.[21]

C) Improving Research-Findings from Questionnaire: The faculty members' responses on the questionnaire helped in identifying various measures for improving HER (Figure 2). The participants opined the availability of resources (31per cent) as one of the most important factors for improving HER. The provision of funds was expressed by 25per cent of participants followed by proper reward system on research involvement (22per cent). 17 per cent participants suggested increasing the number of credit hours for research related courses followed by provision of training in research methodologies and processes (16per cent). This may also include arranging seminars, workshops and talks on research (15per cent). Other suggestions for improving HER with smaller percentages is also shown in Figure 2 for understanding the participants' preferences.

[20] Alayont et al., "Challenges in Promoting Undergraduate Research in the Mathematical Sciences." *Involve,* Vol. 7, No.3, 2014

[21] Gething and Leelarthaepin, "Strategies for Promoting Research Participation among Nurses Employed as Academics in the University Sector." *Nurse Education Today* 20, no. 2, 2000:147-54.

Figure 2. Suggestions for Improving Higher Education Research



D) Improving Research-Findings from Interview Data: In order to seek a broader understanding related to improving HER, the interview data was used. The participants suggested that provision of funds for research will help improve research output in universities. International trend also shows that universities generate funds through commercialization of its research products, keeping close collaboration with industries and getting assistance from international donors.[22] Possible collaboration with industries can be carried in supporting research, collaborating in research, information transfer and technology transfer.[23] One of the participants said, "we should conduct research with industries' support and then commercialize the products for general and industrial use". This was a very valuable suggestion as the universities in the developed countries are generating sufficient funds through commercialization and patents. The findings of Clark also support similar results.[24]

[22] Erkki Kaukonen and Mika Nieminen, "Modeling the Triple Helix from a Small Country Perspective: The Case of Finland," *The Journal of Technology Transfer* 24, no. 2–3 (1999): 173–83.
[23] A Aslan Şendoğdu and Ahmet Diken, "A Research on the Problems Encountered in the Collaboration between University and Industry," *Procedia-Social and Behavioral Sciences* 99 (2013): 966–75.
[24] Burton R Clark, *Creating Entrepreneurial Universities: Organizational Pathways of Transformation. Issues in Higher Education.* (ERIC, 1998).

Some participants mentioned various strategies for encouraging faculty members towards research. Some of the suggestions include awareness about importance of research work in career and professional development, conducting regular research workshops for students and faculty members on developing writing skills. One of the participants said, "the senior professors shall act as research mentor and shall provide research guidance to junior faculty".

Some experts opined that universities should focus on improving undergraduate research which is one important component of improving higher education research. Involving undergraduate students in research will also help in preparing these students for graduate programs[25] and improving the quality of research through better understanding of the research processes[26]. Noor, a young professor said, "The faculty member should involve UG students in reviewing literature, collection of data from sample and data entry". This will greatly help the faculty mentor in implementing his/her project. These students while sharing their personal experience and research report would also motivate peer students towards participation in research activities.[27,28]

The participants suggested that the graduate students would be motivated towards research through greater involvement in research related assignments. Some experts suggested that the students should be provided incentives for involving in research experience. These may include awarding extra credit hours to students for research participation in their transcript, conferring special research awards and certificates, and a more favourable recommendation letter from faculty mentor. The needy students may be provided with financial perks and honorarium for working in project in various capacities. The experts also suggested proper support to faculty members from administration in research related activities. Perhaps, some similar incentives to faculty members might also improve the quality of HER.

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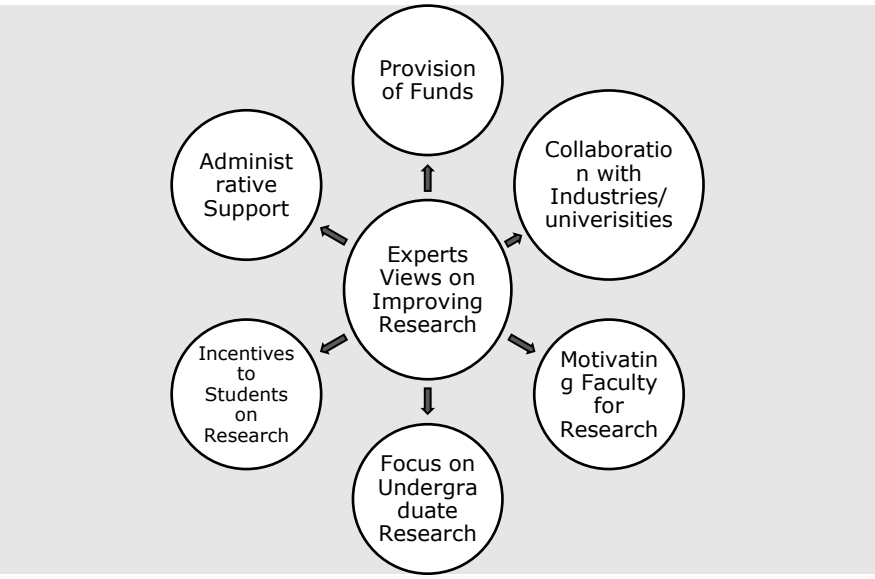
[25] Susan H Russell, Mary P Hancock, and James McCullough, "Benefits of Undergraduate Research Experiences," *Science (Washington)* 316, no. 5824 (2007): 548–49.

[26] CarolAnne M Kardash, "Evaluation of Undergraduate Research Experience: Perceptions of Undergraduate Interns and Their Faculty Mentors.," *Journal of Educational Psychology* 92, no. 1 (2000): 191.

[27] Alayont et al., "Challenges in Promoting Undergraduate Research in the Mathematical Sciences." *Involve,* Vol. 7, No. 3: 2014.

[28] Vessey and DeMarco, "The Undergraduate Research Fellows Program: A Unique Model to Promote Engagement in Research." *J Prof Nurs* 24(6), Nov. 2008:358-63.

Figure 3. Themes from Interview Data for Improving HER



Secondary Data Analysis and Empirical Findings

Today, higher education is widely considered as a capital investment and key to socio-economic development of a country.[29] The main responsibility of the higher education is to educate youth with required skills and knowledge for various professional positions.[30] The objectivity of higher education cannot be narrowed down to impart knowledge only, rather it has immense significance in terms of personal grooming and societal uplift along with socio-economic and cultural development.[31] Moreover, higher education should not be separated from its religious, cultural, moral, historical ethos and social ambiance permeates through the fabric of the educational system of a country.[32]

Unrestrained population growth, scarcity and mismanagement of resources, lack of private-public partnership, inconsistency in policies of education and political instability are some of the factors that affect to

[29] Ronald Barnett, *The Idea of Higher Education,* McGraw-Hill Education (UK), 1990.

[30] N. A Mughal and Manzoor, *Issues in Higher Education: Problems and Prospects of the Pakistani University. Jamhsoro, Pakistan: University of Sindh* (Jamhsoro, Pakistan: University of Sindh, 1999).

[31] M K Moore and P Farris, "Combining a School University Partnership with a Career Incentive Program," *Catalyst for Change* 21, no. 1 (1991): 34–43.

[32] John W Best and James V Kahn, *Research in Education* (Pearson Education India, 2016).

achieve desired results of higher education at large.[33] Apart from the above problems, following are some daunting challenges for higher education in the context of Pakistan which need to be prioritized and addressed immediately:

Character-Building in Higher Education

It is considered that education strengthens emotional integration and brings students' character development along with imparting knowledge. Describing higher education "It should widen the viewpoint, foster the feeling of nationalism, tolerance and a spirit of sacrifice so that narrow group interests are inundated in the largest interest of country".[34] The academicians, social scientists and educators are well-aware of the fact that character is an intellectual and behavioural conception of what is right.[35] A good character has the distinction of "knowing the good, desiring the good, and doing the good".[36] To educate and prepare a student to know, desire and do what is good is the essence of character building of higher education.

The primary role of higher education is "the development of ethical conduct in students and ethical reasoning and understanding, as well".[37] In addition, character building is designed in such a way to not only enhance the student's capacity to defer impulse but also take the right judgement in a critical time.[38]

As education practitioners, the responsibility to build strong character of students lies on teacher's shoulders to enable them to become a true professional who are ready to contribute in the society both with their professional knowledge for socio-economic development and with character for societal uplift. "whether values are taught formally in the curriculum or not, the attitudes, conduct, and beliefs of students

[33] L D Hayes, "The Crisis of Education in Pakistan Delegate Brief, Ministry of Education," *Lahore: Vanguard*, 2009.
[34] Michael D Allen and Michael Allen, *The Goals of Universities* (Open University Press, 1988).
[35] Gregory S Blimling, "Developing Character in College Students," *NASPA Journal* 27, no. 4 (1990): 266–74.
[36] Thomas Lickona, "The Return of Character Education," *Educational Leadership: Journal of the Association for Supervision and Curriculum Development* 52, no. 3 (1993): 9.
[37] J C Dalton, "Values Education: A New Priority for College Student Development," *Promoting Values Development in College Students (NASPA Monograph Series, No. 4, Pp. 17-27). Columbus, OH: National Association of Student Personnel Administrators*, 1985, ii.
[38] Diane Berreth and Marge Scherer, "On Transmitting Values: A Conversation with Amitai Etzioni.," *Educational Leadership* 51, no. 3 (1993): 14.

have always been influenced by their colleges".[39] In past, in the development of curriculum, ethics and values was on the top priority of the colleges and universities. During this period, character building was a purposeful venture of higher education institute to teach students the fundamentals of ethical values and moral reasoning as a regular subject in academic course work. In recent years, the focus on character building in higher education began to shift to monetary and material benefits. As a consequent research has practically turned into consultancy where passion and motivation are confined to earning, not contribution towards knowledge creation and scholarship.

Nurturing Industry-Academia Linkages

The industrial revolution was the product of industry-academia linkage. Pakistan lags behind in filling the gap between industry and academia. Even among Asian countries, China, India and Thailand have considerably improved their industry-academia linkage which proved to be productive in bringing expansion in their economy and commercialization of high technology products. It is a well-known fact that all major revolutions in technological sector were mainly advocated by academicians. Trinity House, Royal Mint and Xerox Company, all these technological enterprises had renowned scientist.[40]

Knowledge Production

By knowledge production, it means the cluster of research and related academic activities in the higher education institutes that help produce new knowledge. An attempt is made to explore a new paradigm of knowledge production in higher institutes with the emergence of knowledge society based on its relationship with academia community. In this regard attempts are needed to address the issue that many institutes and universities in Pakistan are offering the same subjects, courses along with same curriculum which are neither in line with market requirements nor these bring any innovation or competitiveness as intertwined factors for strong base of academia. With globalization, it has become inevitable for countries like Pakistan to prepare youth with subjects and courses developed on the ground and current market realities for competition in the international arena.

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[39] Arthur Sandeen, "The Legacy of Values Education in College Student Personnel," *Promoting Values Development in College Students.*, 1985, 1.

[40] V S Murty, "Interaction between Academia and Industry," *Physica Scripta* 2002, no. T97 (2002): 64.

Leadership Skills and Entrepreneurship

Education without competence and innovation fails to produce desired result envisioned by academician. Some people are best suited for leadership and they cannot perform up to the measures unless they are empowered to take initiatives. It means that mediocre technology in the hands of an outstanding team can soar while outclass technology in the hands of a mediocre team will produce nothing, because this is all about competence and leadership qualities. Apart from imparting knowledge, it is equally important for institutes and universities to identify those who can flourish their own businesses and help them establish their initial setup.

Conclusion

Higher education research has assumed a significant role in the economic development and social change in the today's world. Knowledge based economy has surpassed the influence of natural and physical resources. This article highlighted the impediments in development of higher education research and identified various initiatives for promoting higher education research in Pakistan. Some of the significant problems in higher education research are lack of resources for research, students' disinterest in research work, shortage of funds, lack of proper guidance and supervision, course content dominated by theory, and poor university linkages with industries. For improving higher education research, efforts need to be diverted for availability of resources required for research, proper acknowledgment for research, increasing the credit hours for research-based courses, capacity building of researchers through trainings, innovation in teaching methods, and supervision of research work.

Besides this, the policy makers should properly plan to allocate sufficient funds for promoting research culture in higher education institutes and policy centres. In order to enhance academia-industry research collaboration, the government and policy executors should provide various incentives like tax rebate and tax reduction to industries that work with universities and policy centres. This may also include support to business incubation centres in universities and holding job fairs in universities by the industrial managers and research centres. Moreover, research culture need to be strengthened among the faculty members in universities through holding of regular seminars, conferences and talks by policy experts and policy makers. In this direction, the role of leadership cannot be underestimated for which the government will have to ensure merit-based appointment in academia

and bureaucracy to boost up the research environment in education, research centres and industries.