Chapter 24
Evaluating the Research Productivity of Pakistan in the 21st Century

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ABSTRACT

The publications of scholarly communication have been considered as the driving force and the backbone for international development. The purpose of this study is to evaluate the scholarly research productivity by authors affiliated to Pakistan in all areas of knowledge. The Web of Science (WoS) database has been used to extract the records of publications produced by the authors affiliated to Pakistan and published during the 21st century from 2000 to 2019. The analysis of the retrieved documents has been conducted on the following parameters; distribution of publications by year, percentage, and annual growth rate; the top-20 most productive institutions, subject categories, collaborative countries, and preferred source publications. Findings have shown that 148,678 publications were produced by Pakistan with an average of 7,434 documents per year and 42% documents were produced during the last three years from 2017-19. COMSATS University Islamabad and Quaid-e-Azam University were found to be the most productive institutions while medicine general internal and engineering electrical electronic were found as the preferred areas of research. The examination of research showed that China is on the top, followed by United States and Saudi Arabia, but the highest citation impact in documents produced in collaboration with the authors are of Switzerland. Pakistan Journal of Botany has emerged as the most favorite source of publication. The state-of-the-art systematic research plays a significant role in the development of the country and is compulsory for sustainable developments. This study would help to re-examine the research strategies, support in the decision-making process, and further fund allocation. The result also highlights the strong and least preferred areas of research.

INTRODUCTION

The sustainable development of the country depends on the innovative, indigenous, authentic and incessant research activities (Haq & Tanveer, 2019; Haq, & Alfouzan, 2017). The systematic research process is an inventive task. The basic objectives of research are the growth of existing theories, disclosure of new knowledge through the application of various organized research methods and finding out the solution of everyday problems (Pervez, 2018). The publications of scholarly communication and research findings provide a steady foundation for the imaginative mind to conceive new dimensions of knowledge and to perform further research to explore new horizons of knowledge (Anjum, 2005).

Universities and Degree Awarding Institutions (DAIs) are the nucleus of research productivity and play a vital role in the socio-economic development of society (Iqbal, Mahmood & Iqbal, 2018). Top-quality postgraduate education with sound research training and comprehensive reading of relevant literature coupled with creative imaginative power greatly facilitate research (Memon, 2017). The development of higher education and the number of publications are accumulating at an astonishing pace in the twenty-first century all over the world (Piracha & Ameen, 2019). The role of teachers at university-level has been manifold; they not only engage in the teaching and learning process but also train the young generation in the art of conducting and publishing research (Mägi & Beerkens, 2016). The focus of the contemporary world has changed from industrial to knowledge and information-based economy (Shafique & Mahmood, 2008). Information is considered a substantial resource for any profession, institution, country, region and the whole world (Haq & Tanveer, 2019).

As the quantity of scholarly and scientific publications has been increasing manifold in a digital milieu, the evaluation of data has also gained importance (Haq, Elahi & Dana, 2019). The bibliometric procedure helps to ascertain the different attributes of publications and provide valuable assistance in bibliographic control to the overflow of information. The findings of the quantitative assessment support in managerial decisions, provision of budget, and monitoring research policies as well as to redesign the organizational priorities (Ibrahim & Jan, 2015; Haq, et. al. 2019; Javed, Ahmad, & Khahro, 2020).

Pakistan came into being in August 14th, 1947 and now is the home of 207 million peoples with $1.061 trillion Gross Domestic Product (GDP) and GDP per capita has been recorded $5,400, having the 9th largest labor force estimated at 63.89 million, spending 2.9% of its GDP on education during 2017 and the literacy ratio is 59.1% based on U.S. Central Intelligence Agency records (2020). But latest statistics of Pakistan showed that the literacy ratio has reached to 62.3% and Pak Rupees 829.2 billion expenditures spent on education during the year 2017-18, that is, 2.4% of total GDP and 53031.9 thousand new students were enrolled in universities and DAIs of Pakistan during 2018-19 (Pakistan, 2019).

The Higher Education Commission (HEC) provides the data for the academic year of 2014-2015 that 1298600 new students were enrolled at Pakistani Universities/DAIs and constituent colleges (Pakistan, Higher Education Commission, 2020). At that time the estimated population of Pakistan as shown by The World Bank were 189.4 million. It meant that 0.68% of the new enrolment in universities/DAI in Pakistan. According to UNESCO, the current estimated population of Pakistan is 212.2 million, amongst these 20964647 (9.87%) have been enrolled at the level of higher education (United Nations Educational, Scientific and Cultural Organization, 2020). The statistics of Pakistan also confirmed that 10% of the gross enrolment ratio at tertiary level of education during the period of 2012-17 (Pakistan, 2019).

The Global Information Technology Report 2016 provides the network readiness indices of 139 countries of the world. The indicator number 2.07 deals with Tertiary education gross enrollment rate %, Greece secured the first position with the value of 110.2, followed by Korea, Rep (95.3), Finland

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