

Universities are as good a choice for pursuing Ph D as R&D institutes

S&T institutions world over are involved in the process of expanding their knowledge base. Research scholars are generally regarded as significant players to contribute towards scientific innovations, publications and patents. India has the highest number of youth in the world, and their enrolment in large numbers for higher studies in science and engineering will eventually impact the country's competitiveness towards knowledge-based economy. Doctoral studies foster creativity, innovation and analytical thinking in research scholars. They also provide opportunities to students to experience the excitement of discovering, gaining skills and insights required in their selected areas of research and instil a sense of confidence to take up future research assignments independently. Over the years, a number of institutions of higher learning were set up to provide quality education and to accelerate the pace of research. It is generally believed that barring some universities, R&D institutes are preferred destinations for students to pursue doctoral research. Better infrastructure and conducive environment for doing research in the field of their choice are cited as possible reasons for students to leave their alma mater and join elsewhere to pursue their Ph D. The CSIR Senior Research Fellowships (SRF) scheme is used as a case study to evaluate the preference of students in selecting the institutions for pursuing their Ph D.

SRF selection profile during 2004–05 to 2008–09 revealed that 28% SRFs opted to pursue PhD at source institutions (universities) from where they acquired their essential qualifications. About 26% migrated to other universities and 46% to R&D institutes for pursuing doctoral research. In fact, 54% of the SRFs preferred to pursue Ph D in the university system, in contrast to 46% in R&D institutes.

Data pertaining to leading source institutions (26 universities) from where more than 20 students were selected for the award of SRF, revealed that maximum number of selections was from Madras University (88), followed by Calcutta University (69), Mysore University and Pune University (56 each) and Jadavpur University (52). Maximum students (71%) from Aligarh Muslim University (AMU), selected for the award of SRF, opted to stay at AMU fol-

lowed by Sri Venkateswara University (67%), Anna University (59%), Jadavpur University (58%), Madras University (49%), Banaras Hindu University (BHU) (44%), Madurai Kamaraj University (MKU) (43%), Delhi University (41%), Andhra University (37%), Mysore University (36%) and Lucknow University (4%). The trans-State migration of research scholars was limited to 29% only. The number of institutions to which the students migrated from leading source institutions to other institutions for doing a Ph D varied from 2 to 25. Students from Goa University migrated to only two institutions, whereas students from Calcutta University migrated to 25 institutions for pursuing their Ph D. Placement profiles of 1790 SRFs selected during the period 2004–05 to 2008–09 revealed that they were working in 259 institutions (12 Central universities, 84 State universities, 23 Deemed universities, 37 affiliated postgraduate colleges, 12 institutes of national importance and 91 R&D institutes).

Forty per cent of the total 1790 SRFs selected had been pursuing research for Ph D in institutions which are rated as the top 35 in the country in terms of publications output in Scopus International Database¹, 1996–2006. These 35 institutions include nine source-cum-host institutes, viz. Universities of Madras, Pune, Jadavpur, Andhra, Delhi, Mumbai and BHU, AMU and Anna University, and the remaining 25 were host institutions, which provide placement to students from the source institutions for doctoral research. IIT Kharagpur among the institutes of national importance, BHU among the Central universities, Madras University among the State universities, IISc, Bangalore among Deemed universities, and Indian Institute of Chemical Technology, Hyderabad and National Chemical Laboratory, Pune among R&D institutes were the leading host institutes. However, the highest efficiency and relative efficiency in terms of number of selections of SRF against the number of students who appeared for the interview have been observed in case of IISc, Bangalore².

The placement profile of CSIR SRF revealed that the universities are as good a choice to pursue doctoral research as R&D institutes. Thus the assumption that

the preferential attitude of students to pursue their Ph D programme in R&D institutes has affected Ph D enrolment in the university system is unfounded. Invariably educationists are concerned about the number and quality of Ph D students produced from some State universities. Though there is no limitation on research grants given for scientific research, lack of basic infrastructure and shortage of teaching faculty are cited as the possible reasons which hamper quality research. When the world is moving towards knowledge-based economy, modernization of S&T infrastructure in the university system, particularly in the selected State universities requires top priority. Upgradation of infrastructure in postgraduate colleges and State universities would go a long way in improving the quality of Ph D students produced. Furthermore, to facilitate research in the university system, infrastructure resources available in R&D institutes should also be made available freely to research scholars working in the university system. Joint research proposals from researchers at universities and R&D institutes should be encouraged. Universities should allow researchers from R&D institutes to participate in teaching to overcome the shortage of teachers in the university system. Students may also be encouraged to enroll themselves with two guides from different disciplines, not necessarily from the same department/institute, to promote research in interdisciplinary areas, where boundaries between disciplines are transcended and knowledge and perspectives from different disciplines are integrated. Directed efforts to augment quality S&T human resource will ensure India's sustainability in knowledge-driven economy.

1. Gupta, B. M. and Dhawan, S. M., Report, NISTADS, New Delhi, 2008.
2. Hasan, S. A. *et al.*, *J. Sci. Ind. Res.*, 2008 (submitted).

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