

# CREATING RESEARCH HUBS IN UNIVERSITIES: KEY ISSUES

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# INTRODUCTION

- Research is an integral part of any higher education process.
- Every university teacher has to conduct research as an integral part of his/her duties because a teacher is expected not only to assimilate and disseminates the knowledge but also to generate new knowledge, which is possible only through research.

# INTRODUCTION (contd....)

- We in India have a large pool of research personnel ( i.e. very well qualified faculty members as well as the research scholars and higher degree students) at our institutions of higher learning viz. Universities and Colleges. We have 317 Universities and 17,625 Colleges imparting higher education and research training.

# INTRODUCTION (contd....)

- The number of students in higher degree institutions are increasing very fast. There used to be about 7 million students in these institutions a decade ago and this number has now become about 13.5 million students. Such is the scenario of knowledge/research pool and we have to give proper guidance and directions to them for rapid economic growth through research.

# Key Issues Involved in Creating Research Hubs in Universities

- Universities act as repository of knowledge.
- Basic research, which is the back-bone of any applied/industrial research, is usually done at Universities and for such researches, manpower is always available at Universities as a part of education process and that too at very economical rate.

# Key Issues .....

- Universities have to undertake basic research and in addition should go for directed research as well.
- If the research fructifies into a commercially viable product or process, IPR issues should be addressed to, for generating funds, for further research through royalties from the intellectual property rights/patents generated/obtained.

# Key Issues .....

- However if the research work is unlikely to generate sufficient economic input (such as for research related to certain basic sciences where commercial interest may not lie), it would be better to opt for publishing results rather than going for IPR/patents. Also, even if the University has decided to go for patenting, after filing the patents, publications should be encouraged in the larger interest of scientific community/research.

## Key Issues (contd....)

- It is a well known fact that researches done at the universities generally culminate into good quality theses or project reports. However, Universities right now are neither sufficiently equipped nor have the culture of going to the next stage i.e. development (such as development of a product or process). Institutions of higher studies have to pay attention to this aspect urgently. Could be collaboration with an industrial partner may help this process of development/scaling up of the research.

# Research with Industrial Participation

- We at BITS, Pilani have a large number of collaborative industries who are participating in our Ph D programme. The current list is given below:
- A P Chem Ltd, Hyderabad
- Accenture Services, Mumbai
- Bombay Hospital, Mumbai
- Bosch-Roxroth, India Ltd, Ahmedabad
- Carborundum Universal Ltd, Chennai

- CLA Solutions, USA
- Cognizant Technology Solutions, Chennai
- Dr. Reddys Laboratories Ltd., Hyderabad
- EC Mission, Hyderabad
- EDS Solutions, Chennai
- E-Funds Int (P) ltd, Chennai
- Encore Software, Bangalore
- Emergency Management, Hyderabad
- Enkay Telecommunication, Mumbai
- GE India Ltd, Bangalore

- General Motors India Pvt. Ltd., Halol
- Glenmark Research Centre, Mumbai
- Grasim Industries Ltd, Jodhpur
- HCL Tech. Ltd., Chennai
- Hero Honda Motors Ltd., Daruheda
- Hewlett Packard, Chennai
- HP Labs India, Bangalore
- HRMC Ltd, Mumbai
- IBM Ltd, Bangalore
- IGV Projects and Consultancy Pvt. Ltd., New Delhi
- Invensys India Ltd, Chennai
- IPCA Lab, Mumbai
- IT Contractors, Bangalore

- Laila Impex Ltd, Vijaywada
- Lea Associates, Delhi
- Motorola, Bangalore
- NRB Bearings, Thane
- ONGC Ltd, Mumbai
- Panacea Biotech Ltd, New Delhi
- Pfizer Ltd, Mumbai
- Philips Software Centre, Bangalore
- PNS Centre for HRD, Mumbai

- PSRI Hospital, New Delhi
- Ranbaxy Laboratories Ltd., Gurgaon
- Reliance Energy, Dadri
- Reliance Infocomm, Mumbai
- Renaissance Strategies Consulting Pvt. Ltd., Pune
- Rumco Pvt. Ltd., Mumbai
- Saband Software Tech. Pvt. Ltd., Pune

- SAP Labs, Bangalore
- Safexpress Pvt. Ltd., Pune
- SSS-TTK Ltd., Mumbai
- St. Jude Children Research Hospital, Memphis
- ST Microelectronics Ltd., Noida
- Strides Arcolab, Bangalore
- Sunderam Fasteners Ltd., Chennai
- Tata Autocomp Systems Ltd., Pune
- TVS Needles, Madurai
- Ultra-tech Cements Ltd., Chennai
- USV Ltd, Mumbai
- VNVISION, Hyderabad
- Yashodra Superspeciality Hospital, Secunderabad

# Key Issues .....

- Universities are the main forum for seeding and breeding of ideas and this aspect has to be sustained.
- We should not loose sight of this aspect in our over enthusiasm for generating revenues through commercialization of research projects being carried out at these Institutions or in the process of development/ delivery aspects of undertaking corporate sponsored research projects.

# Research – Development and Delivery

- For economic benefits of research being carried out at various universities, in addition to Research and Development, training in delivery aspect of research projects is very much required. As it is well known, Industrial or Corporate Research is always linked to time bound delivery. Universities have to develop this culture for time bound delivery. Right now most of the research projects do not follow a time line and such a practice may not be conducive for corporate research or even acceptable to the corporate world.

# RESEARCH INTEGRITY, ETHICS AND GOVERNANCE

- Research integrity should be given due importance to avoid issues like re-doing or copying someone else's research, stealing fellow researchers' research ideas, plagiarism, wrong reporting of findings, which do not exist, cooking up of data for publication etc.
- Ethics is central to any strong research and every researcher has to abide by research ethics.

# Certain other issues which need attention

- POLICY AND STRATEGY
- RESEARCH FUNDING
- FUNDING OPPORTUNITIES
- ASSESSING RESEARCH
- DISSEMINATION AND TRANSLATION OF RESEARCH
- DEVELOPING PROFESSIONAL RESEARCH MANAGERS & ADMINISTRATORS
- MANAGEMENT & ORGANIZATION OF RESEARCH SUPPORT

# Certain other issues contd .....

- DEVELOPING RESEARCH CADRE
- PDF, Research Associates, SRF, JRF etc. already exist at most of the Institutions of Higher Education.
- To boost research, we have to seriously create a parallel cadre of
  - Research Professor
  - Research Associate Professor
  - Research Assistant Professor
  - Research Lecturer etc.

# We have to do away with Patchy Approach to Research

- Generally to encourage research at Universities and Colleges, we take patchy approach such as linking it to employment and promotion policies.
- However such approaches may lead to inferior quality research or research for research sake. We have to get out of this patchy approach and provide the necessary support and infrastructure in a big way for serious world class research.

# Research @ BITS, Pilani

- Ph D Programme:
- On-campus Ph D
- Off-campus Ph D for Aspirants from industry and government departments
- Industry sponsored research centres
- Industry sponsored research projects
- External funding from funding agencies
- Collaboration with foreign Universities

# Some of the Suggested Actions to be Taken to help the Issue

- While admitting students to the research programme, his research aptitude and his creativity need to be evaluated in addition to his educational background.
- A course on Research Methodology should be taught at all higher degree educational establishments.

## Suggestions contd .....

- Use of Statistical software packages such as SPSS would help the researchers in proper statistical analysis of results.
- Colloquium lectures on current topics of scientific interest by an eminent person of authority on that subject should be organized frequently at all the Institutions of Higher Education

## Suggestions contd .....

- Research journals, both e-journals and print journals should be freely available to all researchers.
- Effort should be made to bring in changes in the current practices to ensure that creativity of the young researchers do not get killed. Creativity plays a very strong role in research discoveries.

# Suggestions contd .....

- Industries should come forward and institute research fellowships at universities for researchers working on research projects of their commercial or developmental interest.
- Society also has to finally get benefited by the researches being done at the Institutions of higher education and this could either be in form of a product or a process or policy or extension activity for socio-economic upliftment of every one in the society.

Thank you for your kind attention