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National Research Foundation (NRF) in India: Driving Innovation and Collaboration in Research

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ABSTRACT:The National Education Policy 2020 in India proposes the establishment of a National Research Foundation (NRF) to support research activities in all fields, including science, technology, social sciences, and humanities. The NRF will function as an independent and autonomous body, focusing on enhancing the quality and quantity of research in India. It aims to provide a simplified process for funding and administering research projects while promoting interdisciplinary research and collaboration between academia, industry, and government. The NRF will also provide infrastructure and training for researchers and students and encourage international partnerships and collaborations. The establishment of the NRF is expected to have a transformative impact on research activities in India by addressing gaps in the current research ecosystem, fostering a culture of innovation, and attracting and retaining talented researchers and students. The success of the NRF will depend on its ability to provide adequate funding and infrastructure, attract and retain skilled researchers, and promote collaboration and innovation. Ultimately, the creation of the NRF is a significant step towards making India a global leader in research and innovation.

KEYWORDS:NEP-2020, NRF, Indian Knowledge System, Research

I. INTRODUCTION

Research and innovations have a major role in making any country move forward on the path of progress. The higher education system of every country is the foundation of research in that country. In order to keep the country's higher education system successful and alive, it is necessary to continue continuous research. If we look at the history of famous institutions of higher education, it is clear that the most successful institutions have been those which have developed the skills of creative research, innovation, and research mindset, as well as high-quality knowledge. The scope of research and innovation is not limited only to higher education institutions, but it affects the fabric of the entire country. The social, economic and technical structure of the country is affected by new researches. American economist Robert Heilbroner (1963) wrote in his book "The Great Ascent" that "economic development is not limited to material resources and the training of skilled workers, but also to the discovery of new ways of life, thought, and action." There is a need to educate the entire population". It is clear from the above statement that for new research it is necessary that every person should be educated because there is a born researcher in every person and every person has some creative idea or ability to do any work in a new way is present. We just need to nurture these ideas. It is not that the research done in higher education only creates the path of development, but it provides clean drinking water, sanitation, quality education, advanced health services, social equality, transportation, poverty alleviation, clean energy, alternative sources of energy to all the citizens of the country. Helpful in tackling social challenges such as resource discovery, and mitigating the negative effects of climate change. The potential to find solutions to all these challenges lies in the knowledge base available with science and technology as well as humanities, social sciences, and various cultures present in the country, which needs to be brought out and refined through research. Perhaps for this reason, the New Education Policy 2020 has recommended to revive the ancient Indian education system so that the country can be benefited from the Vedic period and even more ancient knowledge systems.

II. HISTORY OF RESEARCH REGULATORS IN INDIA

Indian philosophy and culture have influenced the entire human civilization from the earliest times. Indian sages and mystics can be considered as researchers of that time. The greats like Charaka, Sushruta, Aryabhata,

Varahamihira, Bhaskaracharya, Brahmagupta, Chanakya, Chakrapani Datta, Madhava, Panini, Patanjali, Nagarjuna, Gautama, Pingala, Shankardeva, Maitreyi, Gargi and Thiruvalluvar raised the Indian education system to the highest level with their knowledge. . These scholars were proficient in astronomy, metallurgy, medical science and surgery, mathematics, civil engineering, architecture, shipbuilding and navigation, yoga, fine arts, chess, etc. India has been the pivot of a civilization of research and innovations since its inception. The remains of the Indus Valley Civilization reflect the planned research of that time. The advanced urban system, metallurgy and technical skills of this civilization were the result of research and innovations. Similarly, in the Vedic period also many researches were done on science and other subjects and many life-useful systems were created for human beings. Knowledge related to mathematics, science, astronomy, and other subjects is available in abundance in Vedic religious texts. Aryabhata, the inventor of zero, is considered a famous scholar of astronomy. Takshashila, Nalanda and Vikramshila have been famous centers of higher learning in ancient India. In these universities, there was a system of world-class research along with multidisciplinary teaching. These institutions were the preferred study centers for students and researchers from all over the world. In this way, there are many such examples which show the highest level of advanced education and research of ancient India. But various invasions and British rule destroyed the entire Indian education system and destroyed the chain of traditional research and innovations. The British gave priority to English as a working language in place of local languages, due to which the inferiority complex began to grow in people who did not know English, and gradually research and innovations came to a halt.

UGC: After independence, providing opportunities for education to every citizen was a pressing question before the policy makers of the country. Here the talk of quality education was a distant thing. Based on the recommendations of the Sarkar Committee (1945), five IITs were established in the country. Which can be considered as the first research center of modern India. All India Council for Technical Education was established as the regulator of all technical institutions located in the country. In the year 1948, The Indian Education Commission was formed under the chairmanship of Dr. R. S. Radhakrishnan. On the recommendation of the Indian Education Commission, the University Grants Commission was established in 1953 for the regulation of higher education, which was given constitutional status by the Indian Parliament through the UGC Act, 1956. After this, various research institutes were established in the country under the control of different ministries and departments. Some of them are as follows:

1. Council of Industrial and Scientific Research
2. Department of Atomic energy
3. Defence Research and Development Organisation
4. Indian Academy of Sciences
5. Indian National Academy of Engineering
6. Indian Council for Agricultural Research
7. Indian Council of Historical Research
8. Indian Council of Medical research
9. Indian Council for Philosophical Research
10. Indian Council for Social Sciences Research
11. Indian Space Research Organisation
12. Indian National Science Academy
13. National Academy of Sciences

One of the main functions of the University Grants Commission was to establish and maintain high standards of research, but the commission has been mostly busy setting standards for PhD degree. It is true that the quality of higher educational institutions depends on the efforts made to promote research and innovations in them. UGC, IITs, and various research councils are engaged in furthering research work according to their own standards, but for mutual coordination and sharing of research work and results, the need for such an organization was felt, which is a pure research institute regulator. Act like a research institute to establish a new research environment in the country. Like UGC, other constitutional bodies were also established in the country, which played an important role in setting up research centers along with ranking the works for research and innovations. Changes in higher education started with the announcement of New Education Policy 2020. With the announcement of this new policy, the Ministry of Human Resource Development was again made the Ministry of Education. MoE Innovation Cell and AICTE began working to systematically promote a culture of innovation, entrepreneurship and startups.

NITI Aayog: On January 1, 2015, the Government of India established the NITI Aayog (National Institute for Transforming India) in place of the Planning Commission, which is known as the think tank of the government. NITI Aayog, an institution promoting cooperative federalism, is headed by the Prime Minister himself. The chief ministers of the states are its members. NITI Aayog mainly has two core hubs namely Team Hub and Knowledge and Innovation Hub. The Team Hub disciplines the Center and the States as a team while the Knowledge and Innovation Hub serves as a capacity building for the country's premier think tanks in various ways. The main function of the think tank is to encourage research projects from small scale to large scale and to promote research culture within the country.

NAAC: The UGC established an autonomous body NAAC (National Assessment and Accreditation Council) in 1994 with the objective of bringing excellence in teaching, research and innovation in higher educational institutions of the country. The third of the seven criteria of NAAC is related to research, innovations and extensions. Which evaluates the research facilities established by an institution of higher education and the promotion of research culture. A maximum of 250 marks have been fixed for this, i.e.25 percent of the total evaluation. According to NAAC, it is the responsibility of every higher educational institution to start socially useful research projects in its research center.

NIRF: The National Institutional Ranking Framework (NIRF) in India has several key measures to foster research in higher education institutions. Some of the main measures include:

1. **Research and Professional Practice (RP):** This parameter evaluates the quality and quantity of research output, such as publications, patents, and research projects. The weightage of this parameter is 40% in the overall ranking, making it a crucial factor in determining an institution's ranking.
2. **Perception:** This parameter evaluates the institution's perception among academics, employers, and industry experts. A high perception score indicates that the institution is recognized for its research excellence, leading to greater opportunities for collaboration and funding.
3. **Funding:** This parameter evaluates the amount of funding that the institution receives for research projects. Higher funding translates to better research facilities, equipment, and opportunities, enabling institutions to conduct high-quality research.
4. **Outreach and Inclusivity:** This parameter evaluates the institution's efforts to promote research among students from diverse backgrounds and regions. It also evaluates the institution's efforts to disseminate research findings to the wider community.
5. **Collaboration:** This parameter evaluates the institution's efforts to collaborate with other institutions, industries, and international partners to promote research and innovation. Collaboration enables institutions to leverage resources and expertise to conduct high-quality research.

These measures provide a comprehensive evaluation of a higher education institution's research capabilities and promote a culture of research and innovation. By incentivizing institutions to improve their research output and fostering collaboration and funding opportunities, NIRF plays a crucial role in promoting research in India.

III. NATIONAL RESEARCH FOUNDATION (NRF)

According to AISHE portal, Indian higher education system is the largest system in the world with more than 1100 universities, more than 11000 standalone institutes and more than 43000 colleges. But it is the country's misfortune that less than 1 percent of these institutions are associated with research programs while more than 90 percent of the country's students are studying in these institutions. Thus, most of the students and faculty of the country are away from the search for new knowledge. This is a great loss to the research environment of India. This is the reason why more than one million engineer graduates produced every year go on to become associates, professors or other high paying jobs due to lack of interest in research or due to lack of proper guidance. If the investment in research and innovation sector in India (0.69%) is seen as a percentage of GDP, it is much higher than the US (2.8%), China (2.1%), Israel (4.3%), and South Korea (4.2%). is less. According to the Economic Survey of India 2016-17, the number of researchers in India is only 15 per lakh population, while it is 111 in China, 423 in America and 825 in Israel.

If we talk about the quality of India's research, then the situation here is also not very good. The quality of the country's research and innovations as a whole is not up to global standards. Apart from this, none of India's research centers is included in the top 100 research and innovation institutions of the world. Barring a few exceptions, the quality of researchers is also not world class.

If the country and the country's leadership aspire to progress through sustainable development and make it a super power in the field of knowledge, then it has to be at the forefront of research and development and knowledge creation. Addressing the 106th Indian Science Congress-2019, Prime Minister Shri Narendra Modi said that "by 2030, India will be among the top three countries in science and technology and one of the most attractive destinations for the world's best talent."

The major objective of NEP-2020 is to make Indian higher educational institutions a global knowledge hub by making them knowledge hubs, digital gurus and discussion forums (academic hubs) with the sacred vision of VasudhaivaKutumbakam. Multidisciplinary research will be done in these knowledge centers.

There was a time when lakhs of foreign students used to come to India to learn the 64 arts related to the overall development of a human being. To return this pride of India and to achieve the goal of "Self-reliant India", the National Education Policy-2020 has paved the way for the revival of the ancient Indian education system. NEP-2020 emphasizes that learners should be exposed to the ancient knowledge and tradition of India.

To create a conducive environment for research and innovations, higher educational institutions of the country will have to change their research policies and a research and innovation cell will have to be established in each institution and the government and management will have to arrange necessary funds. Keeping all these things in mind, a National Research Institute has been envisaged in the National Education Policy-2020, which will promote research and innovation in universities and colleges, arrange funds for them and implement excellent research results.

The National Education Policy-2020 takes a comprehensive approach to meet the lack of research in the country and to increase its quality, which includes restructuring of higher educational institutions to promote research in universities along with changes in school education. The main objective of this policy is to develop multidisciplinary and holistic education system in all higher educational institutions and to include research and internship in the curriculum. All the above mentioned points will prove helpful in strengthening the research mindset in the country. Keeping all these things in mind, establishment of a National Research Institute has been proposed in the National Education Policy-2020. So that quality research process can be developed and motivated in the country. The broad objective of establishing this institute is to promote research culture in the country through universities. The NRF will provide an acceptable base of merit and peer-reviewed research funding that will encourage excellent research and help develop a research culture in the country. NRF activities have been proposed in the National Education Policy-2020 as follows:

1. Providing funds for competitive and peer-reviewed research in all subjects.
2. To start research work by developing research facilities by providing suitable assistance to all the universities and colleges of the country where there is no research institute or it is still in initial stage.
3. To establish coordination between researchers and various agencies of the government, to acquaint them with topics of immediate national importance and to encourage research so that policy makers can know the progress of research and implement them from time to time in the national interest.
4. To recognize excellent research and its progress.

Role and responsibilities of NRF

- NRF will promote quality interdisciplinary research in the country as quality research and innovation are important for the economic development of the country.
- NRF will act as a bridge between various departments, laboratories, higher educational institutions, and technical institutions of the Central and State Governments.
- NRF will develop a research ecosystem across the country that bridges the gap between private, state and central universities and provides equal research opportunities to each.
- NRF will help in empowering institutions with limited capacity to undertake multidisciplinary research.
- The NRF will play a key role in promoting research in today's hottest technology, Artificial Intelligence, and other emerging areas of science and technology, as well as in bringing excellence in the quality and outcomes of multidisciplinary research.
- NRF will provide quick and timely solutions to the needs of industries by establishing coordination between industry and academic institutions in collaboration with FICCI and CII, the organization called the voice of the industrial development and business community of the country.
- The NRF will fairly represent gender equality and ensure the fair participation of women in multi-institutional research projects.

- NRF will take initiative to adopt standardized review systems followed by reputed international funding agencies to bring transparency in selection of research projects.
- NRF will provide a centralized research database to help researchers from all walks of life select research topics/areas so that there is no duplication of research topics.
- NRF will provide a "one window solution" to facilitate researchers from all discipline areas and solve their problems.
- The introduction of 4 years degree program in NEP-2020 will prove to be very useful. Because in order to develop research mindset in the final year students, one year internship will have to be done. It is defined in NRF.

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V.CONCLUSION

The NRF is a welcome development for India's research and innovation community. The agency has the potential to significantly boost India's research capacity and output, and to help the country achieve its goals of economic development and social progress. The NRF is expected to play a major role in India's efforts to become a global leader in research and innovation. The NRF will help to create a more conducive environment for research and innovation in India, and will help to attract and retain top researchers from around the world. The NRF will also help to promote the commercialization of research and innovation, and will help to ensure that the benefits of research are shared by all. The NRF is a significant development for India's research and innovation ecosystem. The NRF has the potential to transform India's research landscape and to help India achieve its goals of economic growth and social development. It is also expected to help the country address some of its most pressing challenges, such as poverty, climate change, and healthcare.

The NRF is still in its early stages, but it has the potential to make a significant contribution to India's future. It is a welcome development, and it is one that should be supported by all stakeholders.

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