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"Role of Today's Bharat in the Present Global Scenario"

SCIENCE AND ENVIRONMENT DIMENSIONS

"The impact of Indian research, development and outreaching efforts globally in the field of information technology and science"

Lakshay Dhoundiyal

Student, Department of Electronics, University of Delhi

BSc. (Hons.) Electronics

Saruchi Tandon[1] | Puneet Sehgal[2] | Himani Dua Sehgal[2]

Associate Professor[1], Assistant Professor[2], University of Delhi

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Lakshay Dhoundiyal[1], Saruchi Tandon[2], Himani Dua Sehgal[3], Puneet Sehgal[4,*]

[1]Student, Department of Electronic Science, Atma Ram Sanatan Dharma College, University of Delhi.

[2]Associate Professor, Department of Electronic Science, Atma Ram Sanatan Dharma College, University of Delhi.
[3]Assistant Professor, Department of Instrumentation, Shaheed Rajguru College of Applied Sciences for Women, University of Delhi.
[4]Assistant Professor, Department of Electronic Science, Atma Ram Sanatan Dharma College, University of Delhi.
E-mail : puneetsehgal1988@gmail.com, *Corresponding Author

ABSTRACT

This abstract talks about how the Environmental Policies in India have evolved over the decades and in the current global scenario. Research and Development popularly known as R&D played an immensely important role in the Software innovation process as every sector of the industry require some spice of innovation which results from continuous research and non-stop exploration which results in the economic development of India. The worldwide public health sector disaster was caused due to the viral outbreak of the COVID-19 disease in 2019. Its worldwide mortality rate is around 3-4%. The practices of Yog and Ayurved were one of the daily routine practices of people in ancient times to stay fit and healthy. These traditional practices help to improve immunity, body physique, and mental stability. Even Scientists have emphasized the use of all these practices to prevent humankind from pandemic outbreaks and decrease community spreading of diseases. To promote it as a global medicine and equip Ayurveda to meet global healthcare needs, there is an urgent need to modernize the ancient system in pace with the development of science and technology. Numerous promising systems that incorporate advanced information technology have been developed for clinical use, with regular advancements in vacuity, speed, and ease to use. Among ways taken for the transfer of technology for its immersion is the creation of institutions like Krishi Vigyan Kendras of ICAR, extension centres and poly-technology centres of CSIR, pastoral technology- cum- training centres of NRDC, and community polytechnic.

The generation and use of indigenous technology, and numerous financial and other impulses are granted by the government. India's current environmental policy advocates local solutions that will tackle justice and environmental issues simultaneously. Social and Economic growth is often seen as trumping environmental concerns and eventually India has strong basic laws in place protecting the environment.

Keywords*: Incorporate, Outbreaks, Trumping, Indigenous, Exploration, Vacuity, Pastoral.*

Introduction

India has a rich history of research in various fields including science, technology, medicine, social sciences, and humanities. The role of Indian research in the development of the Indian economy has been significant over the years. The key contributions of Indian research towards the growth of the economy have made a huge change in this world globally. One of the most significant areas where Indian research has contributed to the development of the Indian economy is the field of agriculture. India has a predominantly agrarian economy, and research in this field has played a crucial role in improving crop yields, developing new varieties of crops, and introducing new farming techniques. Research institutions like the Indian Council of Agricultural Research (ICAR) and Agricultural Universities have played a key role in this regard. The Green Revolution, which transformed India from a food-deficit nation to a self-sufficient one, is a testimony to the importance of research in agriculture. It began in the 1960s and was a significant milestone in the development of Indian agriculture. It was based on the use of high-yielding varieties of seeds, irrigation, and the use of fertilizers. The Indian Council of Agricultural Research (ICAR) played a crucial role in the development of the Green Revolution. ICAR is the apex body for coordinating, guiding, and managing research and education in agriculture in India. It has developed many high-yielding varieties of crops, including wheat, rice, and maize, which have helped in improving crop yields and making India self-sufficient in food production. Apart from developing high-yielding varieties of crops, ICAR has also played a crucial role in the development of new farming techniques.

It developed many new techniques, including zero-tillage, precision farming, and organic farming, which have helped in improving the productivity and sustainability of Indian agriculture. The research conducted by ICAR has also helped in the development of agro-processing industries in India. The agro-processing industry is an essential part of the Indian economy, and research in agriculture has played a crucial role in its development.

The Indian pharmaceutical industry is one of the fastest-growing industries in the world. The industry is known for its generic drug manufacturing and has played a crucial role in making medicines affordable for people in developing countries. The Indian pharmaceutical industry is also involved in the development of new drugs and treatments for various diseases. Research has played a significant role in the development of the Indian pharmaceutical industry. CSIR has played a crucial role in the development of the Indian pharmaceutical industry. The CSIR has developed many new drugs and treatments for various diseases, including cancer and tuberculosis. It has also developed many new drug delivery systems, which have helped in improving the efficacy of drugs. The research conducted by the CSIR has helped in the development of new technologies, which have helped in reducing the cost of drug manufacturing. The Indian pharmaceutical industry is now a major player in the global pharmaceutical industry, and research has played a crucial role in its development. Pharmaceutical companies have been able to provide affordable drugs to not just the Indian population, but also to people in developing countries. It has also been able to develop new drugs and treatments, which have helped in the treatment of various diseases, including cancer.

Indian research has also contributed to the development of the Indian IT industry. The Indian IT industry has grown at a rapid pace over the past few decades, and research in this field has played a crucial role in this growth. The Indian Institutes of Technology (IITs) are some of the premier engineering institutes in the world, and they have played a crucial role in producing highly skilled engineers and scientists. The research conducted at the IITs has helped in the development of new technologies.

The IIT industry is involved in software development, hardware manufacturing, and IT-enabled services. The IT industry has played a crucial role in the development of the Indian economy, and research has played a significant role in the growth of the industry[10].

The National Association of Software and Services Companies (NASSCOM) is the premier industry body for the Indian IT industry, and it has played a crucial role in promoting research and development in the industry.

The Indian Institutes of Technology (IITs) and other research institutions have been instrumental in producing highly skilled engineers and scientists who have contributed to the growth of the IT industry. Indian companies like TCS, Infosys, and Wipro are now global players in the IT industry. Indian research has also contributed to the development of renewable energy sources. India is a country that receives abundant sunlight and has a vast coastline, and research in the field of solar and wind energy has helped in harnessing these resources. The Indian government has set a target of achieving 175 GW of renewable energy capacity by 2022, and research in this field is playing a crucial role in achieving this target[7].

Research in agriculture, pharmaceuticals, IT, and renewable energy has helped in the growth of these industries, and India is now a global player in these fields. The government must continue to invest in research, and the private sector should also contribute towards research and development to ensure that India continues to grow and prosper. The role of research in the development of an economy cannot be overstated. Research is essential in identifying the problems facing the economy and finding solutions to them.

Transformative innovation is more likely when basic research leads to quantum steps in expanding knowledge or through synergies when progress in multiple areas of science or technology complement each other to provide new composite capabilities. Here the Federal Government plays a critical role, accounting for 53% of all U.S. basic research funding, compared to 22% for the business sector. These investments in basic research create the building blocks for innovation by creating a transformative knowledge base upon which the private

sector can draw[1]. Investment in R&D is not synonymous with innovation. Many firms introduce new products without R&D[2]. However, it is possible to demonstrate the relationship between the amount of investment in R&D and product and process innovation for a broad cross-section of industries. An index of industry innovation rates with industry R&D intensities[4] for several key industries8 between 2003 and 2007 is created by adding the number of product and process innovations for each industry in a National Science Foundation (NSF) database and plotting this index against the R&D intensity for each industry[4]. A positive correlation is evident, underscoring the importance of R&D intensity as a major policy variable. Ten of the seventeen industries fall below this minimum. Over time, these industries may become increasingly less competitive and provide fewer jobs and lower rates of pay. For economic growth, science and technological factors are important. First, since the industrial revolution, rich as well as developed countries have had the most science and technical capacity and have grown at an increasing pace. From 1870 to the present, scientifically and technologically advanced countries have become increasingly prosperous, and their rates of growth have not diminished as this took place. Second, enhancements in research and development have been implemented in a consistently positive manner and high across virtually all the fields and industries that have been taken into account, in the developed and developing countries. Third, a source of income is a must for rural people; they would like to have some kind of employment so that they can earn a living for themselves and their families, generation of income has been considered to be essential for economic growth and science and technological factors have contributed in the generation of employment opportunities for the rural people not only in agriculture but in also other areas such as industries, offices, educational institutions and so forth.

It is necessary to implement science-based methodologies and technological culture in a methodical manner. The scientific process involves making observations, taking measurements, documenting data, categorizing it, comparing it to prior observations, formulating hypotheses, and testing those hypotheses through the novel, creative experiences[8].

The culture of technology should take into account performance metrics, future planning, and the efficient use of resources, energy, and money. It should also take care of material, product, and process standards. The rural areas would greatly benefit from the latest advancements in biotechnology, space research, microelectronics, computers, and high technology[5].

Information technology (IT) and science have revolutionized the world in recent decades. The impact of development in these fields has been tremendous and has changed the way we live, work, and communicate. One of the most significant impacts of development in IT and science has been on the business sector. Advancements in technology have led to the development of new products and services, which has created new business opportunities. For example, e-commerce has transformed the way people buy and sell goods, while artificial intelligence has made it possible to automate many tasks, reducing costs and improving efficiency. The growth of the IT sector has also led to the emergence of new industries such as software development, Cyber Security, and data analytics.

Another sector that has been significantly impacted by the development of IT and science is education. Technology has transformed the way education is delivered, making it more accessible and interactive. Online learning platforms, educational apps, and digital textbooks have made it easier for students to learn at their own pace and from anywhere in the world. Science has also played a critical role in improving the quality of education by providing new insights into the learning process and developing new teaching methods.

Healthcare is another sector that has seen significant improvements due to the impact of development in IT and science. Medical research and advancements in technology have led to the development of new treatments and therapies, improving the quality of care for patients. Medical devices such as MRI scanners and pacemakers have saved countless lives, while telemedicine has made it possible for patients in remote areas to receive medical care[6]. The impact of development in IT and science has also been felt in the environmental sector.

New technologies and scientific research have led to the development of renewable energy sources, such as solar and wind power, reducing our reliance on fossil fuels. Innovations in materials science have led to the development of more eco-friendly products and packaging, reducing waste and pollution. Advances in agriculture have led to the development of new crop varieties that are more resistant to pests and diseases, increasing yields and reducing the use of pesticides[2].

Outreaching and Technology

Outreach programs have been a significant part of the development of information technology (IT) and science. These programs aim to create a bridge between the academic and research community and the general public by promoting public awareness and engagement with the latest advancements in IT and science. The impact of outreach programs in these fields has been profound, leading to increased public understanding, engagement, and support for scientific research and technological advancements. Outreach programs in information technology aim to create awareness about the latest advancements in the field and their potential impact on society. These programs target a wide range of audiences, from school children to senior citizens. The impact of these programs can be seen in the increased interest and participation of individuals in the IT field. It has also led to the development of new technologies that are more accessible and user-friendly, catering to the needs of a diverse range of users. Outreach programs in IT have also helped in creating a more informed society. With the growing importance of technology in our daily lives, it is essential to have a basic understanding of how these technologies work and their potential impact on society.

Outreach programs have helped in creating awareness about online safety, Cyber Security, and privacy, leading to the more secure and responsible use of technology.

Outreach programs in science aim to promote scientific literacy and create awareness about the latest advancements in the field. These programs target a wide range of audiences, from school children to policymakers. The impact of these programs can be seen in the increased interest and participation of individuals in the field of science. It has also led to the development of new technologies and innovations that cater to the needs of society. Outreach programs in science have also helped in creating a more informed society. With the growing importance of science in our daily lives, it is essential to have a basic understanding of how science works and its potential impact on society. Outreach programs have helped in creating awareness about scientific issues such as climate change, conservation, and sustainability, leading to a more informed and engaged society.

Indian Research and Technology

India has made significant progress in the field of IT, with several Indian companies ranking among the top IT companies globally. Indian research in IT has had a significant impact on the world, particularly in the areas of software development, Cyber Security, and data analytics.

Indian research in software development has led to the development of new technologies that are more accessible and user-friendly, catering to the needs of a diverse range of users. The Indian IT industry has also been at the forefront of the development of new software applications such as e-commerce platforms, social media applications, and healthcare software. Indian research in Cyber Security has led to the development of new tools and technologies that help in protecting data and systems from cyber threats. The Indian IT industry has also been at the forefront of the development of new Cyber Security standards and guidelines, contributing significantly to the global Cyber Security ecosystem. Indian research in data analytics has led to the development of new tools and techniques that help in analyzing and interpreting large amounts of data[3].

The Indian IT industry has also been at the forefront of the development of new data analytics platforms and solutions, catering to the needs of various industries. India has also made significant progress in the field of science, with several Indian scientists and researchers making significant contributions to various fields of science. Indian research in science has had a significant impact on the world, particularly in the areas of space research, biotechnology, and renewable energy.

Indian research in space research has led to significant advancements in the field, with India launching several satellites and sending missions to the moon and Mars. Indian research in biotechnology has led to the development of new drugs, vaccines, and diagnostic tools, contributing significantly to the global healthcare industry. Indian research in renewable energy has led to the development of new technologies and innovations in the areas of solar, wind, and hydroelectric power, contributing significantly to global efforts towards sustainability.

Research and Development aid us as human beings to understand ourselves better and hence get the solutions, particularly to our health problems, easily and guided. Today the results of Research and Development conducted by universities and other organizations are applied to industry in several ways. The Institute of Physical and Chemical Research of Japan is, as the name suggests a laboratory for the study of physics and chemistry. It was established in 1917, with a vision to promote Japanese scientific research. Dr. Kikunae Ikeda, a chemist who discovered monosodium glutamate, a flavor element that was later commercialized belonged to this famous Institute. Such opportunities enable our budding scientists to experiment and deliberate on certain discoveries which could make our lives better and improve our health and well-being. Currently, much study has been embarked on by world scientists to find the cure for HIV/AIDS. Another drug for malaria, coathemather[7], has been introduced to deal with the disease as it changes form due to natural circumstances. Research and Development and subsequent facilities which are well equipped and stocked enable us to get, sometimes quick, at times long solutions to problems that affect our day-to-day living.

Economic growth depends on the existence of reliable institutions within which human beings think, interact and carry on business. The key to economic growth is R&D. The purpose of R&D is to create knowledge and commercialize its outcomes in markets as new products or new production processes. It is these new products that encourage and boost investor confidence, hence the fast growth of the economy. Investors are always attracted by new products or processes on the market. Product development is thus a potential source of competitive advantage for many companies. (Brown and Eisenhardt 1995)[9]. Hence product development is an essential process for the success, survival, and renewal of the firm. So without Research and Development, there can be no product upgrade, thus no economic effect will be felt. There is a growing body of research on the impact of outreach in advancing information technology, particularly in the field of data.

Here are some examples of data that demonstrate how outreaching has helped in information technology:

1. Collaboration: A study published in the Journal of the Association for Information Science and Technology found that collaboration between researchers from different disciplines was essential in advancing data science. The study found that collaborations between computer scientists, statisticians, and domain experts led to the development of new data analysis methods and techniques.

2. Innovation: A report by the Brookings Institution found that outreaching was crucial in fostering innovation in information technology. The report highlighted examples of outreaching efforts that led to the development of new technologies, such as the World Wide Web and the Global Positioning System (GPS).

3. Knowledge-sharing: A study published in the Journal of Management Information Systems found that outreaching was effective in promoting knowledge-sharing among researchers in the field of information technology. The study found that researchers who engaged in outreaching were more likely to share their research findings with others and to collaborate on research projects.

Overall, these examples demonstrate the importance of outreaching advancing information technology.

Conclusion

The impact of scientific and technological advancement has been enormous and has changed many facets of society. New prospects have benefited the industry, and education has grown more approachable and engaging. The quality of healthcare has significantly improved, while advances in renewable energy and environmentally friendly products have benefited the environmental sector. Technology and scientific research are vital to the future of humanity because of how much of an impact they will have on society as they evolve. Indian research has led to the development of new technologies, tools, and solutions that cater to the needs of a diverse range of users and industries. It is essential to continue investing in research and development in these fields to ensure that India remains at the forefront of global advancements in IT and science. This will help in creating a more advanced and sustainable future for the country and the world. Collaborating with experts from different fields, promoting innovation and knowledge-sharing, and forming partnerships with industry leaders, can help drive progress and innovation in information technology. In the field of technology, outreaching, development, and research work together to drive progress and innovation. By engaging in outreaching, organizations can identify new opportunities and collaborate with experts from different fields. This can lead to new ideas and innovations that can be developed through the process of development. Research provides the foundation for development, as it helps to identify new challenges and opportunities, and it validates the effectiveness of new technologies. In short, outreach, development, and research are all critical components of advancing technology, and they are closely related to each other. However, there is still much work to be done. Indian researchers face significant challenges, including the need for increased funding, access to the latest technologies and tools, and the need to address issues such as gender diversity in the field. Despite these challenges, Indian research in information technology is poised to make even greater contributions in the years ahead.

In conclusion, the impact of Indian research in information technology has been significant and far-reaching.

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