



Indigenization of Technology and Developing New Technology-A Study

Prof. Kunta Ailaiah,

Department of Sociology & Social Work, Kakatiya University, Warangal, Telangana State, India-506 009 (e-mail: ailaiah.kunta@gmail.com)

ABSTRACT

Indigenization of technology in India is the process of using domestically produced items instead of imported ones. It's a key component of India's economic sovereignty and strategic autonomy, and can help the country become more resilient and self-reliant. Indigenous technology is technology developed by an Indian entity or developed through collaboration between Indian industry and research institutes. It can be used to address local problems and challenges and to promote self-reliance, economic growth and social change. The process of indigenization is essential for a developing economy to become a developed one. As a result, it has enormous economic significance. As globalization progresses, more and more individuals and material resources are becoming available for other countries to use through bilateral relations. As a result, the nation fails to fully utilize its own resources for development.

The successful indigenization of foreign technology can take many different forms. It has a significant psychological and socioeconomic impact to start with. Citizens develop a sense of freedom and accomplishment as a result of indigenous development. Additionally, it expands the range of jobs available in the manufacturing and other service sectors. Additionally, the cost of production after indigenization is less expensive for products of the same quality compared to importing the technology.

Key Words:-Indigenization, strategic autonomy, resilient, enormous, accomplishment.

Introduction

Understanding “indigenous technology” begins with defining *indigenous*. The possible definitions are many. The term is used in reference to plants, animals or people that naturally belong to a particular place (Hornby 1998, p. 606). It can be defined as “native,” as in something not introduced directly or indirectly according to historical record or scientific analysis into a particular land or region or environment from the outside (Kim and Berry (1993, p. 2). *Indigenous* is associated with people originating or developing naturally in a particular land, region or environment (Kim and Berry 1993, p. 2). *Indigenous* is a term used to describe people *who are the original inhabitants* of a particular geographical area (Pollock 1995, p. 21). *Indigenous people* are the custodians of indigenous technology. The definition of indigenous people is not always clear (Psacharopoulos and Partrinos 1994, p. 21) as it is complicated by the fact that the term *indigenous people* includes culture.

Technology is a key component in accelerating progress in the modern world. Nations compete fiercely for the best resources in the military, economics and infrastructure. As a result, governments around the world which want to see their country succeed place a high priority on indigenizing technology and switching to new technologies. Indigenization of technology in India is the process of using domestically produced items instead of imported ones. It's a key component of India's economic sovereignty and strategic autonomy and can help the country become more resilient and self-reliant. Indigenous technology is technology developed by an Indian entity or developed through collaboration between Indian industry and research institutes. It can be used to address local problems and challenges and to promote self-reliance, economic growth and social change. According to the Oxford Dictionary, indigenization is the process of putting something under the control, authority or influence of the local population. Essentially, this means using a domestically produced item in place of an imported one. The term “indigenization” refers to the replacement of an imported good with one produced domestically. This does not mean that the domestically produced object is a copy of the imported one.

Although functionally identical, it can feature more contemporary, energy-efficient, compact and dependable parts and subassemblies that could be either imported or domestically produced. The government is thinking about establishing a center for focused study on the most modern electronic equipment that can be produced domestically to improve its technological competence in the field of homeland security. The “Make in India” initiative was introduced in 2014 with the goal of enhancing India’s manufacturing capabilities and creating more job opportunities. The main objective of this program was to encourage the localization of technology, including electronics, ICT, defense, space, and transportation.

Methodology:

The present paper ‘Indigenization of Technology and Developing New Technology-A Study’ is collected based on secondary source of data. The secondary data is collected through books, articles published in mottled journals and websites.

Objectives of the Study:

- To know about development of new technology
- To find out significance of indigenization of technology and developing new technologies
- To know about indigenization of technology in various sectors of the Indian economy
- To study about indigenous technologies for Viksit Bharat on national science day
- To explain about advantages of indigenization of technology

Development of New Technology

The following step involves innovation to create new technology once a country achieves technological self-sufficiency. To bear in mind all the requirements for developing new technology calls for efforts at various levels as well as appropriate cooperation and coordination. First and foremost, the government’s responsibilities include carrying out federal and state policies to create a favourable climate that fosters competition and innovation in both the commercial and public sectors. By emphasizing the following four key areas,

- Maintaining strong competitive pressure on the domestic market.
- Harboring high-quality human capital.
- Improving the networking between industry-institution-academia.
- Openness and ease of access to foreign technologies.

The nation's Intellectual Property Rights (IPR) framework is also a significant and essential influence. IPR prevents others from using a person's or a group's original creation, invention, or discovery for financial gain. This promotes national research and development, which advances homegrown technologies. Second, it's critical for businesses in both the public and private sectors to recognize and enthusiastically support prospective talent. This will increase the companies' earnings and reputation, which will ultimately lead to the advancement of technology in the nation. To achieve this, the country's youth potential can be utilized by funding and investing in entrepreneurship and entrepreneurship enterprises. A further sort of assistance could be the acquisition of tools and materials for the development of the new technology.

Significance of Indigenization of Technology and Developing New Technologies

The process of indigenization is essential for a developing economy to become a developed one. As a result, it has enormous economic significance. As globalization progresses, more and more individuals and material resources are becoming available for other countries to use through bilateral relations. As a result, the nation fails to fully utilize its own resources for development. Utilizing one's natural resources is less expensive and simpler. It should be emphasized that for emerging countries, indigenization serves as the precursor to the creation of new technologies. Therefore, indigenous development is important for R&D as well. A nation gains the ability to stand alone, conduct independent research, and create new technologies as long as it can successfully implement the indigenization of technology.

This represents not just a technological achievement in and of itself but also a major morale booster for Indians. After all, creating new technologies depends on innovation. The development of a country into a superpower on the international stage is based on science and technology. As a result of fierce international rivalry, science is always evolving and has made jobs easier and more efficient throughout time. Therefore, continuing to rely on foreign technology will give that country access to all of our data and information, which is a very dangerous game in and of it. Therefore, using indigenous technology is the only way to secure national interests and restrict foreign countries' access to our country's information. This gives indigenous peoples security in their own countries and territories importance.

Indigenization of Technology in Various Sectors of the Indian Economy

- India began to work for the indigenization of several economic sectors as early as 1947 after realizing the necessity of being a self-sufficient country. It is generally acknowledged that, in terms of bolstering the science and technology sector, the Indian economy grew in five stages.
- Building relevant infrastructure was the primary focus of Phase I. Reorientation and the use and application of indigenous technology were the primary focuses of phases 2, 3, and 4. Moving toward economic liberalization was the focus of Phase 4, and the advancement of science and technology in an economically liberalized country was the primary focus of Phase 5.
- The extent of indigenization and development of new technology in India can be measured using six keystone sectors-
 - **Agriculture;** as it has a major share of India's GDP.
 - **Automobiles;** are a vital part of connectivity and networking.
 - **Information and Communication Technology:** is the fastest-growing sector in India.

- **Healthcare and biotechnology**; emerging field of science and technology.
- **Space**; has symbolic significance in the field of science and technology.
- **Defense**; is crucial for maintaining the security of the state.

Indigenous industries have historically tended to be in agriculture. Improving the state of agriculture and livestock production has been a priority since the first five year plan was created in order to address the food shortages brought on by the abrupt population growth brought on by the refugee inflow. In the 20th century, agriculture was already the largest industry in terms of production and employment. Numerous industry-specific revolutions, such as the Green Revolution, which made use of innovative fertilizers, HYV plants, and cutting-edge irrigation technologies in farming, were seen in an effort to further increase agricultural and animal productivity.

Enhanced milk production through improving collaboration between primary and downstream producers (milkmen and companies) aquaculture quality was increased by the blue revolution, while India's yellow revolution enhanced the extraction, processing and market for vegetable oils. Genetically modified crops have recently been launched as innovative, disease-resistant, high-yielding crops. These were created by integrating rDNA technology into farming procedures.

The transportation and vehicle industries have continued to be in demand, particularly in light of rising urbanization. Private sector players have long dominated this industry. The first automobiles came from Britain and other European countries. This made the Indian market more accessible to Western automakers. Following this, the first attempt at indigenization was made with the establishment of Fiat's first production facilities in India. As more and more western companies entered the Indian auto market over time, competition grew. In the 1980s, Maruti and Tata, two Indian competitors, also made their entrance into this market (a decade later). Due to their effective maneuverability on Indian roads, which Western cars lacked, they were a hit on the road. Today's automotive titans in the country, Maruti and Tata, have produced world-class cars.

The Indian economy's ICT and IT sector may be its greatest economic success story to date. It all began in 1974 when Burroughs, a producer of computer mainframes, asked Tata Consultancy Services, its Indian sales agency, to outsource programmers to. The Indian economy's ICT and IT sector may be its greatest economic success story to date. It all began in 1974 when Burroughs, a maker of mainframe computers, approached Tata Consultancy Services, an Indian sales agent, to hire programmers on their behalf. India was only beginning to gain recognition as a capable IT services nation.

However, the technology we used was a Western import. Computers, teachers, students and the products being produced were more geared toward the global market than the domestic one. But as more and more Indian IT businesses gained notoriety for their cutting-edge designs that appealed to home customers, this was to change over time. The likes of Infosys, Wipro, Anand Computing, iBall, Tata Elxsi etc. are the evidence of indigenization and development of modern and target-consumer-specific computers.

Healthcare is an important sector in which India has been able to achieve great heights. Today, people from around the world are coming to India to conduct their treatment in Indian hospitals. While the indigenization of medical and biotechnological resources is yet to be fully achieved, the workforce consisting of doctors, paramedics, and nurses has become adept at using the current technologies. Biotechnology is comparatively a newer field than healthcare and medicine. But even this sector has made a considerable impact in healthcare practices by introducing innovative applications like gene mapping, tailor-made drug dosage, and other such technologies.

Companies like Biocon, Panacea Biotech, and others have already been well-established and are prompting more and more biotech students to take up employment in their sector. Space has been a muscle flex

by India in various other countries. From launching Aryabhata on a Russian rocket to launching missile Chandrayaan 2 on an indigenous rocket, these have always brought laurels to India.

Dr. Vikram Sarabhai and ISRO are to be thanked for the feats achieved by India in terms of space technology in recent years, launching satellites and spacecraft with minimal budgets. Indian Space research and development have been sufficiently funded and supported by the union governments down the line, providing them with funds and resources to carry forward R&D. Finally, we come to the defense. India's mixed economy puts all the defenses manufacturing under public sector undertaking. With that being said, India is also the world's largest importer of arms and military equipment. Most of the aircraft, guns, and ships are from Western countries, especially Russia, the USA, Israel, and other places.

Russia has been India's all-weather ally and has been constantly supplying weapons and aircraft to India. But over the years, Indian military forces have become vintage in nature. The weapons that we use as well as a few planes that are still in service signify the need for immediate modernization of the forces.

But thankfully, India has started to take baby steps toward defense indigenization. The F-INSAS program is supposed to convert the Indian Army into a futuristic terrestrial force and is completely being developed under Indian supervision. Similarly, HAL Tejas, a light combat aircraft has been the first single-engine fighter plane to be completely manufactured in India. Tejas was the star of the 'Make in India' policy. While these steps are being taken to ensure that the military can keep up with the levels of other military forces, India's tag as the largest military importer will remain for a while indicating complete indigenization to be difficult soon.

Indigenous Technologies for Viksit Bharat on National Science Day

In India, National Science Day honours the spirit of creativity and scientific research. The country celebrates Sir C.V. Raman's discovery of the Raman Effect, which won him the 1930 Nobel Prize in Physics, on February 28 of each year. This day serves as a reminder of the value of science and the ways in which it affects society. According to the theme of "Indigenous Technologies for Viksit Bharat," this blog examines the importance of using indigenous technology and knowledge to advance India's development.

Viksit Bharat's Indigenous Technologies in Honour of National Science Day

Utilizing Indigenous is proud of the extensive legacy of indigenous technology and expertise that has been handed down through the years. These customs apply to a number of industries, including as building, textiles, healthcare, and agriculture. Using these native technologies to solve modern issues and promote sustainable development has gained more attention in recent years.

Agriculture Innovations

For millennia, India's economy has been based mostly on its agriculture industry. Crop rotation, organic farming, and watershed management are examples of indigenous agricultural techniques that are essential to sustainable agriculture. Farmers are able to reduce the negative effects of climate change, preserve natural resources, and increase crop yields by combining traditional knowledge with cutting-edge methods.

Renewable Energy Solutions

With the growing emphasis on clean energy, indigenous technologies play a crucial role in harnessing renewable energy sources such as solar, wind, and biomass. Traditional methods of harnessing solar energy, such as solar cookers and solar water heaters, offer affordable and eco-friendly alternatives to conventional

energy sources. Similarly, windmills and biogas plants based on indigenous designs provide decentralized energy solutions for rural communities.

Healthcare Innovations

India's traditional healthcare systems, including Ayurveda, Yoga, and Naturopathy, offer holistic approaches to wellness that complement modern medicine. Indigenous therapies and herbal remedies have been used for centuries to treat various ailments and promote overall well-being. Integrating traditional medicine with modern healthcare practices can enhance accessibility, affordability, and effectiveness of healthcare services across the country.

Revival of Indigenous Crafts

India is renowned for its rich cultural heritage and traditional crafts, ranging from handloom textiles to pottery and metalwork. Reviving and preserving these indigenous crafts not only sustains traditional livelihoods but also fosters economic empowerment and cultural pride. By promoting handcrafted products, India can showcase its cultural diversity and heritage while supporting local artisans and craftsmen.

Advantages of Indigenization of Technology

The successful indigenization of foreign technology can take many different forms. It has a significant psychological and socioeconomic impact, to start with. Citizens develop a sense of freedom and accomplishment as a result of indigenous development. Additionally, it expands the range of jobs available in the manufacturing and other service sectors. Additionally, the cost of production after indigenization is less expensive for products of the same quality compared to importing the technology.

The country's culture of science and technology is also promoted by indigenous people. The scope of research and development is greatly expanded if we have complete autonomy over technology and can effectively refer to it as "ours," which encourages various institutes to take on new initiatives under the banner of innovation. This finally results in our country's technological development, which further advances the economy. Finally, only locals have a complete understanding of the requirements and ideal calibrations a machine needs to function in the local environment. Locals will be more adept at using technology and increase the productivity of the specific sector of the application when it suits their unique needs and desires.

Conclusion

Technological development is essential for a country's economy to grow. The indigenization of that technology however is even more crucial in order for it to be used fully in addressing and effectively resolving problems. Additionally, indigenization is seen as a precursor to innovation, which results in the creation of new technology at a price significantly lower than that of imported technology. Additionally, indigenization strengthens residents' sense of national identity by giving them a sense of shared pride in having technology they can call "Indian" property. This has a good impact on people's confidence, which manifests in their work and eventually increases productivity. Governments and businesses should therefore support indigenization and the creation of new technology as it is a noble endeavor that will result in a better future for the country.

References

1. Kaka, Noshir, et al. 2020. "Digital India: Technology to Transform a Connected Nation". McKinsey & Company. McKinsey & Company.
2. K Giriprakash. 2020. "Getting India's Digital Frame to Stack Up", The Hindu Business Line.

3. PTI. 2019. “Digital Technology in India: UN Panel Lauds India’s Digital Initiatives for Economic Inclusion,” The Economic Times.
4. PTI. 2020. “India Has Building Blocks for Successful Rollout of Digital Government Transfers: Report”, the Economic Times.
5. Vandana Vasudevan. 2018. “How to Ease the Woes of Last-Mile Connectivity in Metros”, DNA India.
6. Karthik Jayaraman. 2019. “How Indian Agritech Startups Are Changing the Dimensions of the Agriculture Industry”, founder INDIA.
7. TV Mohandas Pai and Nisha Holla. Rep. 2019. Human Capital Development in India. Delhi: Federation of Indian Chambers of Commerce and Industry (FICCI).

