The Importance of Technology in Various Sectors in India: Advantages and Disadvantages

Shivanand Rathod
Teaching Assistant,
Department of Studies and Research in Economics,
Rani Channamma University, Belagavi, India.

Abstract:

Modern India has had a strong focus on science and technology, realizing that it is a key element for economic growth. India is among the topmost countries in the world in the field of scientific research, positioned as one of the top few nation in the field of space exploration. Technology helps us to work more quickly and efficiently. More use of technology is a sign of development in any sector. Presently in India we are using maximum technology in every field i.e. education, defence, science, construction, industries, aviation and many more. A technology progress is essential to economic growth and development, and the more advanced technology available, the more quickly the local and global economic and improves. Compared to classical technology and modern technology, modern technology has the maximum production. Using of the technology in any sector it saves time energy and money. Presently India is making the maximum innovation in technology and exports to the other countries its help to the increase of balance of payment. The major objectives of the study are to know the uses of technology in economic development, to know the importance of technology in education and defence sector. To know the advantages and disadvantages of technology in developing country like India. The study is based on secondary data. Also this paper focused on the role of technology in the development of various sectors of India.

Key Words: Technology, Technology and economics, Technology in education, Technology in defence

Introduction:

Technology is the continually developing result of accumulated knowledge and application in all techniques, skills, methods, and processes used in industrial production and scientific research. Technology is embedded in the operation of all machines, with or without detailed knowledge of their function, for the intended purpose of an organization. The technologies of society consist of what is known as systems. Systems apply the intended application of a technology's accumulated knowledge by obtaining an input, altering this input for the system's intended purpose, and then producing an outcome that alters the ultimate intended purpose of the system. This is also known as a technology system or technological system.

Technology is the product of transferring scientific knowledge to practical use. Different forms of technology are the result of people trying to find more efficient ways to do things and testing new ideas. Technology is constantly improving and generally aims to make processes easier for people. For example, the internet makes communication easier and more efficient. While **Categories of technology:**

Single piece of technology often overlaps into different areas, there are generally six different categories of technology: communication, electrical, energy, manufacturing, medical and transportation.

1) **Communication:** technology consists of any pieces of technology people use to communicate with one another. Some early examples of communication technology include Morse code and the telegraph. Below are some examples of more modern communication technologies: Television, Internet, cell phones.
2) **Electrical:** Many pieces of modern technology use electricity in some form. A few examples of electrical technology include: Computers, Circuitry, Artificial intelligence, and Software, Audio and visual technology.

3) **Energy:** Energy technology aims to help generate, store and transmit energy for a variety of purposes. Common examples of energy technology include: Solar panels, Wind turbines, Batteries.
4) **Mechanical:** Mechanical technology is the application of engineering principles to achieve tasks more efficiently. People use this technology in a wide variety of machinery, with some common examples of mechanical technology including: Manufacturing, Heavy engineering.
5) **Medical:** Medical technology helps improve people's quality of life in a number of ways. Some examples include: Diagnostics, Pharmaceutical, Surgical, and Monitoring.
6) **Transportation:** It's much easier to travel than it once was thanks to improvements in technology. Examples of transportation technology include: GPS, Flight, Vehicles.

Objectives:

1) To know the uses of technology in economic development.
2) To know the importance of technology in education and defence sector.
3) To know the advantages and disadvantages of technology in developing country like India.

Methodology:

This Paper is purely based on secondary data. The data have been collected from various national and international journals, books and websites.

Technology progress and Economic development:

Importance of technology in economic development has been emphasized by the economists starting from the classical to the modern economists. Noted classical economist, J.A. Schumpeter has emphasized the role of innovation in economic development in his well known "innovation theory of development". Many economists believed that technical progress is the engine of long term growth. It allows for sustainable growth that is independent of factors accumulation. This has also been empirically proved that technologically advanced economies are also economically advanced. Further, it has been established that technology of the five richest countries in the world has about 13 times better than that of five poorest countries. Many countries in the world has experienced high standard of living because of improvement in technology, beside other factors. In the words of Mansfield, "Technological change is one of the most important determinants of the shape and Evolution of the economy. Technical change has improved working conditions, permitted the reduction of working hours and provided the increased flow of products." Following points may be noted as regards the contribution of technical progress to economic development:

(1) Intensive Utilization of Resources: Technical progress helps intensive utilization of the available resources. Also, their utilization is diversified. Increased and diversified output contributes to the growth of national income and economic development.

(2) Use of Potential Resources: Technical progress facilitates discovery and utilization of potential resources of the nation. It is because of technological progress that oil could be explored from the sea in India. Also, technological progress helps the growth of substitute resources for imports. As a result, domestic production is increased with domestic resources themselves.

(3) Contribution to Import Substitution: An underdeveloped country utilizes her technological progress in the field of import substitution so that, lot of foreign exchange is saved for the import of essential raw materials and capital goods. Thus, the process of technological progress continues hand in hand with the process of capital formation.

(4) Contribution for Export Promotion: Technical progress facilitates diversification of output in less developed countries. As a result, these countries become capable of exporting non-conventional goods, such as engineering products and various other finished products. New technology increases the level of output and therefore, the capacity to export. Because of diversified output, dependence of the underdeveloped countries upon the developed ones is considerably reduced. Accordingly, terms of trade starts improving in favour of the developing

countries and these countries start getting fair compensation for their exports.

(5) Increase in Capital Formation: Technical progress engenders growth of output and productivity. As a result, per capita income is increased. Consequently, while on the one hand consumption of the household rises, on the other, entrepreneurs start saving and generating more and more surplus. They are encouraged to make more and investment. Capital formation improves to improve the rate of growth.

(6) Availability of Foreign Capital: Foreign capital is invested in less developed countries generally on the condition that technological changes are introduced there in the process of production. Some countries contribute to the growth process of others only in terms of their export of know-how. In such a situation, technology and external investment become the cause and effect for each other. New technology is also used in the new enterprises established with foreign collaboration.

(7) Growth of Infrastructure: Technological progress helps the growth of infrastructure of the economy. Transport, communication, power and irrigation are some such basic facilities in the development of which technical progress has been of prime importance. Thus, technical progress contributes to the growth of the economy by way of developing its infrastructure.

(8) Increase in the Efficiency of Human Resources: Technical progress increases the efficiency of human resources. Labour is given training for the use of techniques of production, and it improves their efficiency. Increase in the efficiency of workers, in turn, facilitates more innovative ideas of production. Cost of production and prices are reduced.

(9) Rapid Increase of Industrialization: Growth of industrialization depends upon the growth and application of new technology. Technological progress has been the chief determinant of industrial revolution in the European nations. Establishment of basic industries in underdeveloped countries requires modern technology. Technological progress has been the most important factor in the development of the Japanese and German economies. Technological progress has the direct bearing upon the process of industrialization. It helps the progress of all such parameters which are vital to the growth of industrialization.

(10) Green Revolution: Green revolution in agriculture was to a great extent the outcome of technological progress. New seeds, fertilizers and methods of farming are all the - sine-qua-non of technological progress. As a consequence, there has been a tremendous increase in agricultural output and productivity.

(11) Change in Social and Economic Structure: As a result of technological progress there has been a noticeable change in the social and economic structure of underdeveloped countries. Man becomes curious to acquire new ideas so as to raise his income level and the level of living. His outlook becomes more progressive. Contacts with the developed countries generate 'Demonstration Effect that helps shedding conventions and rituals.

Importance of Technology in Education:

Technological advancement has also helped the proliferation of education. There is continuous research and development in introducing advanced technologies to make education easier, joyful and accessible. Education for children is no longer boring and cumbersome as the educational technologies have made it interesting.

- **Easily access to learning material:** E-books, revision guides and past examination papers that are available on World Wide Web and students can take advantages of these to improve knowledge base.
- **Online learning:** Online learning is not only for the summer or extended periods of time. Students can now take online courses on a part-time basis. The key aspect is that technology, which has come to be an integral part of our lives, will transform education with technology integration and technology being used as a teaching tool by teachers themselves. During this pandemic, everything was forced to stop. But the education of children was still being kept due to technology.
- **Continuous learning:** With the help of information technology in education it is possible for students to keep on learning, irrespective of where they are even at home.

This has greatly enhanced efficiency in the education sector.

- **Sharing of knowledge:** Students from all over the world can come together and can share the experiences; the geographical distances are no more barriers, it has been made possible only through technology.
- **Learning aids:** By using audio and visual materials, we can put some practical aspect to the theory taught in class, students can develop a better understanding of topics being taught.
- **Distance learning:** Now it's possible to attend a college overseas without even getting out of your home country and at your own convenience. With the help of online courses anyone can get the second degrees or additional certifications.
- **Proper record keeping:** Unlike in the past when records used to be kept manually and there were many cases of lost files, the use of information technology in education has made it possible for safe and proper record keeping.

The Role of technology in defence sector:

- These essentially form the communication backbone of the forces and are the launch pad for the next generation of defence networks, but enhancements in the areas of Jointness, Technology led security solutions and ISR (Intelligence, Surveillance & Reconnaissance), interoperability and cyber security are now imperative.
- In the field of defense also our achievements have been quite laudable. The successful production of such missiles as Prithvi and Nag testify to the high capabilities and achievements of our scientists.
- We have been successful in producing night-vision devices required for our indigenous tanks. Obviously, technology has been used effectively as a tool and instrument of national development and yet much remains to be achieved in order to make its benefits reach the masses.

Advantages of Technology:

1. The improvement of productivity: Technology has played a key role in driving productivity for businesses in a way that would have been unthinkable just a few decades ago. Advancements in manufacturing and assembly-line technology mean that goods can be produced at an incredible rate. Machines and robots have been able to cut down the cost of production and drive up output. Whether it's canned foods or clothing or furniture, companies with economies of scale can produce large quantities of their products in a way that can meet market demand.

2. Better and easier communication between people: The greatest advancement in technology in the last century was the invention of the Internet; it has truly changed every aspect of life and made the world more interconnected. The Internet or mobile technology, someone in Asia can communicate with another person in America in a matter of seconds. First came Facebook, which allowed people to post updates about themselves and communicate with the world. Then came Skype, allowing people to communicate with each other visually, at little additional cost. Then came Whatsapp, allowing people to send messages to each other without limitation. And new communication apps keep coming up all the time. Video calls and conferences have become the norm. The old barrier of communication — geographical distance —- has been broken down for good.

3. Saves time in processes and tasks: Both blue-collar jobs and white-collar jobs have become more efficient due to advancements in technology. For blue-collar jobs, automation has streamlined many processes that traditionally require greater human input — reducing error and saving time. For white-collar jobs, the avalanche of new productivity apps and software means that workers can get more done in a shorter amount of time, cutting down bureaucracy and other barriers to effective communication. Technology has functioned as an aid to human efficiency, much like an artificial arm; it has enabled tasks to be completed in a shorter amount of time with greater results.

4. Allows Remote Education: In all past centuries, getting an education required the learner to go to a physical location (for example, a university), learn from a teacher in-person, and read physical books. This often meant that the less fortunate, or simply those who lived in poorly connected towns, could

not receive a proper education. Technology has changed all that. The advent of the Internet itself has made knowledge ubiquitous – anyone can now log onto Wikipedia and find some information about something. Anyone can purchase an eBook, even if the physical version of the book is unavailable at their current location.

5. Cheaper Manufacturing of Products: In the past, the manufacturing industry involved individuals having to labor to produce each item, one at a time. For example, in the clothing industry, every piece of clothing had to be hand-sewn — meaning that someone would need to spend hours (or days) producing a piece of clothing before it could be sold in the market. This meant the cost of manufacturing per item was much higher because it required personal labor. Technology has changed all that. Now, a piece of clothing can be produced within minutes by an automated production line. As a result, the cost per item has been driven down significantly.

6. Artificial Intelligence Can Make Lives Easier and Solve Complex Problems: The phrase 'artificial intelligence' can sometimes conjure up images of sentient robots taking over the world. However, artificial intelligence means so much more than that. Artificial intelligence is broadly defined as technologies that mimic human cognitive functions and can learn to solve problems. For example, Twitter uses artificial intelligence to identify probable hate speech and racist content. Siri, Apple's virtual assistant, is also an example of artificial intelligence — it learns to adapt to instructions and preferences with continual use. The ability of some software to anticipate human behavior has made our lives easier and our relationship with technology smoother.

7. Financial transactions and payments are easier and more secure: In the past, money always had to be stored in a physical location; thieves could break into your home and could steal all your money if they found out where you stored it. Now, money exists in both the physical form as well as the digital, reducing the risk of losing everything from a single act of physical theft. The advancement in financial technology also means that entire financial transactions can be completed online. Moreover, innovative banking Smartphone apps can help us make more informed financial decisions or even save money. The use of single-use codes, multiple passwords, encryption etc have also made financial transactions more secure. Someone from one country can send money to another person in another without worrying about the money getting lost in transition. Fraudulent transactions are also more easily traced and flagged due to technology.

Disadvantages of Technology:

1. Can be bad for the environment: Advancements in technology have been overwhelmingly bad for the environment; technology has contributed to environmental deterioration far more quickly than it has contributed to solving environmental problems. The clearest example of this is the widespread production and use of plastic and factory emissions. All of us would have heard of how significant amounts of plastic have made their way into our oceans and threatened marine life.

2. Technology might be able to replace humans in jobs: The important role that technology plays in automation has a dark side — if every part of the **manufacturing process can be automated**, why hire humans at all? Technological automation can typically produce greater results with fewer mistakes. The threat of technology to human jobs is ominous — a world in which technology has a monopoly on the manufacturing process is simply unsustainable. If technology advances beyond the political will to save jobs, it could spell disaster for millions.

3. Technology can distract students from studying: Technology has indeed made learning more fun and interactive for many, however, it can only confer such benefits if one is interested to learn in the first place. Many young students have access to headphones today, especially those living in advanced countries. The problem with mobile devices is that it is a gateway to a world of distractions, from social media posts to memes to YouTube videos. A minute of distraction can easily turn into hours. This poses a considerable challenge to educators.

4. Data security and privacy problems: What exactly is the extent of privacy in the 21st century? That is an impossible question to answer, precisely because no one knows for sure. Some software are

designed with privacy loopholes that make them incredibly susceptible to attack; even software that have data encryption services still suffer rumors of being susceptible to state surveillance. A famous saying goes, "what goes up on the Internet lives forever." Can we truly be assured of our privacy when there are so many bad faith actors out there wanting to disregard it?

5. It can lead to health problems: The famous Chernobyl disaster that occurred in 1986 was a nuclear accident unprecedented in its scope — thousands have died from the effect of radiation from that one disaster. The Chernobyl accident is perhaps the most serious example of how advancements in technology (in this case, nuclear energy) can negatively impact human health. However, everyday examples of how technology can lead to health problems also exist — from subtle ways like over-processing in foods to overt examples such as factory waste emissions.

6. Misinformation from the Internet: The Internet has made it incredibly easy for someone to start a rumor, package it as truth, and spread it to a large number of people. An untruth that is started on the Internet is a difficult thing to kill — all it takes is for someone online to keep repeating it for it to live forever. 'Deep fakes' — the production of fake videos that are nearly indistinguishable from genuine ones — make misinformation all that more potent. As a result of half-truths and whole lies spread over the Internet, our democracies and elections can sometimes be compromised.

7. Difficult to learn for older generations of people: For technology to truly level the playing field, it should be accessible to people of all ages, and not just the young. Some of the elderly feel shut out as a result of technology becoming more and more integral to everyday life. For the elderly, the disconnect is understandable — they are, after all, forced to reckon with new technologies that they have never encountered previously in their lives. Many of the elderly grew up on pen and paper and find it challenging to adapt to digital writing. To keep up with the Internet, the elderly are forced to learn a language that is entirely foreign to them (the Internet can be likened to a foreign language for those unfamiliar with it. The disconnect with new technologies can drive home the sense of isolation that many elderly people already feel.

Conclusion:

At the end of the day, Technology will require the collective effort of us all to ensure that the advantages of technology outweigh its disadvantages. Technology is, after all, human innovation — what we can create we can also tame. Technology plays the important role in modern days. All the people are continuously using technology to do their work speedily and easily, Technology plays very important role every sector nowadays in education teacher as well as students they learn more important topics by using technology. In manufacturing, communication, transport sector technology plays the important roles. Nowadays in defence sector technology using every nations, for the communication we have social media like Facebook, Whatsapp, instagram, twitter, YouTube, we can upload our ideas to the world. This paper includes importance of technology in economic development, and importance of technology in education and defence sector, and finally advantage and disadvantages of technology.

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