
RELEVANCE OF AI ON DIFFERENT ECONOMIC SECTORS OF INDIA

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Introduction :

Considering its large population, the Indian economy is one of the largest and also fastest growing economies in the world, ranked fifth position in 2024. Indian economy is classified into three main sectors, 1) primary sector 2) secondary sector and 3) Tertiary sector. The 20th century economists further classify of the tertiary sector into the quaternary and quinary sector. Primary sector produces raw materials and agricultural goods and includes activities like farming, mining, fishing, and forestry.

Secondary sector performs converting these raw materials into value added, manufactured goods in factories that can be sold to domestic or foreign consumers using distribution services through the tertiary sector. This sector of Indian economy is growing rapidly over the years.

Tertiary sector involves performing different services by the people to others such as teachers, Physician and other personal services. Furthermore, in quaternary sector, mainly services are provided but such services require more expertise and professional education than the services of tertiary sector. Examples are Information Technology professionals, logistics, consultants, stockbrokers, and product developers etc. Each one of the above sectors has a significant share in India's GDP. The latest estimates from 2022-23 shows the share of primary sector to India's GDP is around 18-19%., secondary sector 25-27% and tertiary 54-56%.

Now, to increase the efficiency and productivity of these sectors application of AI will reach Indian economy to greater heights. Indian IT companies are leaders in AI and already offering lot to the world. Apart from IT industries, AI is increasingly being used by many other Indian industries such as banking, health care, retailing and manufacturing to improve its functional efficiency using intelligence of technology and machines. AI based products are well demanded in large as well as small markets over the world. India has a potential to make huge gains in AI products that leads to position Indian economy to greater heights.

Objectives :

- This study aims to understand application of AI in different economic sectors and its



implications.

- This study attempts to know how sectoral efficiency leads to GDP growth rate of India.

Methodology :

The present research study is exploratory research and purely based on secondary data sources. To understand AI applications in economic sectors of India and to know impact of sectoral efficiency on GDP of India, secondary sources of data were employed. Information published in Journals, news releases, websites and blogs of economists are considered for the purpose.

Data Collection and analysis :

The emergence of artificial intelligence aims to greatly improve the productivity of human society to gear up further economic growth. The literature studies on AI mainly focus on its role in increasing economic growth. Firstly, artificial intelligence simplifies complex work through intelligent distribution, and improves the automation. Secondly, it can make a certain number of existing workers to improve their own quality, ability and productivity through professional training and education; Thirdly, artificial intelligence changes the way of thinking, which will further results in technological change and innovation, and technological progress can pierce into all industries to promote economic development.

AI and Primary Sector :

a) Raw Materials : Artificial intelligence consulting for raw materials will ensure consistency and precision in the processing of raw materials, improving overall product quality. AI systems can also detect quality deviations in real-time, promote immediate corrections and reduce waste.

b) Agriculture : AI-based equipment, machines and systems has great utility to take agriculture system to a different level. It not only achieves generation of new crop types, enhanced crop production and improved irrigation systems, harvesting, processing and marketing, but also determines important constraint like weed detection, yield detection and crop quality and many other techniques. Use of agricultural robots and drones has made a remarkable contribution in the agro-based sector in certain countries. AI-powered tools help farmers increase yields and cutting losses.

AI in agriculture promotes food security by improving crop yields, optimizing resource utilization, and ensuring sustainable farming practices. AI offers better planning, efficient resource management, and early detection of crop diseases and pests. This technology aids in producing higher-quality crops and minimizing losses due to adverse weather conditions or other challenges. By fostering more productive and resilient agricultural systems, AI contributes significantly to meeting the growing global demand for food and securing adequate nutrition for populations worldwide.



AI and Secondary Sector :

a) Manufacturing : AI helps in improving productivity, efficiency, and decision-making processes in manufacturing industries. AI can assist in automating production procedures, enhancing product quality, and cost cutting. AI facilitates Intelligent, self- optimizing machines that automate production processes, forecasting efficiency losses for better planning and detecting quality defects to facilitate predictive maintenance. AI in the Supply chain management enables predictive analytics, optimize inventory management, enhancing demand forecasting, and streamlining logistics. AI tools can process and interpret vast volumes of data from the production floor to mark patterns, analyze and predict consumer behavior, detect irregularities in production processes. These tools help manufacturers gain continuous visibility of all manufacturing operations across all geographies.

For manufacturing workers also, AI facilitates to focus on more creative activities by automating tiresome and time-consuming tasks. AI can also suggest best actions so employees can be more efficient and effective. Modern AI solutions can warn factory workers about any hazards on the shop floor.

Manufacturers are starting to deploy 'cobots' in their factories. Cobots work safely alongside humans, performing various operations including machine operations and even conducting quality inspections to improve overall productivity and efficiency. Being highly versatile, cobots can perform various tasks like glueing, welding and greasing automotive parts, picking and packaging manufactured products etc.

AI and Tertiary sector :

Artificial intelligence (AI) is implemented in the tertiary or service sector in many ways. The use of AI-powered service operations that automates and optimizes business processes such as customer service, sales, marketing, and supply chain management AI-based applications can also enhance decision-making in the service area, leading to improved efficiency and stress reduction. Moreover, facial recognition technology is being implemented in the service sector to enhance security and automate functions such as employee attendance procedures and check-in, check-out etc, AI provides personalized service by tracking customers' personal information and purchase behavior, and it can be utilized for communication support, decision-making assistance, and enhanced customer experience service. Implementations of AI in the service sector have the potential to improve service delivery, reduce response times, increase customer satisfaction, and achieve greater efficiency and security. Therefore AI is increasingly being integrated into service operations to increase efficiencies without compromising quality. A significant 73% of service organizations in India currently use AI technologies, and plan to ramp up their AI investments within the year.

In services like health care AI has the potential to personalize healthcare delivery, improve disease diagnosis and treatment, and create new medications and treatments. In education also AI has the potential to personalize learning, raise educational standards, and



increase accessibility.

For financial services AI can assist with the automation of financial services, increased effectiveness of financial markets, and less fraud.

From the above, we can see that AI applications are of great utility in primary, secondary and tertiary sector of the Indian economy. AI enables each economic sector to improve efficiency, productivity, Quality control, Innovation and substantial reduction in cost . It further contributes in improving its share India's GDP. Already we achieved improving GDP growth rate using AI in various sectors.

However, AI applications are not trouble-free to employ and implement in respect of AI investment, AI research and development etc. It requires large amount of investment in intelligence of machines and technology.

Data privacy and security is one of the major issues in using AI. unauthorized access, data breaches, or malicious attacks. Businesses must safeguard sensitive information from theft, manipulation, or exploitation. This aspect requires robust cyber security measures, ethical data handling practices, and stringent privacy regulations to safeguard sensitive data.

Overreliance on AI for decision-making and management may lead to a technological dependence among businesses. Relying extensively on AI systems may face challenges if these technologies malfunction, experience downtime, or encounter technical issues.

Environmental consequences also arises due to excessive reliance on AI-driven agricultural practices Overuse of technology can lead to increased energy consumption, waste generation and even the neglect of traditional sustainable practices.

Unemployment :

Every sector could experience a huge job loss with the emergence of AI, particularly in tertiary sector the large size enterprises. Banking, financial services and insurance, information technology, business process outsourcing, healthcare and retail which are utilizing AI in a big way could experience these job losses in the coming years. The impact could be as much as 15-20 per cent in the next three years when Gap between large and small enterprises will grow as the former will become more efficient by embracing artificial intelligence. Big companies are going to become bigger because of the bots, small companies will not be able to afford it and even if they can afford, viability of using or implementing will be low.

Moreover, the impact of AI on employment is dual-faceted. While AI can lead to unemployment, particularly in routine and repetitive roles, it also creates new jobs that require more advanced skills, such as AI system maintenance, data analysis, and the development of new AI technologies. It can depend on factors such as the speed of AI adoption and the flexibility of the workers. Businesses need to consider these dynamics as they integrate AI technologies, planning strategically for workforce transitions and up-



skilling programs.

Conclusion :

It is seen that AI has remarkable implication on each sector of the Indian Economy and for attaining the huge domestic as well as international opportunities we cannot stop using AI. According to a new report by Team Lease Digital AI is expected to add up to \$500 billion to India's gross domestic product by 2025 and \$967 billion by 2035. It also states that India's AI software segment is expected to grow annually by 18 per cent to the end of 2025. India's investments in AI are growing by 30.8 per cent annually and will reach \$881 million this year. Thus very soon we are confident that India as a country will continue to invest and soon enough be a very significant part of the whole AI economy.”

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