

## DIGITAL INDIA EMPOWERED BY ARTIFICIAL INTELLIGENCE

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### ABSTRACT

Indian Government launched the scheme of Digital India to ensure that government services are accessible by the citizens electronically by improving online infrastructure as well as internet connectivity. It makes India digitally empowered in technology. A very large youth population in India trained in Information Technology. However, in terms of usefulness of the digital facility and technical infrastructure has not achieved its full potential. A big number of processes are still not digitized or in incomplete condition. The objective of the paper is to portray the opportunities and challenges for AI in India. The paper list some of the challenges originated from the existing social conditions that usually deal with the uptake of digital technologies in governance especially in Indian context. It also finds the possibility of enhancement the scope of AI. Government's Initiatives towards Artificial Intelligence have been also evaluated and presented here.

**Keywords :** Digital India, Artificial Intelligence, empowerment, electronic services, intelligent machines

#### Introduction

Artificial Intelligence (AI) is spreading like a fire in our world. With intelligent machines enabling high-level cognitive processes like thinking, perceiving, learning, problem solving and decision making, with the facility of high level data collection and aggregation, analytics and computer processing power, Artificial Intelligence is empowering and increment human intelligence and enrich the way people be in this world and work.

'Artificial intelligence is the science and engineering of making intelligent machines, especially intelligent computer programs.' – John McCarthy, father of AI

AI has potential to ease and enrich human life in the each step. It has the ability to replace the need of human involvement in tasks that pose threat to their life and safety. If we talk about one of the most high risk situation in Defense, exploratory missions, would need not use human actors anymore soon enough, when we

develop sufficiently intelligent Autonomous Drones and Robots. Autonomous Weapons and Autonomous Drones are being researched globally, to reduce risks to human lives in Defense and exploration.

Artificial Intelligence techniques can be used in a variety of sectors, to help problems persisting in our country, from transport, logistics, education, healthcare and defense. For example, if we try to resolve two of our country's biggest challenges – Agriculture and Healthcare in remote areas, AI can be proved as a great help.

#### Review of literature

Inception of neural network concept took place in 1950s. , however, interest in AI has been reignited over the recent few years. The rapid and dynamic pace of development of AI has made it difficult to predict its future.

As Kokkinakos et al. [2] argues that high-tech technologies, like social software, data analytics etc., transform the day by day operations of modern

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organizations in every possible level and ways, and, thus, it is expected that Digital Transformation lately constitutes one of the ever-present terms around the

World Wide Web. Table 1 illustrates distinctive definitions taken from the literature.

Author(s)	Definition(s)
Fitzgerald et al. [22 ]; McDonald and Rowsell - Jones [3]	Use of new digital technologies, such as social media, mobile, analytics or embedded devices, in order to enable major business improvements like enhancing customer experience, streamlining operations or creating new business models [10 ]. As such, the Digital Transformation goes beyond merely digitizing resources and results in value and revenues being created from digital assets [3]
Solis et al. [4]	The realignment of, or new investment in, technology and business models to more effectively engage digital customers at every touch point in the customer experience lifecycle
Collin et al. [5]; Gimpel and Röglinger [6]; Kane et al. [7]	While digitization commonly describes the mere conversion of analogue into digital information, the terms Digital Transformation and digitalization are used interchangeably and refer to a broad concept affecting politics, business, and social issues
Martin [8]	Digital Transformation is now commonly interpreted as such usage of Information and Communication Technology, when not trivial automation is performed, but fundamentally new capabilities are created in business, public government, and in people's and society life
Westerman et al. [11 ]	Digital Transformation is defined as the use of technology to radically improve performance or reach of enterprises
Stolterman and Fors [9]	Digital Transformation is the changes that digital technology causes or influences in all aspects of human life

**Table 1.** Digital Transformation Definitions

**Research Methodology**

This paper takes a step towards defining the future of AI in India. Our prime observation is that AI brings

with it opportunities, which tend to be obvious and tempting, and risks, whose effects might take longer time balance to manifest themselves.

With considerate planning and management, we believe that not only can AI have a net positive effect on India's development; indeed it can help to overcome the traditional hurdles to growth. With such high stakes involved, it is essential materialization of AI in India be subjected to rigorous academic study.

The research is exploratory cum analytical in nature because it is based on secondary data solely. The data have been collected from various sources like journals, report of Niti Aayog about National strategy for Artificial Intelligence, Websites and Magazines etc. The data have been analysed keeping in mind the PM Modi's Vision for Artificial Intelligence Means for India and the efforts taken by government in this direction.

### **Impact of AI**

AI is science or mechanism to transform the way we humans live and work. This may be possible by helping with automating repetitive tasks and personalising or customising the services for consumers with the ability to learn from specific preferences and interests.

A survey has been done and the participants were presented the above thoughts in order to understand their perception towards AI. **“Can AI applications help address social, economic and environmental causes?”** Survey participants are optimistic about the potential of AI.

They think that AI is able to address key socioeconomic causes and are confident that the government and businesses will undertake necessary developments to meaningful use of AI solutions for the same.

- ✓ 71% Participants believe that AI will help humans to solve complex problems and help live more enriched lives.
- ✓ 43% Participants agree that the government will apply AI to improve global climate, health and education.
- ✓ 67% Participants would prefer AI assistance over humans as office assistants.
- ✓ 60% Participants would prefer AI assistance over humans as financial advisors or tax preparers

### **Government's Plans, Initiatives and implementation of Artificial Intelligence**

According to PM Narendra Modi “technology is a bridge, not a divider of people”. He also iterated that if the human intention is good, artificial intelligence will be a great enabler of prosperity for the country.

PM Modi told during the event how using data intelligence from satellites; the government was able to track the location of LPG distribution centers, and thereby plan new 10,000 centers for efficient distribution.

The government has been removing barriers between government departments and establishing e-marketplace in the country so that technology can be adopted across all departments.

Modi cited how India's postal system has transformed in the last decade, going all the way from basic letter distribution and saving account services to a modern-day banking and informatics lifeline for the country.

### **AI for the common people**

A majority of the people believes that AI enables human beings to live more fulfilling lives. These include stimulating economic growth, enhancing global health and well-being, improving cyber security and improving efficiencies in imparting education. Common people expect their interactions with digital assistants to expand from being convenience-driven to the point of handling major responsibilities such as that of a teacher or advisor.

Business decision makers believe AI powered solutions such as machine learning, virtual private assistants, decision support systems, automated data analysts and others to be have a high impact on their businesses in the future.

A big number of business decision makers would prefer either purely AI advisors or a combination of AI and human advisors to help them to plan their strategies.

When it comes to matters of personal health check-ups (77%) and education (61%), the participants are still tending towards the involvement of human experts. Similar sentiments are encountered regarding the potential loss of human touch associated with AI based customer service.

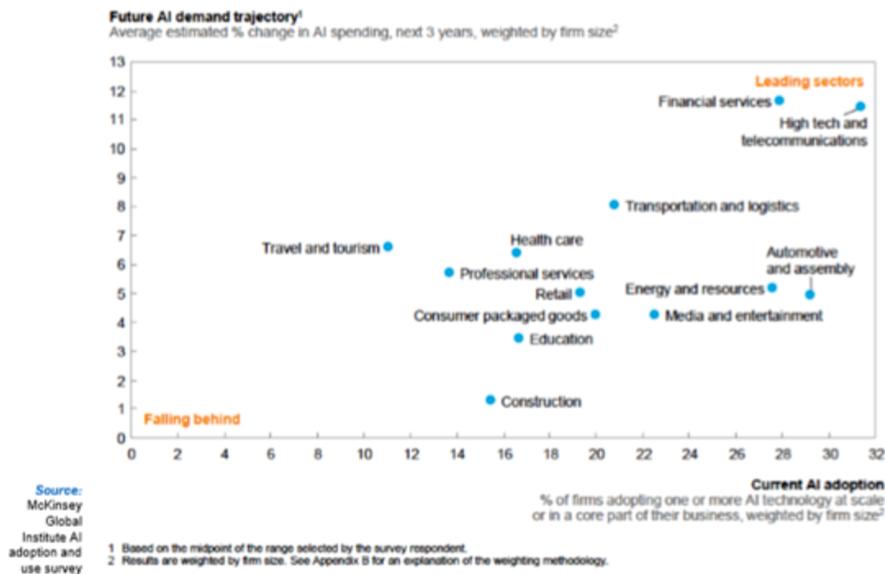


Fig.1: Current AI adoption and future AI investments by sectors

**The Current status of AI in India**

By taking number of initiatives like Skill India, Make in India and Digital India, the Indian Government is trying at great extent to increase human capital on a national scale and catch the attention of global manufacturers' while providing specific prominence on the younger population. India scores the third position of AI-focused start-up hub among the G20 countries in 2016. India going by the number of Artificial Intelligence based start-ups in the country.

Such companies are based in cities like Bengaluru, New Delhi, Mumbai and Hyderabad. There are providing

different products like multi-lingual chat bots to online shopping assistance and automated consumer data analysis. The companies have been working in areas such as E-Commerce, Healthcare, Ed-Tech, FinTech etc. India is in the race with countries like China and the US as far as AI is concerned. Start-ups are a big sign of hope for the country in this race.

**Focus areas for AI involvement**

Artificial Intelligence (AI) is to be expected to transform the way we live and work. Due to its high prospective, its implementation is being treated as the fourth industrial revolution.

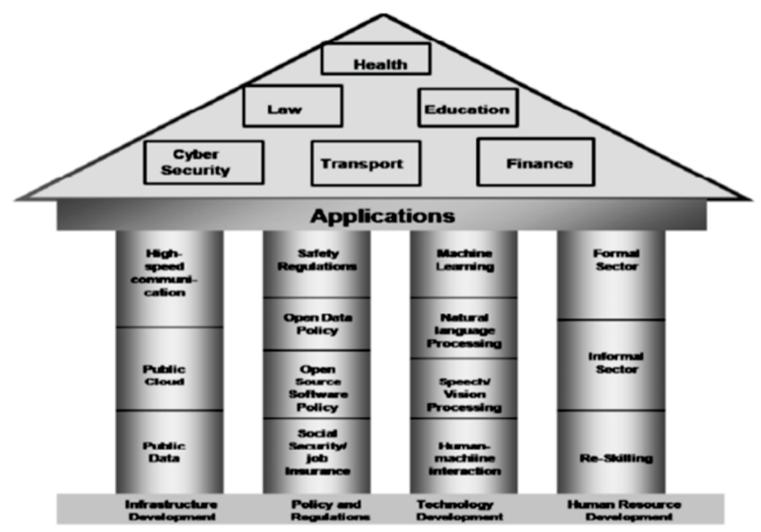


Fig.2: Way forward for India

## I. Healthcare

Healthcare is one of the most vibrant and challenging, sectors in India, and is expected to grow to at a CAGR of upwards of 16%, from the current ~USD100 billion<sup>9</sup>. Healthcare faces major challenges of quality, accessibility and affordability for a large section of the population:

- a) The threshold set by the WHO for a country's health care work force ranges from 22.8 to 59.4 skilled health workers per 10,000 populations; India stands at an estimated 15.2.
- b) Non-uniform accessibility to healthcare across the country with physical access continuing to be the major barrier to both preventive and curative health services, and obvious difference between rural and urban India.
- c) Affordability remains a problem with private expenditure accounting of healthcare expenses, which is out-of-pocket expenditure for common man, probably one of the highest in the world.

The Government of India has been planning and implementing a series of large scale interventions to address India's healthcare challenges. At present transformation of 1.5 lakh Health and Wellness Centres, developing district hospitals have been started to cater to long-term care for non-communicable diseases, Ayushman Bharat Mission, promoting e-Health etc.

## II. Agriculture

AI holds the pledge of driving a food revolution and meeting the increased demand for food. The target of AI is to fulfil the global need to produce 50% more food and cater to an additional 2 billion people by 2050 as compared to today. It also has the ability to address challenges such as inadequate demand prediction, lack of assured irrigation, and overuse / misuse of fertilisers and pesticides. Some implementation of AI based agriculture include improvement in crop yield through real time advisory, advanced detection of pest attacks, and forecast of crop prices to inform sowing practices.

Some examples of real-time acquisition of micro-climatic data from field are timely assessment of crop condition, DSS & Personalized Agro-advisory services to farmers etc.

## III. Education

Artificial intelligence (AI) has impacted every area of our lives, from clothes shopping to TV viewing to dating. But what is its impact on education? Will it help in teaching-learning, or make them old-fashioned? The fact is that, AI does not detract from classroom instruction but enhances it in many ways. There are a lot of benefits of AI in our educational systems.

As educators, we all have fears about instituting large universal changes, and sometimes those fears are well grounded. However, we cannot afford to ignore the possibilities that AI offers us for considerably improving the student learning experience.

### Conclusion

Artificial Intelligence may be a strong weapon for India to stand in the queue of developed nations. India has a very large number of talents, which can drive the AI revolution and bring our country the much needed position of being a world leader in the field of technology.

This paper takes a step towards defining the future of AI in India. Our prime observation is that AI brings with it opportunities, which tend to be obvious and tempting, and risks, whose effects might take longer time balance to manifest themselves. With such high stakes involved, it is essential materialization of AI in India be subjected to rigorous academic study.

Ethics and morality has been the strong ensemble of Indian culture since ancient ages, thus making our country the right place for intelligent machines to take birth. The existing digital revolution encouraged by Digital India scheme have accomplished a lot in governance domain, particularly in delivery of public services, education, health, agriculture, etc. To sustain these digital initiatives, the governance agencies must provide citizens with what exactly they need and aspire rather than just an model where 'one size fits all'. We need a citizen-centric and citizen-inclusive approach, which can bridle the ever-changing image of technology and help to design a recursively self-regulated ecosystem of e-Governance. Ethics and Morality are going to construct the spine of a society which has AI as a loyal servant, and has established itself against machines becoming a master of humanity.

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