

WELCOME TOMORROW
Episode 39
 (Radio Serial on Artificial Intelligence)
 AI (Automation) Effect on Indian Economy

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Anchor: India is the world's largest democracy, and one of the world's fastest growing economies. Better technology adoption supported by automation can keep Indian economy afloat to realize the target of a \$5 trillion economy by 2024-25. The government of India is planning to set up a National Mission for artificial intelligence (AI) to boost the use of AI in India. The mission will include government projects that will be rolled out across departments and ministries. The project is estimated to cost about Rs. 2000crore. The AI projects will benefit startups and maximize the use of technology in India. It will also include setting up of a Centre of Excellence for AI and benefits to encourage AI startups. Automation technologies including AI, natural language processing (NLP) and machine learning(ML) will be the next gen growth drivers to the economy propelling more job creations than any other sector. The shrinking Indian economy can very well rebound by just 16% shift on automation across sectors.

Characters:

Prakash: Father (55)- Manager in Transport Company
Tripura: Mother (52)-House wife
Ramani: Daughter (19)-MCA Student
Anand: son (25) -AI Researcher
Keerti: (22) – IT Professional
Prof:Narendra: (55)- Economics Professor
Ranga: (27) - Salesman in Big Bazaar

SCENE-1

Anand: Oh! It looks wonderful!

Ramani: What is that Anand? You seem to be excited. You are attached to your cell phone for a long time

Anand: Yes Ramani. It's really exciting! I am watching a video.

Ramani: What is it? What is new in it?

Anand: You see, sister. Here is a video of a humanoid robot delivering a new car to the customer. It handed over the keys and documents to the customer after taking them from the showroom officials.

Ramani: Oh! It is something novel. Let me see it. Give your phone.

Ramani:(Watching video) Bro, you see, the robot is explaining the highlights of the new model car and the customer service available.

Anand: Yes. What is more interesting is, this innovation took place recently in Kerala state of our country. I understand that it's a business promotion drive. Automation of artificial intelligence is being adopted by many organizations in India to become true digital enterprises.

Ramani: Bro, you did a course in AI and now a researcher too. You can discuss your future plans with your friends and also take the advice of our father. He knows many things about business.

Anand: Yes. I will do so sister. I will contact some of my class mates who are doing small businesses and interested in AI startups. We must take a bold step to invest in a startup company.

Ramani: It's a good idea bro, but before taking any such decision you need to know about our government's plans to promote AI and the economic implications of AI automation.

Anand: Look sister, dad is coming.

Prakash: Anand, you are discussing something with your sister. What is it?

Anand: Yes dad. How long can we carry on with limited income? We need to start a new venture as the market trends are changing and business competition is growing.

Ramani: Dad, Bro is mulling with an idea to take up a startup initiative with some of his friends.

Prakash: Oh! It's a good idea.
Anand, I know you have interest in AI. So, better think of a AI-based startup company.

Anand: Yes dad. I have the same idea. I already contacted some of my friends who are willing to join me. We will plan a joint venture.

Prakash: It's good. But you ought to become informed about the government's economic policies and the implications of AI (automation) on our country's economy. The knowledge will help you to take correct decisions and wise investments.

Anand: Thank you dad for your suggestion. You have experience as a personnel manager of an automobile enterprise; you have knowledge about many micro, small and medium enterprises (MSMEs) and technology automation. I will ask my local friends to sit with you for a discussion on all aspects of AI automation.

Prakash: Ok. But you know Prof. Narendra, my friend. He is a professor of economics and consultant for some businesses. He can give some suggestions and clarify your doubts. He may be free tomorrow, Sunday. I will contact him. You can go and pick him up. We all can have lunch here.

- Anand:** Ok dad.
- Ramani:** I too have interest in AI and automation. But see that the discussion is interesting . It is enough if you touch upon some basic issues.
- Prakash:** Yes Ramani. You are right. We will briefly discuss only a few important issues of AI (automation) with possible effects on Indian economy.

SCENE 2

(Sunday. Alarm rings. Anand wakes up.)

- Anand:** Oh! It's 7am. I must hurry up.
(Loudly) Mom, where is dad?
- Tripura:** Anand, your dad is in the backyard garden. He is reading newspaper. Why, anything important?
- Anand:** Yes mom. Today is Sunday. We planned a discussion on AI (Automation). Tell dad. I will go and bring Prof. Narendra and two of my friends. I will come back in half an hour.
- Parvati:** OK, Anand. I will prepare lunch for all. Invite them for lunch.

(Doorbell rings....Ramani opens the door)

- Ramani:** Nameste professor sir. Please come inside. Dad is waiting for all of you.
- Prakash:** Welcome Prof. Narendra. It's a long time since we met. Please sit in the sofa.
- Narendra:** Thank you Mr.Prakash. Today is Sunday. I am free. We can spend some time together.
- Prakash:** Yes Narendra. I have weekly off today.
- Anand:** Dad, these are my friends keerti and Ranga. Keerti is software professional. Ranga is my friend. He is a salesman in the city shopping mall and a workers union leader.
- Keerti:** Good morning sir. I am working for Tata Consultancy Services (TCS)
- Ranga:** Good morning sir. Our manager sent these masks and hand sanitisers for all of you.
- Prakash:** Good morning. Please take your seats here. Thanks for the gesture of your manager. We will wear the masks during our discussion.

- Tripura:** Narendra bhai. Anand told me that you and his friends are coming. Please have coffee and the snacks. (Sounds of cups and plates)
- Anand:** Mom, are you busy? Where is Ramani sister? She is also interested in our discussion. Today is Sunday. She must be free.
- Tulasi:** Anand, I am busy with kitchen work. But Ramani is attending online class. She may join you after some time.
- Anand:** Uncle, we want to collect information about AI (automation) and implications on Indian economy. We are thinking of a AI-based startup company. So we want to know about government policies and other related aspects.
- Narendra:** It's good. Youth should come forward to take advantage of government's initiatives to encourage use of AI.
- Prakash:** Yes. Automation and artificial intelligence are increasingly becoming an integral part of business now-a-days. We need to have full knowledge about the recent developments at the national level and government policies.
- Narendra:** First let me tell you that India is the fastest growing economy with the second largest population in the world. It has a significant role in the AI revolution.
- Anand:** Has the Government of India (GOI) recognized the importance of AI?
- Prakash:** Why not. GOI has recognized the potential of AI to transform economies and the need for India to strategise its approach. In his budget speech in 2018-2019 the then Hon'ble Finance Minister mandated NITI Aayog to establish the National Program on AI to guide the research and development in new and emerging technologies.
- Narendra:** Yes. Accordingly Niti Aayog has adopted a three pronged approach.
- Ranga:** Professor sir, now-a-days everybody is talking about artificial intelligence. Our shopping mall management is also planning to use the emerging technology to improve customer services. But myself and most of my fellow workers are all school dropouts and do not have much knowledge about these things. I have interest to know about these things. Anand asked me to come with him and follow the discussion with all of you.
- Narendra:** It's alright Mr.Ranga. Our discussion is all about AI (automation). Many business concerns and other sectors are using AI and going for automation. You can ask us if you have any doubts. The knowledge will be useful to you in your work. You can also help Anand in business.
- Ranga:** Thank you sir. You are all talking about AI and automation. Would you please tell me about what they mean?
- Narendra:** Well Mr. Ranga. It's always necessary to know about the basic concepts to understand the government initiatives and related economic impacts. I will tell you briefly.

Artificial Intelligence is all about trying to make machines or software mimic and eventually supersede human behavior and intelligence. The technology stimulates machine intelligence by teaching them audio-visual perception and reasoning. Such machines can rationalize and solve problems like a human and, much more efficiently. AI has become a part of our everyday life. Mr. Ranga, you know, you are also using AI.

Ranga: Yes sir. I have a Smartphone. To unlock the phone I use my face id. I am using the voice assistant Siri in my cell phone in many ways. There are spam filters. I am also using Face book, WhatsApp, online shopping and many other things.

Narendra: Ok. There is AI in all these.

Keerti: Uncle, what is automation?

Narendra: Keerti, automation is a broad term. It covers many areas of technology where human input is minimized. The most complex level of automation is AI automation. The addition of AI means the machine can “learn” and make decisions based on past situations it has encountered and analysed.

Prakash: Now-a-days many companies are automating critical parts of their service function giving customers a positive experience. There are many AI automation applications such as optical character recognition, handwriting recognition, speech recognition, face recognition, artificial creativity, computer vision and virtual reality.

Anand: Dad, all these new technologies need lot of explanation. But now we only try to understand briefly their economic implications for our country.

Narendra: I will tell you how the AI automation impacts India’s economy.

Anand: Ok uncle.

Ranga: I heard that your shopping mall is using AI for mapping customer data.

Ranga: Yes Anand. Our management is just beginning to use the AI technology. They have plans to expand it further and give training to our workers.

Narendra: You see Mr. Ranga, AI is the future of the retail industry. It will benefit both the traders and the consumers.

Anand: Uncle, you were talking about the three pronged strategy of NITI Aayog. What are the strategies?

Narendra: Anand, these strategies prepare a roadmap for our country’s approach to AI technology. These are, undertaking exploratory proof-of-concept AI projects in various areas, creating a national strategy for building a vibrant AI ecosystem in India and collaborating with various experts and stakeholders.

Ranga: Professor sir, what is the meaning of proof-of-concept?

Narendra: Mr.Ranga, proof-of-concept is a solution to help an organization understand whether an AI-based project can be successful or not.

Ranga: Ok sir.

Keerti: Sir, what are the actions of NITI Aayog?

Narendra: NITI Aayog has taken several concrete steps. It has partnered with several leading technology players to implement AI projects in critical areas such as agriculture, health, education, energy, manufacturing etc. Learning from these projects has given a better perspective to our task of crafting the national strategy for AI.

Anand: Uncle, India is going in a big way to adopt AI technologies in different sectors. What is the economic impact of AI for India?

Narendra: AI is emerging as a new factor of production, augmenting the traditional factors of production, labor, capital and innovation and technological changes captured in total factor productivity. AI has the potential to overcome the physical limitations of labor, and open up new sources of value and growth.

Keerti: How does AI drive growth, sir?

Narendra: Agriculture, industry and services are India's economic strengths contributing to Gross Domestic Product (GDP) and employment. AI drives growth in all these sectors besides other sectors through different ways.

It enables automation, labor capital augmentation and innovation diffusion.

Prakash: I understand that AI innovations in one sector will have positive consequences in another as industry sectors are interdependent based on value chain.

Narendra: That is true prakash. Economic value is expected to be created from the new goods, services and innovations that AI will enable. AI research reports estimated AI to boost India's annual growth rate by 1.3% points by 2035. AI has the potential to add ~US\$ 1 trillion or 15% of India's current gross value to India's economy by 2035.

Anand: I think AI technologies will benefit many sectors.

Narendra: It's true. As AI matures and generalized applications become common place, it will be of advantage to India when it comes to large scale implementation. Moreover, India's internet user base is the fastest growing in the world. Digitization of the country is surging through initiatives like 'Digital India' and accelerating access to internet and telephony provided by India's telecom companies.

Prakash: It's great! As internet connectivity improves, the volume of commercial activity conducted through digital platforms is also increasing.

- Narendra:** Yes. These processes generate vast amounts of information, which businesses can use to improve their performance.
- Ranga:** What are the general applications of AI systems in business, sir?
- Narendra:** There are many applications like customer services, marketing, and logistics besides data analysis.
- Keerti:** Yes sir. Machines can be programmed to perform repetitive tasks to improve efficiency and accelerate output targets.
- Narendra:** You are right, Keerti. An encouraging development is the businesses and factories in India are beginning to appreciate the benefits of AI systems, and are increasingly investing in adoption of smart machines and automated technologies. Internet of Behavior (IoB) is an emerging technology.
- Ranga:** What is IoB, Sir?
- Nagendra:** It is an amalgamation of AI, data analytics and behavioral science. It can become a great marketing and sales tool for businesses and organizations and will help the country's economy.
- Anand:** I learnt that Indian Institute of Technology (IIT), Delhi and the Automation Industry Association entered into a partnership to develop technology in the area of smart manufacturing. What do you say Keerti?
- Keerti:** As a software professional, I know that in the Information Technology (IT) sector, leading Indian technology firms such as Wipro, Infosys, and TCS are developing new products to meet changing demands. They are diversifying their capabilities by providing AI support through software developed in-house.
- Anand:** You know, Keerti, Wipro is servicing clients in the telecom sector with its AI system known as HOLMES.
- Keerti:** Yes Anand. I know. Infosys is offering its own AI software called Nia in the finance sector to large volumes of data. Nia is a next generation integrated AI platform. It achieved data insertion rate of 18.22 MB per second. Nia can predict variability in manufacturing and material cost.
- Narendra:** That's right. In labor-intensive industries like retail, automotive, manufacturing, logistics, and agriculture - automated machines are used to make up for productivity gaps and increase efficiency. Sensors, material tracking mechanisms, 3D printing, automated product design, robotics and wearable can help reduce costs and increase productivity. Startups in India are responding to this through innovations.
- Keerti:** Sir, there is a Bangalore-based startup, Grey Orange. They have built robots to monitor e-commerce sector.
- Prakash:** Yes. In the automotive segment, some car makers like Hyundai have automated entire body and paint shops in their Indian factories. The automation allows car makers to improve quality, and respond to sudden market changes with ease.

Narendra: That is a advantage of AI automation. Some car manufacturers are using humanoid robots for business promotion.

Anand: Yes, uncle I have seen one such video.

Narendra: Ok. Automation will help the manufacturing industry reach a high level of accuracy and productivity, which may be beyond human ability. It enables more innovation and new operations and ultimately contributes to India's economic growth.

Keerti: How is AI automation benefitting agriculture, sir?

Narendra: Agriculture sector is very important for India. It forms the bedrock of India's economy and needs infusion of multilayered technology. AI holds the promise of driving a food revolution and meeting the increased demand for food.

Prakash: That's right Narendra. It also has the potential to other challenges of agriculture.

Anand: There are several challenges that limit production such as lack of assured irrigation, inadequate demand prediction, and overuse or misuse of pesticides and fertilizers.

Narendra: Yes, Anand, AI has the potential to address these challenges. It enables improvement in crop yield through real time advisory, advanced detection of pest attacks, and prediction of crop prices to inform sowing practices. There is a technology-oriented startup Nebulaa in Hyderabad. It uses data from various agricultural markets in India for quick, accurate and cheap quality testing.

Keerti: There is another important application of AI in agriculture.

Anand: What is that Keerti?

Keerti: Anand, I know that Image Processing and Machine Learning enable crop and soil monitoring besides predicting impact of weather on crop output.

Prakash: Yes. They impact efficiency in allocation of farm inputs such as pesticides as well as crop cycle management.

Ranga: AI automation in agriculture is ok. But sir, how will it help India's economy?

Narendra: Well Mr. Ranga. You have raised the important point. We all know that agriculture plays a vital role in Indian economy. We should know that AI will have a significant effect. It can double the economic growth rate. Government has set a target of doubling the farmer's income by 2022 as well as increasing the agro exports to over US \$60 billion by 2022. AI will help meeting the target by improving crop productivity by reducing risks and improving farmer's income.

Ranga: It's ok.

Anand: It's great, uncle! Manufacturing sector is also very important for the country's economy. How does AI impact the sector?

Narendra: Anand, manufacturing sector is one of the biggest beneficiaries of AI-based solutions. They provide flexible and adoptable technical solutions to automate

processes and machinery. AI automation impacts Research and Development (R&D) efforts, demand forecasting and production.

Prakash: Quality assurance is another important benefit of AI automation. The vision systems with ML algorithms will identify defects and deviations in production features. This will assure efficiency gains.

Anand: Health sector is also important for a country as economy as only a healthy population can contribute to asset creation and Gross Domestic Product (GDP). How is AI automation helpful to health sector, dad?

Prakash: In our country rural areas suffer from poor connectivity and shortage of healthcare professionals. Implementation of AI driven diagnostics, personalized treatment, early identification of potential pandemics and imaging diagnostics are among some of the AI applications in healthcare. These can address issues of high barriers to access healthcare facilities.

Keerti: Trichy Health Services, a Bangalore-based startup has developed a machine that conducts an Electrocardiogram (ECG) in a few minutes. Tricog aims to provide instant diagnosis by fitting internet-enabled sensory devices into ECG machines.

(Ramani comes with tea cups and bananas)

Anand: Come on sister. Sit in the chair.

Ramani: Sorry bro. I couldn't join your discussion till now. Mom sent fruits and tea for all. Please take.

Prakash: It's Ok Ramani. Come and sit. You too have tea with us.

Narendra: Oh! It's good. All are ceramic cups. You are avoiding plastic and paper cups.

Scene-3

Ramani: I read in e-newspapers that robots were used in some Covid hospitals as an interface between a doctor and a patient. They can carry out diagnostic and treatment processes.

Anand: This reduces human contact and risk of transmission of infection during the coronavirus pandemic. AI has a major role in operation and implementation of telemedicine.

Prakash: In many ways, AI reduces healthcare costs. Government's spending on public health will be considerably reduced and thus helps the country's economy.

Ranga: AI is used in banking also. Most of our customers are using Phone pay, Google pay for payments for purchases.

Narendra: Yes Ranga. Banks are using AI automation in many ways. This enables increased accuracy in detecting credit card anomalies and money laundering besides enhanced risk analysis and early detection of security breaches.

- Keerti:** Sir, ICICI bank has employed bots, I mean web robots, to perform most of the procedures related to banking, agribusiness, and customer services.
- Prakash:** AI automation has great impact on utilities such as water, electricity, oil and gas. Smart grid systems and enhanced energy management have an impact on economy. Smart meters for consumers and sensors along transmission lines will revolutionise both demand and supply side of energy economy.
- Narendra:** That's right Prakash. AI automation benefits many other sectors such as transport, education, defense, retail and tourism. An improvement in all these sectors will greatly give a boost to India's economy in the years to come. Future impacts can be realized on account of firms increasing their investments in research, developing in house capabilities of developers, data engineers, building data governance practices etc.
- Prakash:** AI can potentially solve quality and access issues observed in education system. It helps human resource development and plays an important role in India's transition to an advanced economy.
- Anand:** So, it is now clearly established that the impact on AI and automation have an unambiguous impact on India's economy.
- Narendra:** Yes Anand.
- Prakash:** The coronavirus disease and the lockdowns gave a big shock to India's economy. Recovery from the consequences of the public health crisis is a firefighting exercise and requires innovative strategies.
- Narendra:** You are right prakash. Among the emerging economies India seems to be the worst affected by the Covid-19 pandemic. The strength of the economy has deteriorated in the first half of 2020. However, Indian companies expect quicker return to pre-Covid levels. They intend to increase financial investment in their businesses by increasing the use of digital technology to enhance reliability of their supply chain.
- Anand:** Uncle, I think AI can be helpful to our economy to get back to normalcy.
- Narendra:** Of course, Anand you may be correct. Several studies have shown that AI and automation can give a boost to the economic revival. Data analytics and Artificial Intelligence helped improve GST collections. During the last three months i.e., September, October and November, 2020 GST collections crossed Rs.1lakh every month.
- Prakash:** Yes. In general, Organizations and workforce in any sector will benefit from adopting autonomous technology and AI. In the pandemic situation India has shown that the digital readiness was of great help. Union Finance Minister recently said that one year from now India would move a lot more on digitization and have its signature on anything to do with fintech, financial transaction and digital payment globally.
- Ranga:** Sir, there is a fear among our workers that AI and automation will take away our jobs.

- Ramani:** I too heard about such fears. Is the threat real or false, uncle?
- Narendra:** No. It is not true that AI automation will take away jobs. On the other hand as more organizations adopt intelligent automation, it will eventually create more high-skilled jobs. More economic opportunities will be created for everyone. Moreover, Government of India's focus on responsible AI allays all such fears. For the centre, major challenge is to create an adequate number of jobs amid work increasingly becoming technology driven and automated. So, any such fears are unnecessary.
- Ranga:** Thank you sir.
- (Ranga's phone rings). Ok sir, definitely. I will tell them.
- Anand:** Who is that Ranga? Any message?
- Ranga:** Yes Anand. There is a sales promotion event and also inauguration of automated message system that responds to emails from customers at our mall and automated email campaign to new and old customers. Our manager asked me to invite you all to visit our mall.
- Narendra:** Oh! It's good. Such automation will promote businesses and will, in turn, boost our country's economy.
- Ranga:** Sir, please visit our mall tomorrow. You can see the use of AI and interact with our customers and management.
- Narendra:** ok. sure, Mr. Ranga. We all will visit your mall tomorrow evening.
- Anand and Keerti:** We will take a video and prepare a short film based on our discussion.
- Prakash:** It's a good idea Anand. We discussed many things. We will stop now.
- Tripura:(Coming from the kitchen)** Your discussion is not yet over? You know ,it's already 2'o clock. Lunch is ready for all.
- Prakash:** Ok, Tripura. We have just stopped our discussion. We are coming for lunch.

Scene Ends
