

Automation Exposure and India's Services-Led Growth Model: How AI Adoption Could Reshape White-Collar Employment

Abstract

India's economic growth over the past few decades has been strongly supported by services, particularly information technology, business process management and professional services. These industries have created millions of relatively skilled jobs and have made India an important exporter of digitally delivered services. The rapid development of artificial intelligence (AI), however, creates a new question for this growth model: what happens when technologies capable of performing cognitive and routine white-collar tasks become increasingly available?

This paper examines the potential impact of AI adoption on India's services-led growth model. It considers the importance of IT and business services to the Indian economy, the exposure of different types of occupations to AI, and early evidence of AI adoption within India's technology sector. The analysis suggests that AI is unlikely to simply eliminate large numbers of jobs overnight. Instead, it is more likely to change the tasks performed by workers, reduce demand for some routine activities and increase demand for workers with advanced technical, analytical and interpersonal skills. This transition could create productivity gains for India, but it may also increase wage inequality if opportunities for reskilling are unevenly distributed. The paper argues that India's ability to benefit from AI will depend not only on technology adoption but also on its capacity to prepare workers for a changing labour market.

1. Introduction

India's development path has been unusual compared with many other large developing economies. Instead of relying primarily on manufacturing exports, India has developed a strong services sector, particularly in information technology, business process outsourcing and other digitally delivered services.

This model has created an important source of employment for educated workers and has generated significant export earnings. According to the International Monetary Fund (IMF), India's IT and business process outsourcing sector employs more than four million people and contributes around 8% of GDP. India has also become a major global player in digitally delivered services.

Artificial intelligence introduces a new challenge to this model. Earlier forms of automation mainly affected repetitive physical or routine tasks. Generative AI is different because it can perform or assist with activities involving writing, coding, customer support, data analysis and other forms of cognitive work.

This raises an important question for India: **if AI increases the amount of output that can be produced by each worker, will it create better employment opportunities or reduce the need for white-collar workers?**

The answer is unlikely to be completely one-sided. AI can replace some tasks while simultaneously creating new tasks and increasing productivity. The main challenge is therefore managing the transition between the types of work that decline and the types of work that expand.

2. India's Services-Led Growth Model

Services have become one of the most important components of India's economy. IT services, business process management and professional services have connected Indian workers with companies and consumers around the world.

India's advantage has traditionally included a large educated workforce, relatively competitive labour costs, widespread English-language capability and experience working with international clients.

This model, however, depends partly on the continued international demand for human labour. If companies in the United States, Europe and other major markets can use AI to perform tasks that were previously outsourced to India, some parts of India's traditional outsourcing advantage could weaken.

The IMF has specifically identified India's service sector as particularly exposed to AI because many IT and business-service activities involve routine cognitive tasks such as customer service, transaction processing and technical support. At the same time, AI could allow Indian companies to move towards more complex and higher-value activities.

Therefore, AI does not necessarily threaten India's services sector as a whole. Instead, it may change the type of services in which India has a competitive advantage.

3. Which Jobs Are Most Exposed?

AI exposure should not be confused with complete job replacement.

A job can contain some tasks that AI can perform while still requiring human judgement, communication or responsibility. For example, an accountant may use AI to prepare preliminary financial analysis but still need to interpret the results and communicate them to a client.

This distinction is important when studying the Indian labour market.

An IMF assessment estimated that around **26% of Indian workers are in occupations with high AI exposure**. Within this group, around 14% were in jobs where AI could be largely complementary to human labour, while approximately 12% were in occupations facing a higher risk of displacement.

This means that exposure does not automatically translate into unemployment.

For many workers, AI may function as a productivity tool. A programmer can use AI to generate a first version of code, a financial analyst can use it to process information faster, and a customer-support employee can use AI to handle routine queries.

The more difficult situation arises when an occupation consists mainly of predictable tasks that can be performed by software with limited human intervention.

This creates a possible division in the white-collar labour market: workers who can use AI effectively may become more productive, while workers whose tasks can be directly automated may face weaker demand.

4. Evidence of AI Adoption in India's Services Sector

AI adoption in India has already begun rather than being purely a future possibility.

The IMF reported in 2025 that nearly 60% of surveyed Indian companies reported actively deploying AI, although adoption remained uneven across sectors and types of firms. Services such as financial services, healthcare, telecommunications, retail and logistics were among the areas where adoption was concentrated.

Job-market evidence also shows a significant increase in demand for AI-related skills.

Research based on Indian online job advertisements found that demand for AI skills increased rapidly after 2016, particularly in IT, finance and professional services. The same research found that AI-related positions generally offered a wage premium but were concentrated among workers with higher education and specialised skills.

This creates an important paradox.

AI can increase the value of highly skilled workers while reducing demand for some non-AI roles. As a result, the overall number of jobs may not fall dramatically, but the composition of employment can change significantly.

5. The Risk of a "Hollowing Out" of White-Collar Employment

One possible long-term effect of AI is a hollowing out of middle-level cognitive work.

Imagine a traditional organisation with three levels of work:

- entry-level employees performing routine analysis and processing;
- mid-level employees handling standardised professional tasks;
- senior employees making complex decisions and managing clients.

AI could potentially automate some of the routine work previously performed by the first two groups. At the same time, companies may continue to require highly skilled employees who can supervise AI systems, solve complex problems and manage relationships.

104 This could increase the wage gap between workers with advanced AI-related skills and
105 workers performing more routine tasks.

106 The IMF's research on India provides some evidence supporting this concern. It found that
107 increased AI demand within establishments was associated with lower demand for non-AI
108 and total labour in certain high-skill, non-routine occupations, while AI-related jobs carried
109 significant wage premiums.

110 However, this does not prove that AI will permanently reduce total employment.
111 Productivity gains can reduce costs, increase demand for services and create entirely new
112 types of work.

113 The final employment effect will therefore depend on whether new economic activity grows
114 quickly enough to offset the labour displacement caused by automation.

115 **6. Reskilling as a Policy Challenge**

116 The ability of Indian workers to adapt will be one of the most important factors determining
117 the economic impact of AI.

118 Traditional education is not always designed for rapid technological change. A worker
119 trained for a particular software platform or routine process may find that the value of those
120 skills declines when AI can perform the same task.

121 Reskilling therefore needs to focus on broader capabilities rather than only teaching workers
122 how to use a particular tool.

123 Important areas include:

- 124 • data analysis,
- 125 • AI literacy,
- 126 • programming,
- 127 • critical thinking,
- 128 • communication,
- 129 • problem-solving,
- 130 • domain expertise,
- 131 • management and decision-making.

132 The challenge is particularly large because India's workforce is highly diverse. Large
133 technology companies can provide internal training, while smaller businesses and individual
134 workers may have fewer resources.

The IMF has also highlighted skills shortages, lack of tools and platforms, and difficulties integrating AI as important barriers to adoption. It argues that investment in human capital and labour-market policies will be important if India is to benefit from AI while protecting workers during the transition.

7. AI and Inequality

The impact of AI is unlikely to be evenly distributed.

Workers who already possess strong technical or analytical skills may benefit because AI can increase their productivity. Workers performing routine cognitive tasks may face greater competition from automation.

This could create a situation where economic output continues to grow while employment growth becomes weaker in certain occupations.

There is also a geographical dimension. AI-related jobs are concentrated in major technology and business centres, meaning that workers in cities with stronger digital ecosystems may have more opportunities to transition than workers in smaller cities or regions.

This makes reskilling an economic policy issue rather than simply an individual responsibility.

If access to AI education and training is unequal, the benefits of the technology could become concentrated among already advantaged workers.

8. What Does AI Mean for India's Growth Model?

The central question is whether AI will weaken India's services-led growth model or help it move to a higher-value stage.

There are reasons for both possibilities.

On one side, AI could reduce India's traditional cost advantage in services. If foreign companies can automate customer support, coding, document processing and other routine activities, they may need fewer outsourced workers.

On the other side, AI could make Indian companies more productive. Instead of competing primarily on the cost of labour, Indian firms could increasingly compete on specialised knowledge, technology development, consulting, research and complex problem-solving.

This would represent a shift from a **labour-arbitrage model to a productivity-and-innovation model**.

The IMF has noted that AI could increase productivity in emerging Asian economies, although the benefits depend on skills, infrastructure and the ability of firms to adopt the technology effectively.

For India, this transition could be particularly important because the country has a large young population and a substantial pool of technology workers.

9. Fiscal Implications

There is also a less discussed question: what happens to government revenue if employment growth slows while economic output continues to increase?

Governments collect revenue through income taxes, consumption taxes, corporate taxes and other sources. If AI allows companies to produce more with fewer employees, corporate profits could rise even if wage income grows more slowly.

This could gradually change the balance between different sources of tax revenue.

It does not necessarily mean that government revenue will fall. Higher productivity and corporate profits can increase tax collections. However, if the distribution of income shifts significantly from labour towards capital, governments may need to reconsider how their tax systems capture the gains from technological growth.

For India, this question is particularly important because creating sufficient productive employment for a large young workforce remains a major economic objective.

10. Conclusion

Artificial intelligence presents India with both an opportunity and a challenge.

The country's services-led growth model has benefited enormously from its large pool of skilled workers and its position in global IT and business services. However, many of the same activities that created this advantage are now becoming increasingly exposed to AI-driven automation.

The evidence available so far does not suggest that AI will simply eliminate India's white-collar workforce. Instead, it points towards a more complicated transformation. Some routine cognitive tasks may decline, while demand increases for workers who can develop, supervise and effectively use AI systems.

The greatest risk may therefore be a mismatch between the skills workers possess and the skills that the new economy demands. If reskilling opportunities are widely available, AI could help India move from a relatively labour-intensive services model towards a more productive, technology-intensive model. If the transition is uneven, however, wage inequality and employment insecurity could increase.

India's future response to AI should therefore focus not only on encouraging technological adoption but also on preparing workers for the changes that adoption will create. The success of India's next phase of services-led growth may ultimately depend on whether AI becomes a substitute for Indian workers or a tool that allows those workers to produce higher-value services.

The evidence suggests that the outcome is not predetermined. Technology will influence India's growth, but education, skills, business strategy and public policy will determine how broadly its benefits are shared.

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