

11

Artificial Intelligence and the Future of Employment: An Economic Perspective

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Abstract

Artificial Intelligence (AI) is transforming labour markets by changing the nature of work, the composition of occupations, productivity and the demand for skills. This chapter examines the economic relationship between AI adoption and employment, with particular attention to automation, job displacement, job creation, wages, productivity and labour demand. AI can automate specific routine and information-processing tasks, while simultaneously augmenting human capabilities and creating new activities and occupations. Recent ILO research indicates that around one in four workers globally are in occupations with some degree of generative-AI exposure, while transformation of jobs is generally more prevalent than complete replacement. The chapter also examines the importance of reskilling and upskilling as AI changes occupational requirements. OECD research highlights growing demand for both specialised AI capabilities and skills needed to effectively use AI applications. Particular attention is given to the Indian context, including opportunities for productivity improvement, digital entrepreneurship and emerging employment, alongside challenges associated with skill gaps and unequal access to technology. The chapter concludes by discussing the importance of education, lifelong learning, labour-market institutions and appropriate policy responses in facilitating an inclusive transition toward an AI-enabled economy.

Keywords: Artificial Intelligence, Employment, Labour Market, Automation, Productivity, Reskilling, Digital Economy.

Introduction

AI and the Changing Employment Landscape

Artificial Intelligence (AI) has emerged as one of the most significant technological developments shaping contemporary economies and labour markets. AI refers to computer-based systems capable of performing tasks that traditionally require human intelligence, such as learning, reasoning, problem-solving, language

processing and decision-making. Its rapid adoption is transforming the way goods and services are produced and how organisations manage their workforce.

The integration of AI into workplaces has created both opportunities and concerns. Automation can improve productivity, reduce operational costs and increase efficiency, but it may also reduce the demand for workers performing certain routine tasks. At the same time, AI is creating new occupations and increasing demand for specialised technological and analytical skills.

From an economic perspective, the relationship between AI and employment is therefore complex. AI can substitute for some forms of labour while complementing others. The overall impact depends on technological adoption, industry structure, worker skills, education systems and economic policies. This chapter examines these changes and explores the implications of AI for employment, wages, productivity and the future labour market.

Conceptual Understanding of Artificial Intelligence and Employment

Artificial Intelligence can be understood as the development of computer systems capable of performing activities that normally require human cognitive abilities. These activities include learning from information, recognising patterns, understanding language, generating content, solving problems and supporting decisions. Machine learning, deep learning, natural language processing, robotics and generative AI represent important areas of contemporary AI development.

Employment refers to the engagement of individuals in productive economic activities in return for income or other forms of compensation. The relationship between AI and employment can be examined through three major concepts: **automation, augmentation and substitution**. Automation occurs when machines or AI systems perform tasks previously completed by workers. Augmentation occurs when AI supports workers and improves their capabilities. Substitution occurs when technological systems replace particular human tasks or, in some cases, entire occupations.

AI does not necessarily eliminate complete jobs; frequently, it changes the composition of tasks within occupations. Workers may therefore need to adapt to new technologies and develop complementary skills. Understanding these concepts is essential for analysing how AI influences labour demand, productivity, wages and occupational structures.

Evolution of AI and Technological Transformation in Labour Markets

The evolution of AI is closely connected with the broader history of technological transformation. Earlier industrial technologies primarily mechanised physical labour, while computers and information technologies increasingly automated administrative and information-processing activities. Contemporary AI

represents a further stage in this transformation because advanced systems can perform increasingly complex cognitive and analytical tasks.

The development of machine learning, neural networks, robotics, natural language processing and generative AI has expanded the range of activities that can be performed with technological assistance. Businesses are using AI for data analysis, customer service, financial assessment, production planning, recruitment, marketing and decision support.

These developments are transforming labour markets by changing the types of skills demanded by employers. Routine tasks that can be clearly defined and digitally processed are increasingly suitable for automation, while tasks requiring creativity, interpersonal interaction, complex judgement and contextual understanding may continue to require substantial human involvement.

Consequently, technological transformation is not simply reducing labour requirements. It is also restructuring occupations and creating demand for new combinations of technical, analytical, creative and interpersonal skills. The economic effects therefore depend significantly on how workers and organisations adapt to technological change.

AI, Automation and Job Displacement

One of the major economic concerns associated with AI is the possibility of job displacement through automation. AI systems can perform many repetitive, predictable and data-intensive tasks with considerable speed and consistency. As organisations adopt such technologies, certain tasks previously undertaken by employees may be automated, potentially reducing demand for workers in specific occupations.

However, it is important to distinguish **task displacement from complete job displacement**. Most occupations consist of multiple tasks, and AI may automate only some of them while leaving other responsibilities to human workers. For example, an employee may use AI for data processing while continuing to perform activities involving communication, judgement, negotiation or relationship management.

The risk of displacement also varies across sectors, occupations and skill levels. Jobs involving highly repetitive activities may be more exposed to automation, while occupations requiring complex social interaction, creativity, physical adaptability or specialised judgement may experience a different pattern of technological change.

Job displacement can create adjustment costs for workers, including the need for retraining, temporary unemployment and occupational mobility. Regions and industries with rapid technological adoption may experience particularly significant labour-market adjustments.

Therefore, the economic impact of AI-driven automation should be evaluated not only in terms of jobs lost but also through changes in tasks, occupational structures, worker transitions and the creation of new employment opportunities.

Emergence of New Jobs and Employment Opportunities through AI

Although AI can automate certain tasks, technological innovation can simultaneously create new employment opportunities. The development, implementation and management of AI systems require workers with specialised knowledge in areas such as data science, machine learning, software development, cybersecurity and AI system management. These emerging occupations represent a direct source of employment associated with technological advancement.

AI can also generate indirect employment by supporting new products, services and business models. Entrepreneurs can use AI to reduce costs, analyse markets, personalise services and develop innovative digital products. Small businesses and startups may therefore gain access to capabilities that were previously available mainly to larger organisations.

Another important development is the growth of **human–AI collaboration**. Rather than completely replacing workers, AI can assist employees by processing large volumes of information, generating preliminary outputs or supporting decision-making. This may enable workers to devote more time to creative, strategic and interpersonal activities.

AI may also expand opportunities for freelancers and digital workers through online platforms and remote work arrangements. However, access to these opportunities depends heavily on education, digital infrastructure and appropriate skills.

Thus, the employment effects of AI involve both displacement and creation. The ability of economies to convert technological innovation into broad-based employment opportunities will depend substantially on skills development, entrepreneurship and institutional adaptation.

Impact of AI on Wages, Productivity and Labour Demand

AI can influence wages, productivity and labour demand through several interconnected economic mechanisms. By automating certain tasks and improving the efficiency of production processes, AI can increase worker productivity and enable organisations to produce goods and services more efficiently. Higher productivity may contribute to economic growth and potentially create additional demand for products and services.

The effect on wages, however, may differ across occupations and skill groups. Workers whose skills complement AI technologies may experience increased demand for their services, while workers performing tasks that can be more easily

automated may face greater competitive pressure. This can contribute to changes in wage structures and potentially increase differences between workers with different levels or types of skills.

AI can also change the composition of labour demand. Employers may require fewer workers for certain routine tasks while increasing demand for technical, analytical, managerial and interpersonal capabilities. Consequently, the labour market may increasingly reward workers who can effectively collaborate with AI systems.

The overall economic outcome will depend on the balance between productivity gains, labour substitution, new employment creation and the ability of workers to acquire relevant skills. Education, reskilling and labour-market policies therefore have an important role in ensuring that productivity improvements associated with AI translate into broader economic opportunities.

AI and the Transformation of Skills: Reskilling and Upskilling Requirements

The growing use of AI is changing the skills required in modern labour markets. As routine and repetitive tasks become increasingly automated, employers are placing greater emphasis on digital literacy, analytical thinking, problem-solving, creativity and adaptability. Workers increasingly need to understand how to use AI-based tools while also developing skills that complement rather than duplicate machine capabilities.

Reskilling involves preparing workers for entirely new roles, whereas **upskilling** involves improving existing capabilities to perform current jobs more effectively. Both are becoming important strategies for managing technological transitions. Educational institutions, employers and governments have important roles in providing continuous learning opportunities.

AI-related training should not be limited to technical professionals. Workers in administration, finance, education, healthcare, manufacturing, marketing and other sectors may also require basic AI literacy. Alongside technical knowledge, human-centred capabilities such as communication, collaboration, ethical reasoning and creativity remain important.

Investment in lifelong learning can help workers adapt to changing occupational requirements and reduce the adjustment difficulties associated with technological transformation.

AI and Employment in India: Opportunities and Challenges

India's large and diverse labour force makes the relationship between AI and employment particularly significant. The country's expanding digital economy, technology sector, startup ecosystem and increasing adoption of digital services provide opportunities for AI-enabled economic growth and employment creation.

AI can support productivity improvements across sectors such as information technology, banking, healthcare, education, agriculture, manufacturing, retail and logistics. It can also facilitate new forms of entrepreneurship and digital services. For India's young workforce, the development of AI-related technical and professional skills may create opportunities in emerging occupations.

At the same time, AI adoption may create challenges for workers whose occupations contain highly automatable tasks. Differences in digital infrastructure, educational access and skill availability may also influence how workers and regions benefit from AI-driven growth. Small enterprises may face difficulties in adopting advanced technologies because of financial and technical constraints.

India therefore faces the dual challenge of encouraging technological innovation while supporting workers through labour-market transitions. Strengthening digital education, vocational training, reskilling programmes and access to technology can help broaden participation in the emerging AI economy. Policies addressing the changing nature of work will also be important for ensuring that technological progress contributes to inclusive economic development.

Sectoral Impact of AI on Employment

The impact of AI differs considerably across economic sectors because occupations involve different combinations of tasks. In **manufacturing**, robotics and intelligent automation can improve production efficiency and reduce the need for certain repetitive activities. In **banking and finance**, AI is increasingly relevant to data analysis, fraud detection, customer support and risk assessment.

In **healthcare**, AI can support medical data analysis, administrative functions and diagnostic processes, while professionals continue to perform tasks requiring specialised judgement and patient interaction. In **education**, AI can assist with personalised learning, content development and administrative activities. **Agriculture** may benefit from AI-enabled forecasting, precision farming and monitoring technologies.

The service sector may experience substantial transformation because many service activities involve information processing. Across sectors, the employment outcome will depend on the extent of AI adoption, the nature of occupational tasks and workers' ability to adapt to changing requirements.

Economic Inequality, Labour Market Polarisation and AI

AI may influence economic inequality by producing different outcomes for workers with different skills, occupations and access to technology. Workers possessing specialised technical and analytical capabilities may experience increased demand, while workers performing highly automatable tasks may face greater adjustment pressures.

This can contribute to **labour-market polarisation**, where employment opportunities expand at the higher-skill end while some routine middle-skill occupations experience technological pressure. The effects may also differ across regions and industries because access to education, infrastructure and investment is uneven.

However, the distributional consequences of AI are not predetermined. Education, social protection, labour-market institutions and reskilling programmes can influence how technological benefits and adjustment costs are distributed across workers and households.

Policy and Institutional Responses to AI-Driven Employment Changes

Effective policy responses are important for managing the economic and social consequences of AI adoption. Governments can strengthen education and vocational training systems to provide workers with relevant digital and technical skills. Reskilling and upskilling programmes can support employees whose occupations are undergoing technological transformation.

Labour-market policies may also need to address temporary unemployment, occupational mobility and changing forms of employment. Institutions can encourage responsible AI adoption while supporting innovation and productivity growth.

Employers can contribute by providing continuous workplace training and involving employees in technological transitions. Universities and research institutions can strengthen AI education and interdisciplinary research. Collaboration among government, businesses, educational institutions and workers can help develop a labour market capable of adapting to technological change while promoting broad participation in economic opportunities.

Future Prospects and Conclusion

AI is likely to remain an important force shaping employment, productivity and economic structures. Its future impact will depend not only on technological capabilities but also on how businesses, workers, educational institutions and governments respond to technological change.

The relationship between AI and employment should therefore not be viewed simply as a choice between job creation and job destruction. AI can replace particular tasks, transform existing occupations, increase productivity and create new forms of employment simultaneously. The ability of workers to acquire complementary skills will be central to this transition.

A balanced approach combining technological innovation, human capital development, reskilling, entrepreneurship and appropriate labour-market policies can help economies adapt to AI-driven transformation. Continued research will be necessary to understand its long-term effects on employment, wages, productivity and economic inequality.

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