Artificial Intelligence Framework in Labor Market:
Present and Future Trends

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ABSTRACT

This article explores the impact of artificial intelligence on the labor market, emphasizing the roles AI can potentially automate and those that benefit from human collaboration. Using a framework that aligns specific cognitive abilities with AI tools, the study identifies which tasks within an occupation are most susceptible to AI-driven automation. It highlights the nuanced interaction between human abilities and AI, suggesting that while some tasks may be automated, others require a synergistic blend of human judgment and machine efficiency. The chapter leverages data from the U.S. Bureau of Labor Statistics to assess job functions and estimates the effect of AI on employment dynamics. Findings underscore the importance of training programs focused on both technical and soft skills to prepare employees for a future of AI-enhanced work environments. This framework provides organizations with strategic insights into optimizing human-AI collaboration to improve productivity and job satisfaction.

INTRODUCTION

Despite mounting global challenges, ranging from economic volatility to demographic shifts and climate-related disruptions, the integration of advanced digital technologies into the labor market continues to accelerate at an unprecedented pace. Among these innovations, artificial intelligence (AI) stands out as a transformative force capable of fundamentally reshaping the organization of work, the distribution

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of skills, and the nature of value creation within economies. AI-driven systems, encompassing machine learning, natural language processing, and computer vision, are increasingly capable of performing tasks once thought to be the exclusive domain of human intelligence.

The central debate today centers not only on which occupations are most susceptible to AI-driven automation but also on the broader implications for the future role of human labor. This has triggered a renewed focus on the boundaries between machine-executable tasks and those that require distinctly human attributes, such as creativity, emotional intelligence, ethical reasoning, and contextual judgment. Key questions arise: *How many of our everyday tasks still require uniquely human abilities? Which job functions can be efficiently automated, and where does human judgment remain irreplaceable?* As the capabilities of AI tools expand, the line between automation and augmentation blurs, raising complex questions not just about productivity but also about fairness, worker identity, and the evolving meaning of employability in a digital economy.

This duality between substitution and complementarity underscores the urgency of understanding AI's real impact across sectors, occupations, and skill levels. For some, AI may displace repetitive or rule-based tasks, while for others, it may serve as a powerful assistant, enhancing human performance and enabling entirely new forms of work. In this evolving landscape, the challenge is not simply predicting which jobs will disappear, but instead identifying how tasks within jobs are reconfigured, what new capabilities are needed, and how institutions can adapt to ensure inclusive and sustainable workforce transitions.

Concerns about AI's growing footprint in the labor market are particularly salient for both ends of the wage and skill spectrum. While low-skilled, routine-based jobs have long been considered vulnerable, recent research also highlights that better-paid professionals and technical employees are increasingly exposed to disruption. The relentless pace of innovation in digital technologies, driven by advances in machine learning, natural language processing, and robotics, is rapidly reshaping occupational structures, often rendering traditional roles obsolete and requiring new skill sets in their place.

Two main theories explain this phenomenon: Ability-Biased Technological Change (ABTC) and Task Routinization. Both highlight that AI affects workers unevenly across skill levels. ABTC argues that technological progress benefits high-skill, high-cognitive workers, increasing their demand and reshaping jobs and wages. Task Routinization suggests that roles based on repetitive, rule-based tasks are more easily automated, putting routine-intensive, often middle-income jobs at greater risk.

Empirical studies (Yu & Shi, 2025; Xie & Yang, 2025; Huang, 2024) show declining employment in routine occupations, especially in manufacturing and administration, supporting Autor's (2015) "hollowing out" of middle-skill jobs. As these roles shrink, workers shift toward lower-wage service jobs that are less automatable because they rely on manual skills, interpersonal interaction, and contextual judgment. At the same time, falling digital technology costs have increased the productivity of analytical and problem-solving capabilities, driving growth in high-skill occupations where educated workers hold a comparative advantage. These roles require cognitive flexibility, digital fluency, and social intelligence, raising the returns to education and to skills such as adaptability, creativity, and critical thinking (Ramstedt Stadin et al., 2024).

Building on this foundation, this book chapter seeks to provide a comprehensive, forward-looking framework for understanding the evolving relationship between AI and labor markets. Specifically, it examines the current and projected impact of AI across a wide array of occupations, highlighting the areas where technology is likely to lead to partial automation while preserving, and in some cases enhancing, human involvement in high-value roles. By synthesizing insights from existing literature (Agrawal et al., 2019; Bessen, 2019; Tolan et al., 2021; Huang, 2024) and conducting a detailed analysis of data from