



Impact of Artificial Intelligence on Job Design and Employee Roles

Kartik¹, Nishant Raj²

¹Student, School of Engineering and Technology, Apeejay Stya University, Gurugram, Haryana, India

² Student, School of Engineering and Technology, Apeejay Stya University, Gurugram, Haryana, India

ABSTRACT :

The growing use of Artificial Intelligence (AI) in organizations is significantly changing the way jobs are structured and performed. Tasks that were once manual, repetitive, and time-consuming are increasingly being handled by intelligent systems, prompting organizations to rethink how roles are designed and how responsibilities are distributed among employees. This paper explores how AI-driven technologies influence job design and reshape employee roles in contemporary workplaces. The study examines how automation modifies task variety, skill requirements, decision-making authority, and performance expectations. While AI can enhance productivity and reduce operational errors, it also creates new challenges for employees, including role uncertainty, pressure to continuously upgrade skills, and concerns about job stability. As responsibilities shift from routine execution to supervision, analysis, and problem-solving, employees must adapt to more dynamic and technology-integrated roles. This paper discusses both the opportunities and complexities associated with AI-enabled job redesign. It argues that successful technological integration depends not only on system efficiency but also on thoughtful restructuring of roles that considers employee adaptability, training support, and organizational communication. By analyzing the evolving relationship between AI systems and human work, the study highlights the importance of designing jobs that balance innovation with workforce development and long-term organizational sustainability.

Keywords: Artificial Intelligence, Job Design, Employee Roles, Automation, Skill Development, Organizational Change

Introduction

Artificial Intelligence (AI) is rapidly transforming modern workplaces by automating tasks, enhancing decision-making, and reshaping organizational structures. Unlike previous technological shifts, AI not only replaces manual labour but also redefines cognitive and analytical work.

Job design, which traditionally focused on task allocation, autonomy, and responsibility, is undergoing a fundamental shift. AI integration is leading to a transition from routine-based roles to more dynamic roles requiring analytical thinking, creativity, and decision-making.

From a behavioural science perspective, this transformation influences employee perceptions, adaptability, and role clarity. Employees are required to continuously update their skills while dealing with uncertainties related to job stability and evolving responsibilities.

This study explores how AI impacts job design and employee roles based on primary data collected through a survey, focusing on perceptions, adaptability, and structural changes in work.

Literature review

Existing research highlights that AI significantly alters job characteristics and employee expectations. Hackman and Oldham's (1976) Job Characteristics Model emphasizes skill variety, autonomy, and feedback. AI modifies these by:

- Reducing repetitive tasks
- Increasing reliance on cognitive skills

Studies suggest that:

- AI enhances productivity and efficiency
- Employees experience uncertainty and role ambiguity
- Continuous learning becomes essential

Research also indicates that AI shifts human roles toward:

- Supervision of automated systems
- Decision-making based on AI insights

- Creative and strategic contributions

As AI-related technologies continue to advance, the industrialization and commercialization process continues to accelerate, and the industry continues to explore the application of AI across multiple fields. Since AI was first proposed at the Dartmouth Conference in 1956, discussions about “AI replacing human labour” and “AI defeating humans” have endlessly emerged. This dynamic has increased in intensity since the emergence of ChatGPT, which has aroused people’s concerns about technology replacing the workforce. Summarizing the literature, we can find three main arguments concerning the relationship between AI and employment:

First, AI has the effect of creating and filling jobs. The intelligent manufacturing industry paradigm characterized by AI technology will assist in forming a high-quality “human-machine cooperation” employment mode. People habitually regard robots as competitors for human beings, but this view only represents the materialistic view of traditional machinery. The coexistence of man and machine is not a zero-sum game. When the task evolves from “cooperation for all” to “cooperation between man and machine,” it results in fewer production constraints and maximizes total factor productivity, thus creating more jobs and generating novel collaborative tasks (Balsmeier & Woerter, 2019; Duan et al., 2023). AI and machines increase labour productivity by automating routine tasks while expanding employee skills and increasing the value of work. As a result, in a machine-for-machine employment model, low-skilled jobs will disappear, while new and currently unrealized job roles will emerge (Polak, 2021). We can even argue that digital technology, artificial intelligence, and robot encounters are helping to train skilled robots and raise their relative wages (Yoon, 2023).

Second, AI has both a destructive effect and a substitution effect on employment. As soon as machines emerged as the means of labour, they immediately began to compete with the workers themselves. As a modern new technology, artificial intelligence is essentially humanly intelligent labour that condenses complex labour. Like the disruptive general-purpose technologies of early industrialization, automation technologies such as AI offer both promise and fear in regard to “machine replacement.” The development of productivity creates more free time, especially in industries such as health care, transportation, and production environment control, which have seen significant benefits from AI. In recent years, however, some industrialized countries have faced the dilemma of declining income from labour and the slow growth of total labour productivity while applying AI on a large scale (Autor, 2019). Low-skilled and incapacitated workers enjoy a high probability of being replaced by automation (Ramos et al., 2022; Jetha et al., 2023). It is worth noting that with the in-depth development of digital technologies, such as deep learning and big data analysis, some complex, cognitive, and creative jobs that are currently considered irreplaceable in the traditional view will also be replaced by AI, which indicates that automation technology is not only a substitute for low-skilled labour (Zhao & Zhao, 2017; Dixon et al., 2021; Novella et al., 2023; Nikitas et al., 2021). Among factors, AI and robotics exert a particularly significant impact on the manufacturing job market, and industry-related jobs will face a severe unemployment problem due to the disruptive effect of AI and robotics (Zhou & Chen, 2022; Sun & Liu, 2023). The power of AI models is growing exponentially rather than linearly, and the rapid development and rapid diffusion of technology will undoubtedly have a devastating effect on knowledge workers, as did the industrial revolution (Liu & Peng, 2023).

In particular, the development and improvement of AI-generated content in recent years poses a more significant threat to higher-level workers, such as researchers, data analysts, and product managers, than to physical labourers. White collar workers are facing unprecedented anxiety and unease (Nam, 2019; Fossen & Sorgner, 2022; Wang et al., 2023). A classic study suggests that AI could replace 47% of the 702 job types in the United States within 20 years (Frey & Osborne, 2017). Since the 2020 epidemic, digitization has accelerated, and online and digital resources have become a must for enterprises. Many occupations are gradually moving away from humans (Wu & Yang, 2022; Männasoo et al., 2023).

Third, the effect of AI on employment is uncertain, and its impact on human work does not fall into a simple “utopian” or “dystopian” scene, but rather leads to a combination of “utopia” and “dystopia” (Kolade & Owoseni, 2022). The job-creation effects of robotics and the emergence of new jobs that result from technological change coexist at the enterprise level (Ni & Obashi, 2021). Adopting a suitable AI operation mode can adjust for the misallocation of resources by the market, enterprises, and individuals to labour-intensive tasks, reverse the nondirectional allocation of robots in the labour sector, and promote their reallocation in the manufacturing and service industries.

In the view that modern information technology and digital technology increase employment, the literature holds that foreign direct investment (Fokam et al., 2023), economic systems (Bouattour et al., 2023), labour skills and structure (Yang, 2022), industrial technological intensity (Graf & Mohamed, 2024), and the easing of information friction (Jin et al., 2023) are important mechanisms. The research on whether AI technology crowds out jobs is voluminous, but the conclusions are inconsistent (Filippi et al., 2023).

However, empirical studies at micro-level (small samples like students/employees) are limited. This study addresses that gap.

Objectives of the study

- To analyse the impact of AI on job design
- To examine changes in employee roles due to AI
- To study employee perceptions regarding AI-driven transformation
- To evaluate the need for skill development and adaptability

Hypotheses

- H1: Artificial Intelligence significantly impacts job design.
- H2: Artificial Intelligence significantly changes employee roles.
- H3: Employees perceive AI as a driver of skill transformation and job restructuring.

Research methodology

The study consists primarily of students and individuals aware of technological trends.

1.1. Data collection method

Primary data was collected using a structured questionnaire consisting of close-ended questions.

1.2. Tools used

- Percentage analysis
- Descriptive interpretation

Results and discussions

1.3. AI reshaping job structures

A significant majority of respondents (90%) either agreed or strongly agreed that AI is already reshaping job structures (Fig. 1). This indicates a high level of awareness among participants regarding technological transformation in workplaces.

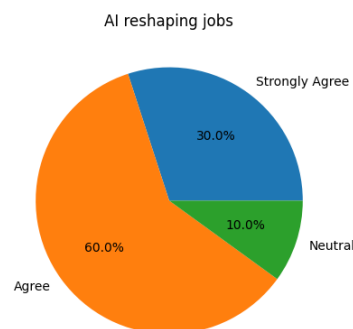


Fig. 1 - Respondents' views on AI reshaping jobs.

From a behavioural perspective, this reflects cognitive acceptance of change, even among a small sample. The absence of disagreement suggests that AI is no longer perceived as a future concept but as a present reality.

However, the presence of a small neutral segment (10%) indicates partial uncertainty or lack of exposure, suggesting that awareness is not uniformly deep but may be surface-level for some individuals.

1.4. Understanding AI in job roles

Approximately 90% of respondents reported that they understand how AI is used within real job roles. This is a crucial finding because it differentiates between:

- Tool-level understanding (basic awareness)
- Role-level understanding (practical integration)

The data suggests that respondents are not merely aware of AI tools but are beginning to understand how AI integrates into workflows and decision-making processes. The small neutral group again highlights a knowledge gap, indicating the need for better exposure and education in practical AI applications.

1.5. Shift toward analytical and judgment-based tasks

While 60% agreed that human work will shift toward analytical tasks, 40% remained neutral. This neutrality is highly significant. It suggests:

- Uncertainty about how fast or deeply this shift will occur
- Possible lack of real-world exposure to AI-driven work environments

Behaviourally, this indicates a transitional mindset—people are aware of change but not fully convinced of its implications. This gap represents an adaptation lag, which organizations must address through training and awareness programs.

1.6. Reduction of low-value tasks

All respondents (100%) agreed that AI reduces time spent on low-value tasks (Fig. 2). This is one of the strongest findings in the study and indicates:

- Clear recognition of AI's efficiency benefits
- Positive perception of automation in reducing workload

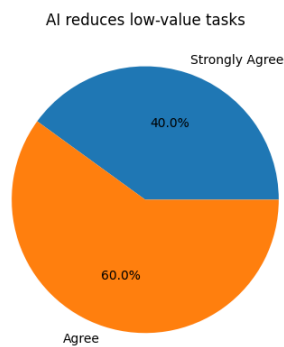


Fig. 2 - Respondents' views on AI reducing low-value tasks.

From a job design perspective, this confirms a shift from:

- Execution-based roles → Value-based roles

However, this also indirectly implies that tasks that define many entry-level jobs may disappear. This creates a structural shift in employment patterns.

1.7. Error detection as a human responsibility

Responses were mixed, with 50% agreement and 50% neutrality. This indicates a lack of clarity regarding new human roles in AI-driven systems. While AI performs tasks, humans are expected to:

- Validate outputs
- Handle exceptions
- Ensure accuracy

The neutrality suggests that respondents have not fully internalized this supervisory role, which is critical in AI-integrated environments. This is an important behavioural gap.

1.8. Output-based job design

A significant portion of respondents remained neutral (50%). This indicates:

- Limited understanding of modern performance metrics
- Continued attachment to traditional models based on time and effort

In AI-driven systems, performance is increasingly measured by output quality, decision accuracy, and value creation. The neutrality here suggests that this concept is not yet widely understood or experienced.

1.9. AI in decision-making

Eighty percent of respondents agreed that decision-making will involve AI-supported insights (Fig. 3). This reflects strong acceptance of AI as a decision-support tool rather than a replacement. Behaviourally, this shows:

- Trust in AI systems

- Willingness to rely on data-driven insights

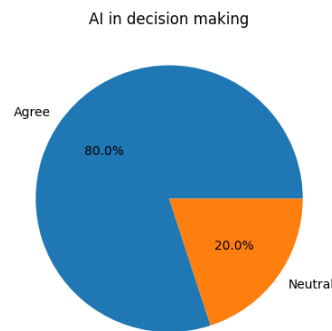


Fig. 3 - Respondents' views on AI in decision-making.

However, the presence of neutral responses indicates cautious optimism, suggesting that complete trust in AI is still developing.

1.10. Validation of AI outputs

A majority agreed that employees will need to validate AI outputs. This reinforces the concept that:

- AI does not eliminate human roles
- It transforms them into supervisory and evaluative roles

This is a critical shift in job design, from doing tasks to ensuring the correctness of automated tasks. The neutral responses again highlight uncertainty about responsibility distribution between humans and machines.

1.11. Creativity and problem framing

Eighty percent agreement indicates a strong perception that human roles will shift toward creativity. This is a key transformation:

- Routine work → Automated
- Creative work → Human domain

This finding aligns with modern organizational theories that emphasize innovation, strategic thinking, and problem-solving. The neutral group suggests that some respondents still associate jobs with structured tasks rather than creative roles.

1.12. Continuous upskilling

Ninety percent of respondents agreed that continuous upskilling is necessary. This reflects a major shift in career mindset, from static skill sets to dynamic learning models. Behaviourally, this indicates:

- Awareness of competitive job environments
- Acceptance of lifelong learning

The single disagreement suggests that a small segment may underestimate the pace of change.

1.13. Skill obsolescence

A majority agreed that existing skills may become outdated. This creates psychological pressure and fear of irrelevance. However, neutrality (30%) indicates that not all respondents have personally experienced or recognized this risk. This gap can lead to delayed adaptation, which is dangerous in fast-changing environments.

1.14. Learning ability vs knowledge

Ninety percent agreement indicates a strong shift in perception, in which learning ability is valued above current knowledge. This reflects a future-oriented mindset, where adaptability becomes the key competitive advantage. This is one of the most important findings in the study.

1.15. Reduction in entry-level jobs

Responses are divided: 60% agree and 40% are neutral. This indicates uncertainty and concern regarding job availability. This is a critical structural issue:

- Entry-level roles traditionally provide learning opportunities
- AI may eliminate these stepping stones

This creates a potential experience gap problem in the workforce.

1.16. Job stability

Responses include both quantitative and qualitative insights. Some respondents believe that stability depends on adaptability and skill development. This indicates a fundamental mindset shift: the traditional view (job equals stability) is giving way to a modern view (skills equal stability). This reflects a transition toward a skill-based employment model.

Overall discussion

The findings of this study clearly establish that Artificial Intelligence is perceived not merely as a technological tool but as a transformative force fundamentally reshaping job design and employee roles. A dominant pattern across responses indicates strong agreement that AI is actively restructuring how work is performed, particularly through the automation of repetitive and low-value tasks. This reflects a broader shift in organizational functioning where efficiency is increasingly achieved through intelligent systems rather than human effort alone.

One of the most striking insights is the near-universal agreement that AI reduces time spent on routine tasks. This suggests that respondents recognize automation as a means of enhancing productivity and minimizing human involvement in monotonous activities. However, this efficiency gain also implies a deeper structural shift: jobs are no longer centered around task execution but around value creation. As a result, traditional job roles that were defined by repetitive actions are gradually being replaced by roles requiring higher-order thinking.

At the same time, the data reveals a noticeable transition toward analytical and judgment-based responsibilities. A majority of respondents believe that human work will increasingly involve interpretation, decision-making, and problem-solving. This indicates an evolving understanding that while AI can process data and generate outputs, human intervention remains essential for contextual judgment and strategic thinking. However, the presence of a considerable neutral segment suggests that this transition is not fully understood or experienced by all individuals. This gap highlights an important behavioral dimension—awareness of change does not always equate to clarity about its implications.

Another critical aspect emerging from the findings is the growing importance of human roles in validating and supervising AI outputs. While respondents acknowledge that AI can perform tasks efficiently, there is also recognition that human oversight is necessary to ensure accuracy and reliability. This reflects a shift from direct task involvement to a more indirect but crucial role in managing and refining automated processes. Such a transformation redefines job design by emphasizing accountability, critical evaluation, and system monitoring.

The study also brings attention to changing perceptions of job design itself. A significant portion of respondents expressed uncertainty regarding the idea that jobs will be structured around outputs rather than time or effort. This suggests that traditional models of work—where performance is measured by hours invested—still influence current thinking. However, in AI-driven environments, output quality and impact are becoming more relevant metrics. The hesitation observed in responses indicates that this conceptual shift is still in its early stages and requires greater exposure and understanding.

From a skill perspective, the findings strongly emphasize the necessity of continuous learning and adaptability. Most respondents agree that upskilling is no longer optional but essential for career sustainability. This reflects a major transformation in the employment landscape, where static knowledge is insufficient, and the ability to learn and adapt becomes the most valuable asset. Furthermore, the belief that existing skills may become outdated highlights an underlying sense of uncertainty and pressure among individuals. This creates both a challenge and an opportunity—while employees may feel threatened by rapid changes, they are also motivated to evolve and remain relevant.

The perception regarding entry-level jobs presents a more complex picture. While a majority believe that AI may reduce such opportunities, a substantial proportion remains uncertain. This ambiguity reflects the unpredictable nature of technological disruption. Entry-level roles traditionally serve as a foundation for skill development, and their potential decline raises concerns about how individuals will gain practical experience in the future. This issue points toward a broader structural challenge that organizations and educational institutions must address.

Perhaps the most profound insight from the study is the shift in the concept of job stability. Responses indicate a movement away from the traditional belief that stability is tied to a specific job or position. Instead, stability is increasingly seen as a function of an individual's ability to adapt, learn, and evolve with changing demands. This represents a significant psychological transformation, where employees begin to view their careers as dynamic and self-driven rather than fixed and organization-dependent.

In conclusion, the study highlights that while there is strong awareness of AI's impact on job design, the depth of understanding varies across different aspects. Respondents clearly recognize efficiency gains and skill requirements but show uncertainty regarding structural and long-term implications. This suggests that the transition toward AI-driven work environments is not only technological but also behavioral and cognitive. Organizations must therefore focus not only on implementing AI systems but also on preparing employees to understand, adapt to, and effectively engage with these changes.

Conclusion

The study concludes that Artificial Intelligence significantly impacts job design and employee roles. It reduces routine tasks while increasing the demand for analytical, creative, and decision-making skills.

Employees must adapt to continuous learning and evolving responsibilities. While AI creates opportunities for efficiency and innovation, it also introduces challenges related to job uncertainty and skill obsolescence.

Organizations must focus on redesigning jobs in a way that balances technological advancement with employee development to ensure long-term sustainability.

REFERENCES

- Autor, D. (2019). Work of the past, work of the future. *AEA Papers and Proceedings*, 109, 1–32. <https://doi.org/10.1257/pandp.20191110>
- Balsmeier, B., & Woerter, M. (2019). Is this time different? How digitalization influences job creation and destruction. *Research Policy*, 48(8), 103765. <https://doi.org/10.1016/j.respol.2019.03.010>
- Bouattour, A., Kalai, M., & Helali, K. (2023). The nonlinear impact of technologies import on industrial employment: A panel threshold regression approach. *Heliyon*, 9(10), e20266. <https://doi.org/10.1016/j.heliyon.2023.e20266>
- Dixon, J., Hong, B., & Wu, L. (2021). The robot revolution: Managerial and employment consequences for firms. *Management Science*, 67(9), 5586–5605. <https://doi.org/10.1287/mnsc.2020.3812>
- Duan, S. X., Deng, H., & Wibowo, S. (2023). Exploring the impact of digital work on work-life balance and job performance: A technology affordance perspective. *Information Technology & People*, 36(5), 2009–2029. <https://doi.org/10.1108/ITP-01-2021-0013>
- Filippi, E., Bannò, M., & Trento, S. (2023). Automation technologies and their impact on employment: A review, synthesis and future research agenda. *Technological Forecasting and Social Change*, 191, 122448. <https://doi.org/10.1016/j.techfore.2023.122448>
- Fokam, D. N. D. T., Kamga, B. F., & Nchofoung, T. N. (2023). Information and communication technologies and employment in developing countries: Effects and transmission channels. *Telecommunications Policy*, 47(8), 102597. <https://doi.org/10.1016/j.telpol.2023.102597>
- Fossen, F. M., & Sorgner, A. (2022). New digital technologies and heterogeneous wage and employment dynamics in the United States: Evidence from individual-level data. *Technological Forecasting and Social Change*, 175, 121381. <https://doi.org/10.1016/j.techfore.2021.121381>
- Frey, C. B., & Osborne, M. A. (2017). The future of employment: How susceptible are jobs to computerisation? *Technological Forecasting and Social Change*, 114, 254–280. <https://doi.org/10.1016/j.techfore.2016.08.019>
- Graf, H., & Mohamed, H. (2024). Robotization and employment dynamics in German manufacturing value chains. *Structural Change and Economic Dynamics*, 68, 133–147. <https://doi.org/10.1016/j.strueco.2023.10.014>
- Hackman, J. R., & Oldham, G. R. (1976). Motivation through the design of work: Test of a theory. *Organizational Behavior and Human Performance*, 16(2), 250–279. [https://doi.org/10.1016/0030-5073\(76\)90016-7](https://doi.org/10.1016/0030-5073(76)90016-7)
- Jetha, A., Bonaccio, S., Shamaee, A., Banks, C. G., Bültmann, U., Smith, P. M., et al. (2023). Divided in a digital economy: Understanding disability employment inequities stemming from the application of advanced workplace technologies. *SSM – Qualitative Research in Health*, 3, 100293. <https://doi.org/10.1016/j.ssmqr.2023.100293>
- Jin, X., Ma, B., & Zhang, H. (2023). Impact of fast internet access on employment: Evidence from a broadband expansion in China. *China Economic Review*, 81, 102038. <https://doi.org/10.1016/j.chieco.2023.102038>
- Kolade, O., & Owoseni, A. (2022). Employment 5.0: The work of the future and the future of work. *Technology in Society*, 71, 102086. <https://doi.org/10.1016/j.techsoc.2022.102086>
- Liu, Y., & Peng, J. (2023). The impact of "AI unemployment" on contemporary youth and its countermeasures. *Youth Exploration*, 24(1), 43–51. <https://doi.org/10.13583/j.cnki.issn1004-3780.2023.01.004>
- Männasoo, K., Pareliussen, J. K., & Saia, A. (2023). Digital capacity and employment outcomes: Microdata evidence from pre- and post-COVID-19 Europe. *Telematics and Informatics*, 83, 102024. <https://doi.org/10.1016/j.tele.2023.102024>
- Nam, T. (2019). Technology usage, expected job sustainability, and perceived job insecurity. *Technological Forecasting and Social Change*, 138, 155–165. <https://doi.org/10.1016/j.techfore.2018.08.017>
- Ni, B., & Obashi, A. (2021). Robotics technology and firm-level employment adjustment in Japan. *Japan and the World Economy*, 57, 101054. <https://doi.org/10.1016/j.japwor.2021.101054>
- Nikitas, A., Vitel, A.-E., & Cotet, C. (2021). Autonomous vehicles and employment: An urban futures revolution or catastrophe? *Cities*, 114, 103203. <https://doi.org/10.1016/j.cities.2021.103203>
- Novella, R., Rosas-Shady, D., & Alvarado, A. (2023). Are we nearly there yet? New technology adoption and labor demand in Peru. *Science and Public Policy*, 50(4), 565–578. <https://doi.org/10.1093/scipol/scad007>
- Polak, P. (2021). Welcome to the digital era—The impact of AI on business and society. *Society*, 58, 177–178. <https://doi.org/10.1007/s12115-021-00588-6>
- Ramos, M. E., Garza-Rodríguez, J., & Gibaja-Romero, D. E. (2022). Automation of employment in the presence of Industry 4.0: The case of Mexico. *Technology in Society*, 68, 101837. <https://doi.org/10.1016/j.techsoc.2021.101837>
- Sun, W., & Liu, Y. (2023). Research on the influence mechanism of artificial intelligence on labor market. *East China Economic Management*, 37(3), 1–9. <https://doi.org/10.19629/j.cnki.34-1014/f.220706008>
- Wang, P. X., Kim, S., & Kim, M. (2023). Robot anthropomorphism and job insecurity: The role of social comparison. *Journal of Business Research*, 164, 114003. <https://doi.org/10.1016/j.jbusres.2023.114003>
- Wu, B., & Yang, W. (2022). Empirical test of the impact of the digital economy on China's employment structure. *Finance Research Letters*, 49, 103047. <https://doi.org/10.1016/j.frl.2022.103047>
- Yang, C.-H. (2022). How artificial intelligence technology affects productivity and employment: Firm-level evidence from Taiwan. *Research Policy*, 51(6), 104536. <https://doi.org/10.1016/j.respol.2022.104536>
- Yoon, C. (2023). Technology adoption and jobs: The effects of self-service kiosks in restaurants on labor outcomes. *Technology in Society*, 74, 102336. <https://doi.org/10.1016/j.techsoc.2023.102336>

-
- Zhao, L., & Zhao, X. (2017). Is AI endangering human job opportunities?—From a perspective of Marxism. *Journal of Hebei University of Economics and Business*, 38(6), 17–22. <https://doi.org/10.14178/j.cnki.issn1007-2101.2017.06.004>
 - Zhou, S., & Chen, B. (2022). Robots and industrial employment: Based on the perspective of subtask model. *Statistics & Decision*, 38(23), 85–89. <https://doi.org/10.13546/j.cnki.tjyj.2022.23.016>