

# AI for workforce transformation in the academia: A review of literature

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**Abstract** - This paper examines the impact of artificial intelligence in academia while considering how this emerging technology transforms the workforce. To achieve the objective of this study, the paper employs a qualitative research design, utilizing a systematic review of the literature using the PRISMA framework. Relevant studies were sourced from Google Scholar, Scopus and Web of Science, yielding 67 initial articles, of which 24 met the inclusion criteria after screening. The reviewed studies report that AI is utilized in key academic processes, including literature discovery (83% of studies), data coding and analysis (71%), and writing assistance (65%). AI assists with literature reviews, data analysis, and predictive modeling, accelerating the pace of scientific discovery. However, challenges remain regarding academic integrity, ethical use, and the potential over-reliance on automated systems. The findings indicate that AI has relatively transformed human activities in academia. The integration of AI-powered tools enhances efficiency in administrative tasks, enables personalized learning experiences, and provides new methods for data-driven research. AI presents vast opportunities to enrich academia; its responsible adoption is essential to ensure it complements rather than compromises the values of critical thinking, originality, and equity in education and research. The paper recommends that institutions of higher learning should advocate/promote the usage and adoption of AI for upskilling and reskilling.

**Keywords:** Artificial Intelligence, Upskilling, Reskilling, Academia, Emerging Technology

## I. INTRODUCTION

Generative AI has undergone rapid improvements over the years, particularly since the COVID-19 pandemic. AI is rapidly reshaping the landscape of academia by transforming teaching, learning, and research processes. Advances in artificial intelligence (AI) highlight its potential to affect productivity, growth, inequality, market power, innovation, and employment [1]. The integration of AI-powered tools enhances efficiency in administrative tasks, enables personalized learning experiences, and provides new methods for data-driven research. In education, adaptive learning platforms and intelligent tutoring systems allow instructors to tailor content to individual student needs, improving engagement and outcomes. Artificial intelligence (AI) is arguably the driving technological force of the first

half of this century, and will transform virtually every industry [2]. In research, AI aids in literature reviews, data analysis, and predictive modeling, thereby accelerating the pace of scientific discovery. However, challenges regarding academic integrity, ethical use, and the potential over-reliance on automated systems remains. Concerns about plagiarism, bias in AI algorithms, and the shifting role of educators highlight the need for clear guidelines and policies. Overall, while AI presents vast opportunities to enrich academia, its responsible adoption is essential to ensure it complements rather than compromises the values of critical thinking, originality, and equity in education and research.

In so doing, the following questions guided this study:

- How is AI changing roles, tasks, and workflows across academic job families (faculty, instructional support, student services, research administration, IT/data teams)?
- What competencies and professional-development needs emerge for the academic workforce?
- What governance, policy, and labor issues (e.g., academic freedom, workload, and equity) accompany AI adoption?
- What outcomes (e.g., efficiency, quality, integrity, well-being) are reported, and under what conditions?

## II. RESEARCH METHODOLOGY

The study employed a systematic review to map how Artificial Intelligence (AI) is transforming academic work (faculty and professional staff roles, skills, governance, and work systems) in academia. A scoping approach was selected to capture the breadth of fast-moving evidence across peer-reviewed and grey literature. Reporting follows PRISMA-ScR guidance; where applicable, PRISMA 2020 elements are adopted for transparency.

### A. Information Sources

The databases of Scopus, Web of Science and Google Scholar was used for the search. This is because these databases provide access to top-tier journals and conferences all over the world.

### B. Eligibility Criteria

- Only studies covering Higher education institutions (universities, colleges); academic and professional services staff were considered
- Journal articles and conference proceedings were considered for the review.

- Studies between 2016 and 2025 were also considered.
- Literature published in the English language were used.

**NOTE:** Studies on artificial intelligence with little or no impact on workforce, job productivity, opinion/editorials, non-English, and pre-2016 were excluded for the review.

### C. Search Strategy

Boolean strings combined controlled terms and free text for AI + workforce + academia. The search strings used were: ("artificial intelligence" OR "machine learning" OR "generative AI" OR "large language model\*" OR "LLM\*" OR "chatbot\*" OR "GenAI")

AND

("higher education" OR university OR "tertiary education" OR "postsecondary")

AND

(workforce OR "academic staff" OR faculty OR "professional staff" OR "instructional designer\*" OR "student services" OR "administration" OR governance OR "organizational change" OR "job design" OR workload OR skills OR competencies)

AND

(transform\* OR impact OR "role\* change" OR automation OR augmentation)

Database-specific fields/filters (title/abstract/keywords) were applied where available. Full search strings for each source are provided in Appendix A.

### D. Study Selection

- The researcher compiled all the selected studies using the Microsoft Excel Sheet. The studies were entered according to their authorship, date of publication, title, methodology, and findings.
- Two reviewers independently screened titles/abstracts against eligibility criteria; conflicts were resolved through direct discussion.
- Candidate articles/reports were retrieved for full-text assessment by two reviewers.
- Counts for identified, screened, excluded (with reasons), and included records were documented in a PRISMA-ScR flow diagram (Figure 1).

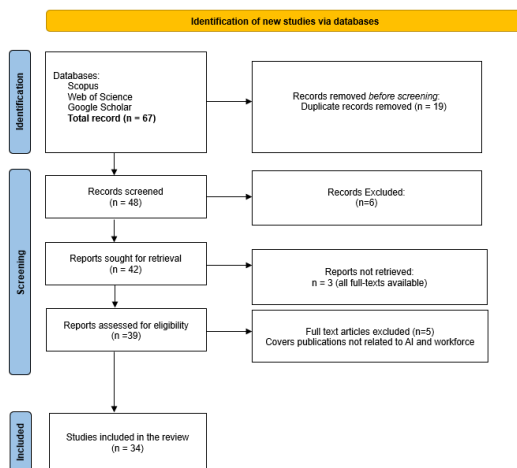


Figure 1. PRISMA-ScR flow diagram

### E. Data Extraction and Analysis

67 initial studies were arrived from the databases. After considering the eligibility of the studies, 34 studies were found eligible and considered for the study (Figure 1). The data collected from each study were analysed using thematic narrative analysis. The research manually read through each study and filtered out connecting themes to form the narrative that answered the research questions. In addition, the researcher complied with all ethical considerations. All sources and attributions were duly acknowledged. The researcher conformed to IEEE reference style for reporting the study.

### III. DISCUSSION

The findings from the review suggest that Artificial Intelligence (AI) is not merely a technological addition to academic institutions but a catalyst for workforce transformation across teaching, research, and administration. To interpret the findings in relation to the study's objectives, the discussion is organized according to the research questions.

1. How is AI changing roles, tasks, and workflows across academic job families (faculty, instructional support, student services, research administration, IT/data teams)?

- From Manual Execution to AI Oversight
- Research Labor Becomes Hybrid
- Student-focus Roles Move from Information Delivery to Human-Centered Coaching
- AI Adoption Requires New Interprofessional Collaboration
- New AI-Intensive Roles Are Emerging

2. What competencies and professional-development needs emerge for the academic workforce?

- AI Literacy and Functional Proficiency
- Data Analysis and Digital Research Skills
- Ethical Reasoning, Accountability, and Integrity Oversight
- Critical Thinking and Human Oversight in AI-Enabled Workflows
- Emotional Intelligence and Student Relations Competence
- As AI takes over routine advising, human professionals must focus on empathetic support, mentoring, and complex student concerns.

3. What governance, policy, and labor issues (e.g., academic freedom, workload, and equity) accompany AI adoption?

- Academic Freedom and Autonomy Concerns
- Workload Redistribution and Labor Intensity
- Equity and Inclusion Challenges
- Job Security and Role Displacement Fears
- Governance and Accountability Gaps
- Ethical and Legal Compliance Challenges

4. What outcomes (e.g., efficiency, quality, integrity, well-being) are reported, and under what conditions?

Outcome Category	Reported Positive Effects	Reported Negative Effects	Conditions Influencing Impact
Efficiency & Productivity	Faster grading, quicker literature review, reduced admin time, faster research cycles	Increased time in early adoption due to training and system supervision	Positive impact in digitally mature, well-resourced institutions; mixed or negative in low-capacity environments
Quality of Teaching & Research	More personalized learning, data-driven intervention, refined hypotheses, comprehensive literature coverage	Risk of over-standardization of teaching, superficial reliance on AI-generated content, “template thinking”	Improved quality when AI is used reflectively; declines when used as content replacement rather than augmentation
Academic Integrity & Trustworthiness	Improved detection of plagiarism and fabricated data through AI-check tools	AI-generated text raises risks of ghost authorship, lack of originality, hallucinated references	Integrity improves under strong policy frameworks and disclosure norms; declines where AI use is unregulated
Well-being & Work Satisfaction	Reduction in repetitive workload, mental relief from grading burden	Digital fatigue, cognitive overload from monitoring AI, anxiety over role replacement	Positive when training and support exist; negative when AI adoption is forced or unaccompanied by professional development
Equity & Accessibility	AI tutoring enhances support for struggling students and those with disabilities	Widening digital divide for staff/students without access or literacy; biased predictive analytics disproportionately flag marginalized groups	Positive outcomes in institutions with inclusive AI policies and capacity-building; inequitable outcomes in resource-poor settings
Collaboration & Innovation	Enhanced cross-disciplinary research discovery, AI-suggested co-authorship networks	Concerns about automated intellectual matchmaking reducing organic scholarly communities	Most beneficial in research-intensive, collaborative cultures with open data ecosystems

expertise is complemented by algorithmic support. Faculty increasingly function as orchestrators of AI-assisted teaching and learning processes, while professional staff see their responsibilities evolve toward data stewardship, student support triage, and oversight of automated systems. This reconfiguration raises dual narratives: one of opportunity, where AI alleviates repetitive workload and opens space for higher-order intellectual and relational tasks; and one of risk, where job intensification, DE professionalization, or inequitable access could compromise the integrity of academic work. Research outputs also reflect a global divergence: resource-rich institutions experiment with enterprise-level AI platforms, while resource-constrained settings risk lagging, exacerbating systemic inequities. In research, AI accelerates literature analysis, predictive modeling, and data management, but challenges persist around the authorship, originality, and trustworthiness of outputs. These tensions underscore the need for continuous policy adaptation, workforce upskilling, and governance structures that protect academic freedom while ensuring responsible use.

#### IV. THEORETICAL IMPLICATIONS

- **Sociotechnical Systems Theory:** The integration of AI confirms academia as a sociotechnical system where human actors, technologies, and institutional structures co-evolve. Workforce transformation is not a simple case of substitution but reflects new configurations of work, authority, and responsibility.
- **Human Capital and Skill Formation Theory:** AI adoption highlights the growing importance of AI literacy and new skill sets (e.g., prompt engineering, data ethics, algorithmic auditing). The literature suggests that sustainable transformation depends on continuous professional development, aligning with human capital theory’s emphasis on investment in workforce capacity.
- **Labor Process Theory:** Evidence of potential work intensification and control via AI tools aligns with labor process critiques, suggesting that automation can redistribute power and reshape the labor–management relationship. Faculty and staff voice, therefore, becomes a critical determinant of whether AI leads to empowerment or precarity.
- **Innovation Diffusion Theory:** Variation in adoption across institutions mirrors diffusion dynamics, where early adopters experiment with pilots while others await proven value. The role of institutional culture, leadership, and resources directly affects the pace and depth of AI-driven workforce transformation.
- **Equity and Critical Theories of Education:** Persistent concerns about bias, fairness, and unequal access foreground theoretical perspectives on equity and justice in education. AI adoption risks reinforcing hierarchies if only elite institutions and well-resourced staff benefit from their affordances, necessitating intentional interventions for inclusivity.

Evidence indicates that academic work is shifting from task-oriented roles to augmented workflows, where human

## V. LIMITATIONS

Despite offering valuable insights, this review has several limitations. First, the scope of the included literature was restricted to peer-reviewed sources in English, potentially excluding relevant findings from non-English or grey literature (such as policy reports, conference proceedings, or institutional pilots). Second, the fast-moving nature of AI in academia means that many studies quickly become outdated, with emerging tools and practices not yet reflected in the literature base. Third, most studies reviewed are conceptual or exploratory in nature rather than empirical, limiting the generalizability of claims about AI's impact on academic workforce transformation. Finally, heterogeneity in institutional contexts (e.g., resource-rich versus resource-constrained universities) makes cross-comparison difficult, as findings may be highly context-dependent.

## VI. FUTURE DIRECTIONS

Future research should address these gaps by:

- Expanding Data Sources for upskilling and reskilling
- Incorporating grey literature, institutional policy documents, and cross-cultural studies to capture a more comprehensive picture of AI adoption across diverse academic settings.
- Empirical Investigations
- Conducting longitudinal and large-scale empirical studies to track how AI affects workforce roles, workload distribution, and professional identity over time.
- Equity and Inclusion Focus
- Examining how AI adoption influences workforce disparities, particularly between well-resourced and under-resourced institutions, and among faculty of different career stages.
- Policy and Governance Studies: Investigating the development and effectiveness of institutional and national policies for regulating AI's ethical use in academic contexts.
- Pedagogical and Curricular Implications: Exploring how AI literacy can be systematically embedded into faculty development programs and student curricula to ensure sustainable workforce transformation.
- Interdisciplinary Perspectives: Engaging with labor studies, organizational psychology, and critical education theories to deepen understanding of the socio-cultural dimensions of AI-driven transformation.

## VII. CONCLUSION

This review highlights the transformative potential of artificial intelligence in reshaping the academic workforce through enhanced administrative efficiency, personalized learning, and accelerated research capabilities. While AI presents vast opportunities to enrich teaching, research, and institutional operations, its integration into academia must be guided by careful consideration of ethical, social, and pedagogical implications. The findings suggest that AI should be viewed not as a replacement for academic labor but as a complementary tool that can empower educators,

researchers, and administrators to focus on higher-order intellectual and creative tasks.

At the same time, unresolved challenges—such as ensuring academic integrity, mitigating algorithmic bias, and addressing disparities in access—underscore the need for clear policies and inclusive governance frameworks. Ultimately, the responsible adoption of AI in academia requires balancing innovation with equity, critical thinking, and the enduring values of scholarly work. By situating AI within a broader theoretical and institutional context, this review provides a foundation for future empirical research, policy development, and workforce planning strategies that can ensure AI contributes positively to the future of higher education.

## VIII. LIMITATIONS OF THE STUDY

This study has some limitations. The study was limited to literature published in the English Language which could exclude other important literature in other languages. Also, the review covered studies published between 2016 and 2025. This timeframe would have excluded relevant studies in the world of literature. In addition, the findings of this study were based on literature without empirical validations. Finally, this study was limited to three (3) databases excluding other databases that could have harnessed relevant literature.

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