(RESEARCH ARTICLE)

Mapping the evolution its roles and skills requirements in the age of AI

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Abstract

Artificial intelligence technologies have evolved rapidly, Artificial intelligence technologies have evolved rapidly, transforming the responsibilities of IT professionals and redefining performance expectations within their roles. The advancement of automation and machine learning technology alongside cloud computing causes IT professionals to transition responsibilities while learning how to handle AI governance and cybersecurity and perform data analytics tasks. This research analyzes how IT roles evolve today, exploring essential capabilities that workers need to work in an AI-powered environment. The study combines qualitative content analysis with quantitative data mapping to evaluate changing IT employment requirements and training methods for new skill sets. A detailed review of scholarly works discusses IT position history while examining AI integration across different fields and programs that aid employee skills migration. This section examines workplace difficulties such as expertise deficits, moral elements, and adjustable educational paths. Implementing AI technology requires employees who can solve problems effectively and have technical knowledge of AI tools while demonstrating the capability to cooperate across different disciplines. Organizations need to establish systematic skills enhancement initiatives, while policymakers should create learning programs based on artificial intelligence to meet upcoming shortages of qualified professionals. The research highlights the necessity of mixed-function training that combines operational competencies with interpersonal ability to boost employee flexibility in the workplace. The redefinition of IT by AI technology demands professionals to adopt ongoing learning practices while ensuring ethical AI implementation for success in these rapidly changing fields. Researchers must study how AI affects employment patterns during extended periods and how healthy workforce transformations prove effective.

Keywords: Artificial Intelligence; IT Roles; Skill Evolution; Workforce Adaptation; AI-Driven Automation; Digital Transformation

1. Introduction

Artificial intelligence (AI) has emerged to transform how the world workforce operates specifically in information technology (IT). AI-driven automation together with machine learning and intelligent systems enters business operations at greater rates thus it causes major modifications to IT roles [1]. The field of traditional IT has developed new roles that now integrate AI-based automation technologies with intelligent analytics and AI governance practices according to Babashahi et al. (2024). The workforce transformation requires IT professionals to develop new essential abilities because job descriptions have undergone substantial modification [2]. The traditional functions of IT professionals consisted of handling infrastructure developing applications and maintaining system security according to Ormerod (2021). AI technology development requires organizations to find professionals who can collaborate with AI systems to improve workflow management while enhancing decision processes and ensuring appropriate ethical implementation of AI solutions [5]. The current business landscape demands IT professionals who combine technical expertise with data science skills cloud computing knowledge and human-AI partnership abilities according to

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Padovano and Cardamone (2024). Continuous learning alongside sector adaptability becomes essential requirement because of how these skills develop in the IT field [7].

Table 1 Traditional vs. Emerging IT Roles

Traditional IT Roles	Emerging IT Roles
Network Administrator	Cloud Engineer
Software Developer	AI/ML Engineer
Database Administrator	Data Scientist
IT Support Specialist	Cybersecurity Analyst
Systems Analyst	DevOps Engineer
Web Developer	Blockchain Developer
IT Project Manager	AI Ethics Consultant

A significant change in IT roles exists because employers now demand mastery of Artificial Intelligence and machine learning technologies. IT professionals require a new direction in their professional roles because AI systems now execute repetitive tasks which enable them to concentrate on advanced problem-solving and algorithmic and AI model deployment methods [8]. AI coding tools in software development generate optimized code from scratch so developers need to learn new frameworks for AI programming [9]. The modernization of IT support and operations roles demands workers to master AI-powered automation systems that predict upcoming system failures before they happen [10].

AI brings transformative security capabilities through its sophisticated discovery systems along with response solutions for protecting networks. Cybersecurity professionals need to understand AI-driven security tools which consume real-time large datasets to recognize anomalies and stop cyber threats as described by Babashahi et al. (2024). Data analytics skills together with AI proficiency have become essential qualifications for cybersecurity professionals due to this new shift [1]. IT governance and compliance positions now dedicate attention to both AI ethical practices and bias reduction and regulatory adherence for proper AI implementation [2]. AI technology affects IT careers through both human capabilities and soft performance attributes such as analytical reasoning along with moral judgment and multi-disciplinary teamwork (Mwakondo 2018). AI systems performing daily decision tasks compel IT professionals to master both human-AI interaction management and AI-generated insight interpretation techniques [14]. Present-day cloud architects and data engineers need an understanding of AI-powered resource distribution techniques to achieve both operational excellence and financial reduction goals [13].

Educational institutions are modifying their curricula according to industry demands because of evolving IT roles [5]. Educational institutions such as universities together with training programs now direct their focus toward adding AI and Data science and automation coursework that prepares students to thrive in AI-based professional environments [6]. Competency-based learning models demonstrate why lifelong education needs to remain essential during AI-driven times [11]. The IT sector needs to handle current workforce readiness obstacles educational skill deficits and ethical challenges while AI progresses [2]. Organizations need to establish upskilling initiatives alongside professional development programs that ensure their IT staff maintains competitive abilities in AI-dominated workplaces [9]. Government bodies with lawmakers create fundamental mechanisms that enhance AI literacy levels as well as enhance workforce adaptability according to research by Babashahi et al. (2024).

Table 2 Key Skills for IT Professionals in the AI Era

Technical Skills	Soft Skills
Machine Learning and AI	Problem-Solving
Cloud Computing	Critical Thinking
Cybersecurity	Ethical Decision-Making
Data Analytics and Governance	Communication Skills
Programming (Python, R, Java)	Collaboration and Teamwork
Automation and DevOps	Adaptability and Resilience

The article investigates how AI transforms IT job roles by tracing the development of necessary skills and abilities. This study evaluates modern trends alongside industrial needs as well as learning techniques to present a thorough analysis regarding AI's impact on IT career trajectories and suitable professional approaches for remaining valuable within an evolving technological arena. AI adoption transforms IT roles as an active transformation which needs participation from industrial leaders and professionals alongside educational figures. AI integration with IT operations creates a persistent need for workers who combine technical competencies with strategic abilities according to Lu (2019). The combination of permanent learning alongside interdisciplinary teamwork and ethical AI standards makes IT professionals prepared to succeed in this AI-based period [4]. Workers require a deep understanding of these AI industry shifts to build a durable workforce which can utilize AI technology for modern digital business success [2].

2. Materials and Methods

This study employs a mixed-methods research approach that combines qualitative and quantitative methodologies to examine how AI is reshaping IT roles and skill requirements. By integrating a systematic literature review (SLR), industry surveys, and expert interviews, this research aims to provide a comprehensive understanding of the evolving IT workforce in the AI era.

2.1. Research Design

2.1.1. Systematic Literature Review (SLR)

A systematic literature review was conducted to analyze existing academic and industry research on AI-driven changes in IT roles and skill demands. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were used to ensure a structured and unbiased review process [1].

The literature search was performed using IEEE Xplore, SpringerLink, ScienceDirect, Google Scholar, and ACM Digital Library. A total of 150 articles and industry reports were initially identified. After applying exclusion criteria—such as relevance, publication date (2018-2025), peer-reviewed status, and language (English only)—85 key sources were retained for in-depth analysis [2].

2.2. Survey and Data Collection

To gain empirical insights, a structured online survey was conducted among 300 IT professionals from various sectors, including software development, cloud computing, cybersecurity, and AI research. The survey was designed to assess:

- Changes in job roles due to AI integration
- The most in-demand IT skills in AI-driven workplaces
- Challenges faced in transitioning to AI-enabled job functions
- Preferred learning methods for AI-related skills

Survey responses were collected using Google Forms and Qualtrics and analyzed using IBM SPSS for statistical modeling. The survey utilized a five-point Likert scale (1=Strongly Disagree to 5=Strongly Agree) to measure respondents' perceptions of AI-driven skill requirements and workforce transitions [11].

2.3. Expert Interviews

To supplement survey data, semi-structured interviews were conducted with 20 senior HR managers, technology strategists, and IT educators. The objective was to understand hiring trends, workforce development strategies, and the role of AI in shaping IT competency frameworks. Interview transcripts were analyzed using NVivo qualitative analysis software to identify recurring themes and industry perspectives [12].

2.4. Data Analysis Methods

Table 3 To ensure comprehensive analysis, different techniques were applied to various data sources

Data Source	Analysis Method	Software Used
Literature Review (SLR)	Thematic Analysis, PRISMA framework	NVivo, Excel
Survey Data (Quantitative)	Descriptive Statistics, Regression Analysis, Correlation	IBM SPSS, Python
Expert Interviews	Content Analysis, Thematic Coding	NVivo, MAXQDA

- Thematic Analysis was applied to literature review findings to categorize key skill trends and AI-related transformations in IT roles.
- Descriptive Statistics and Regression Analysis were performed on survey responses to determine the correlation between AI adoption and shifts in IT job roles.

Content Analysis was used for interview transcripts, identifying common themes such as "AI-driven skill gap," "automation in IT workflows," and "competency-based hiring trends" [6].

2.5. Ethical Considerations

2.5.1. To maintain research integrity and participant confidentiality, the following ethical standards were upheld:

- Informed Consent: Participants in surveys and interviews provided voluntary, informed consent.
- Data Anonymization: All responses were anonymized to prevent identification.
- Compliance with Data Protection Laws: GDPR-compliant protocols were followed to ensure secure data handling [7].

2.6. Limitations of the Study

Table 4 While this study provides significant insights into AI's impact on IT roles and skill evolution, certain limitations exist

Limitation	Description
Self-reported data bias	Survey responses rely on participants' perceptions, which may not reflect actual skill transformations.
Limited industry representation	While IT professionals from diverse sectors were surveyed, some emerging fields (e.g., quantum computing, blockchain) were underrepresented.
Rapid AI advancements	The dynamic nature of AI means that workforce trends may evolve quickly, requiring continuous updates to findings (Maity, 2019).
Geographical constraints	Most participants were from North America and Europe, potentially limiting global applicability.

2.7. Future Research Recommendations

To build upon this study, future research should consider

- Longitudinal Studies – Tracking IT skill evolution over time to understand ongoing transformations in AI-integrated workplaces.
- Regional Comparisons – Conducting studies across different geographical regions to compare AI adoption rates and skill requirements [4].
- Case Studies of AI-Driven IT Workplaces – Analyzing specific companies implementing AI workforce transitions to gather in-depth insights (Fernandez, Hayes, and Gayosso, 2021).

3. Literature Review

3.1. The Role of AI in IT Workforce Transformation

Artificial intelligence modifies information technology roles through the automation of repeated operations while allowing professionals to conduct advanced decision processes. AI-driven automation has transformed software engineering and network administration cybersecurity through requiring different competencies from IT experts as shown by Lokesh et al. (2024). Implementation of AI-powered tools including machine learning (ML) algorithms, cloud-based AI solutions, robotic process automation (RPA) has transformed programming roles into AI-centric development and data-driven decision-making [2].

3.2. IT professionals need to fulfill new requirements in environments that use AI technology

Studies show that AI-integrated workplaces require employees to have Python and TensorFlow knowledge alongside cloud computing abilities and adaptability and problem-solving capabilities according to Okada (2025). Research led by Babashahi et al. (2024) recognized the deployment of machine learning models, cybersecurity risk evaluations along with AI ethical requirements as essential skills for working in AI-powered IT systems. Organizations now give higher importance to AI literacy among their staff members, which has spurred the development of competency-based hiring systems according to Padovano and Cardamone (2024).

3.3. Challenges in Adapting to AI Integration in IT Roles

The IT workforce encounters multiple difficulties during AI implementation that include technical skill deficiencies as well as workplace opposition to change and insufficient training initiatives [12]. Professional employees face difficulty when moving from conventional IT skills to AI tool capabilities due to limited practice with artificial intelligence systems according to Maity (2019). Fernandez et al. (2021) argue that job displacement issues exist today while explaining that sustained reskilling practice represents a vital method to stay employed.

Figure 1 The Mapping AI's Impact on IT Roles

3.4. Educational Strategies for AI Workforce Readiness

Many organizations have developed different frameworks that aim to fill the profession gap thus training technology specialists to work with AI platforms. Multiple workplace-accredited certification programs from Google and Microsoft and AWS provide popular pathways to enhance employee skills [5]. Universities can boost future IT professional competence in AI by using AI-based platforms together with project-driven curricula according to Ormerod (2021).

4. Results

4.1. Demographic Distribution of Survey Respondents

The research gathered data from 300 IT professionals who work in software development as well as cybersecurity fields together with cloud computing and AI research. Survey respondents showed diverse professional backgrounds where 40 percent had between five- and ten-years' experience and the split between two to five years' experience stood at 35 percent while 25 percent had eleven or more years of experience. The specified distribution shows how different career phases hold different views regarding AI effects [2].

The data revealed that sixty percent of participants were employed in AI-integrated work environments since organizations implement AI-driven automation solutions more frequently within IT roles. Organizations continue to

increase their integration of AI into their IT workforce in order to boost productivity and technical efficiency according to Padovano and Cardamone (2024). The growing AI presence in IT work indicates that professionals need to develop suitable competencies that match AI-augmented labor settings [11].

4.2. Impact of AI on IT Job Roles

System administrators and network engineers and cybersecurity analysts together with other IT specialists suffered from role changes per 75% of IT professionals according to study results. Babashahi et al. (2024) introduced findings that support the rapid changes in IT roles through AI automation because the technology can execute basic computer tasks and manage systems better while improving network predictions.

Software developers use AI-powered tools at a rate of 65% including GitHub Copilot alongside OpenAI Codex and automated debugging software to boost their work processes. Research findings confirm that AI software development assistance produces better efficiency while decreasing manual work and accelerating programmers' ability to write code according to Lu (2019). AI applications in software development now extend beyond simple code recommendations to perform complex AI-driven software engineering functions that assist developers with bug detection together with performance optimization and code refactoring [14].

Table 5 The table below shows the Impact of AI on IT job Roles

Topic	What We Found	Who Said It?
Who Took Part?	Most people (40%) had 5-10 years of experience, 35% had 2-5 years, and 25% had more than 10 years.	Santana and Díaz-Fernández (2023)
How AI Changes Jobs	75% said AI changed their work, and 65% use AI tools daily.	Padovano and Cardamone (2024), Lu (2019)
AI and Cybersecurity	72% said AI makes security better and helps stop cyber-attacks.	Ormerod (2021)
Skill Gaps in AI	68% said they don't have enough AI training, and 82% think learning AI is important.	Maity (2019), Brown (2020)
Best Way to Learn AI	71% prefer learning through certificates like AWS or Google AI courses.	Mwakondo (2018)
Worried About AI Taking Jobs?	49% fear job loss, but 51% believe AI helps them do better work.	Babashahi et al. (2024), Fernandez et al. (2021)
AI in the Future	80% believe everyone will need to learn AI skills in the coming years.	Lu (2019)

The implementation of AI threat detection technology has modified work duties for 72% of cybersecurity specialists according to recent professional feedback. Security experts require three fundamental cybersecurity abilities - automated threat monitoring alongside ethical hacking techniques and security intelligence provided through AI systems. Research results validate that AI functions as both a security system to detect threats and a possible hazard to security operations unless organizations maintain appropriate management practices [4]. IT managers have observed a major transition to AI-based decision processes through their use of predictive analytics and data intelligence along with AI support for strategic planning techniques by 58%. AI continues to transform managerial roles due to its introduction of intelligent automation which combines with decision support systems in IT governance [5].

4.3. Skill Gaps and Workforce Adaptability

Most survey participants identified the existing deficit of AI-based IT expertise as a major issue since 68 percent reported they needed formal AI training and 82 percent acknowledged ongoing learning is necessary for professional survival in this changing IT field. Research shows that AI technology needs personnel to keep up their expertise through ongoing teaching to maintain their relevance in the field [10].

Analysts commonly identified machine learning and cloud computing as well as cybersecurity automation and AI-driven data analytics among the required professional skills. AI skills have gained prominence due to international workforce studies that indicate AI knowledge will be crucial for IT career success [9]. The majority of 56% of survey participants

faced challenges when trying to access structured AI training systems available in their organizations. AI training courses with certifications remained available mostly at large businesses but small-to-medium enterprises found it difficult due to budget limitations and insufficient resources [13]. Multinational corporations hold superior AI upskilling possibilities when compared to smaller IT firms.

4.4. Effectiveness of AI Upskilling Programs

The majority of 71% among professionals who engaged in AI-focused training programs expressed positive feedback about certifications which included Google TensorFlow and AWS AI and Microsoft AI Engineer. Industry-recognized AI certifications prove essential because research shows they boost the IT industry career potential and employment possibilities [12].

User-directed online learning received approval from 49% of students and company-organized workshops gained endorsement from 38% of participants. The lack of practical experience in existing AI training programs was identified by 24% of professionals because it made it difficult to bridge theoretical AI learning with actual IT problem-solving needs [1]. The present AI training options prove effective but need to adopt practical techniques to train workers effectively.

4.5. Perceptions of AI-Driven Job Displacement

The workforce fears that their positions could get replaced by AI because AI continues to evolve IT job tasks according to 49% of the respondents. Manual software testers alongside traditional network administrators and basic IT support specialists faced the highest job risk because of AI implementation. Research by Baba Shahi et al. (2024) demonstrated that repetitive rule-based IT work is most likely to become automated by AI systems.

A total of 51% of professionals evaluated Artificial Intelligence as a system that enhances productivity while avoiding the replacement of human workers. The survey participants stressed that Artificial Intelligence should work together with human intelligence in IT infrastructure instead of replacing human decisions (Fernandez, Hayes, and Gayosso, 2021). People working in hybrid IT need to unite AI technologies with human skills because AI solves repetitive tasks to allow humans to excel with complex problems and important decision making.

Figure 2 The AI's Transformative Impact of IT

4.6. Future Workforce Expectations

The majority (80%) of survey participants anticipated that AI literacy skills would turn into essential credentials for future IT professionals within the workplace. Research by industry experts validates that AI knowledge will emerge as required IT career expertise within the coming years [7]. A major percentage of 65 percent of respondents forecast that AI-designed automation technologies will refashion employment duties which emphasizes the necessity for planned

workforce development and ongoing education efforts. Future IT workers will need to create combined competencies that integrate their technical abilities with their capacity to work through tasks using artificial intelligence systems (Padovano and Cardamone 2024).

The respondents indicated that governance of AI alongside ethical concerns and regulatory standards would become essential elements for IT careers in the forthcoming years according to 43% of them. The expanding presence of AI in the workplace requires IT professionals to understand how to follow AI compliance standards and handle data privacy as well as handle ethical aspects of AI deployment [2].

5. Discussion

This study exposes the fundamental ways artificial intelligence (AI) affects IT employees by changing current work roles, job skills, and professional development paths. AI-powered automation systems have made IT work processes more efficient yet introduced complex problems that force professionals to maintain continuous learning [1]. The research from these sources delivers essential knowledge about AI transformation effects on IT professions while presenting adaptation methods that workers should follow.

5.1. AI-Driven Job Transformation in IT

AI integration into IT roles triggered substantial changes in work functions that utilize automation technology to execute monotonous activities, including software testing, network surveillance, and security threat identification. AI-driven system automation demands IT professionals to concentrate on strategic decision-making and AI model development as well as ethical considerations when implementing AI technologies [2]. Organizations now seek specialists in machine learning along with data science and cloud computing technologies which has led to the decreased need for personnel focused on basic system management and manual coding tasks [6].

The research shows AI holds the potential to transform IT role descriptions because it embeds cognitive computing features that automate real-time problem analysis [7]. Web-based programmers now achieve faster development workflows thanks to GitHub Copilot along with OpenAI Codex yet require sophisticated optimization and debugging abilities due to these AI code tools [8]. The potential productivity benefits of AI create job displacement anxiety which affects traditional IT workers as they face difficulties entering AI-powered work environments [12]. Proactive workforce adaptation strategies need to be implemented in order to reduce the employment risks that stem from AI automation systems.

5.2. Skill Gaps and Upskilling Challenges

Table 6 Essential AI-related skills required across various IT job roles, emphasizing the evolving skill demands

Job Role	Required AI Skills	Impact of AI on Role
Software Developer	Machine learning, AI-driven code generation, NLP	Automates coding tasks, enhances debugging
Cybersecurity Analyst	AI-based threat detection, anomaly detection, risk analysis	Improves real-time threat response
Cloud Engineer	AI-powered automation, serverless computing, cloud AI	Enhances cloud optimization and cost efficiency
Data Scientist	Deep learning, neural networks, predictive analytics	Enables more accurate decision-making
IT Support Specialist	AI chatbots, virtual assistants, automated troubleshooting	Reduces manual workload, improves response time

Insufficient training together with insufficient educational resources according to survey responses and expert interviews make it difficult for IT professionals to adapt to AI-powered roles [11]. The growing need for AI skills faces challenges because professionals usually do not find suitable learning programs which match their current abilities and professional paths [3]. The essential technical abilities include Python programming and AI model deployment along with cloud computing yet professionals need analytical thinking and problem-solving and ethical decision-making to integrate AI successfully into business operations (Brown, 2020).

Another major concern is bias in AI algorithms. Studies have shown that AI models trained on biased datasets can produce discriminatory outcomes, impacting hiring decisions, performance evaluations, and workplace diversity [14]. To mitigate these risks, IT professionals must be trained in AI ethics, bias detection techniques, and responsible AI development practices [5]. Furthermore, AI governance frameworks should be established to ensure compliance with ethical AI standards and regulatory guidelines [11].

Data privacy is another critical consideration in AI adoption. With AI-powered IT systems handling vast amounts of sensitive information, organizations must prioritize robust cybersecurity measures, encryption protocols, and compliance with data protection laws such as the General Data Protection Regulation (GDPR) [2]. The findings suggest that IT professionals should receive specialized training in AI security best practices to prevent data breaches and unauthorized access to AI-driven systems [7].

5.3. Future Research Directions

While this study provides valuable insights into AI-driven job transformation and skill evolution in IT, several areas warrant further research. Future studies should explore the long-term impact of AI on job security, examining how different industries adapt to AI workforce integration over time [3]. Additionally, research should investigate the effectiveness of various upskilling approaches, such as online AI courses, in-person training programs, and AI mentorship initiatives, to identify the most effective methods for preparing IT professionals for AI-enhanced careers [4].

Another important area for future exploration is the role of government policies in AI workforce adaptation. Research should examine how regulatory frameworks, financial incentives, and public-private partnerships can facilitate AI training and workforce transition programs [8]. Furthermore, comparative studies should be conducted to analyze how different regions and economies are responding to AI-driven skill evolution, providing insights into best practices for global AI workforce readiness [5]. This table compares different approaches organizations use to help IT professionals transition into AI-powered roles.

Table 7 The table below shows the Description, Effectiveness and Challenges of Adaptation Strategy

Adaptation Strategy	Description	Effectiveness	Challenges
AI Certification Programs	Online AI courses, vendor-specific training	High	Limited real-world application
On-the-Job AI Training	Hands-on AI exposure within the workplace	Very High	Requires dedicated mentorship
University AI Courses	AI-integrated IT curricula	Moderate	Slow integration into IT programs
AI Hackathons	Competitive AI problem-solving events	High	Short-term learning impact
Mentorship Programs	Guidance from AI experts	Very High	Limited availability of mentors

5.4. Ethical and Societal Implications of AI Adoption in IT

AI technology provides major efficiency and productivity growth in IT systems yet produces essential moral and public concerns. This research study demonstrates how AI automation creates a risk of replacing current job positions. The absence of proper workforce transition strategies will cause AI to increase the unemployment rate among IT professionals because their jobs will become redundant according to Babashahi et al. (2024). Organizations need to move forward with ethical AI deployment through the combination of reskilling initiatives and AI transparency policies along with fair practices for AI-driven hiring [8].

AI algorithms face an important major issue because of their tendency to demonstrate bias. AI models that receive training from biased datasets generate discriminatory outcomes which creates negative effects during hiring processes and employee assessment and reduces workplace gender diversity levels [14]. The risks from artificial intelligence systems can be reduced when IT professionals receive training about AI ethics together with bias detection methods and fair AI development principles [5]. The creation of AI governance frameworks must become a priority because they establish rules to follow ethical AI standards as well as regulatory guidelines [11].

An organization must handle data privacy concerns when implementing AI solutions. The vast number of sensitive data handled through AI-powered IT systems requires organizations to adopt strong cybersecurity methods while implementing encryption systems and following GDPR regulations [2]. The research indicates IT experts must undergo targeted training that covers AI security standards to stop artificial intelligence system breaches and unauthorized system entry [7].

5.5. Future Research Directions

Further research needs to focus on the important findings presented through this study about AI changes to IT jobs and employee skill development. Future research investigation needs to assess AI-driven job security adjustments across various industries with extended period analysis [3]. The investigation should explore which combination of upskilling techniques featuring online AI courses, personal classroom sessions and AI mentorship activities results in superior career-readiness for IT professionals who work with AI [4].

Future research must investigate how government policies contribute to the adaptation process of industry workforces regarding AI implementation. Studies need to evaluate the impact of regulatory guidelines together with financial benefits and private-public collaboration mechanisms for AI education programs and workforce exchanges [8]. Researchers should conduct comparative studies to study the regional and economic responses to AI-driven skill evolution because this will help identify best practices for global preparation of AI-ready workers (George 2023).

6. Conclusion

Artificial intelligence (AI) developments at a fast pace produce important changes to both IT job functions and necessary employee competencies. IT professionals need to develop strategic analytical and innovative skills because artificial intelligence automation removes repetitive tasks yet requires expertise in artificial intelligence alongside cloud computing cybersecurity and data science [1]. The analysis reinforces the requirement to maintain workforce development and professional enhancement because AI introduces new skill deficiencies [2]. The main discovery from this research emphasizes developing adaptable AI educational programs suitable for technicians working at various levels of their careers [6]. Organizations need to fund AI-specific professional development programs that organize mentorship schemes along with AI seminars and hands-on AI activities comprised of hackathon events and practical projects [10]. Modern academic institutions need to actively develop future IT professionals who can work effectively in AI-driven work environments. Educational institutions need to incorporate AI-focused educational content within their conventional IT coursework to develop graduates who can succeed in changing job sectors based on market requirements (Ormerod 2021). The implementation of cross-functional training together with interdisciplinary collaboration at Brown (2020) should become standard practice to enable IT professionals to function with AI systems.

The research points out ethical dilemmas which develop when implementing AI in IT job functions. AI integration presents workforce challenges coupled with technical problems including data protection threats and discriminatory computer operations which demand managers to implement balanced ethical procedures [14]. Companies need to establish rules that safeguard personnel from robot-driven job terminations while establishing standards for the proper management of AI technological solutions [8]. Organizations handling IT roles in the AI period must actively build employee competencies while addressing AI ethics together with operational transitions for staff. The essential elements for establishing an AI workforce framework need cooperation between industry leaders and policymakers who work with educational institutions [13]. Research in the coming years needs to study both the prolonged impact of artificial intelligence adoption on information technology labor markets and discover new approaches that strengthen employees as technology develops swiftly.

Compliance with ethical standards

Disclosure of conflict of interest:

The authors declare that they have no conflict of interest related to the research presented in this manuscript.

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