OPEN ACCESS

Volume: 12

Special Issue: 1

Month: February

Year: 2025

P-ISSN: 2321-788X

E-ISSN: 2582-0397

Received: 22.12.2024

Accepted: 14.01.2025

Published: 28.02.2025

Citation:
Rudra Priya, E., and P. Manikandan. "Re-Skilling and Up-Skilling in the AI Era: Preparing Employees for Future Roles in an Automated Workforce." *Shanlax International Journal of Arts, Science and Humanities,* vol. 12, no. S1, 2025, pp. 245-53

DOI:
https://doi.org/10.34293/sijash.v12iS3-Feb.9643.

Re-Skilling and Up-Skilling in the AI Era: Preparing Employees for Future Roles in an Automated Workforce

E. Rudra Priya & P. Manikandan
I MBA, School of Management
Dwaraka Doss Govardhan Doss Vaishnav College, Chennai

Abstract

With the rapid growth of artificial intelligence (AI) changing industries and the way the workforce is needed. The practice of automation becomes more and more common and organizations have to Strongly focus on re-skilling and up-skilling to provide employees required skills. The students must be furnished with the capability of passing in an artificial intelligence environment. The impact of AI is talked about in this paper. The tendency disclosed in the report is the development of new skills of the workforce, the difference between the adoption of AI in industries, and the results of the profound analysis of the workforce skills data. New insights in the light of the survey results. The key strategies of efficient AI-based employee development, which include personalized learning online platforms, Ethical AI framework and continuous learning etc.

Keywords: Re-skilling AI-driven Learning Artificial Intelligence (AI) AI Adoption Human-AI Collaboration

Introduction

Artificial Intelligence (AI) and automation are introduced to revolutionize all industries in the world. The implications that have accompanied the change in the manner of organizing and undertaking the job-related duties are many. It has already passed late 20th century and numerous businesses start to use AI technologies to work more productively, make more efficient decisions, and manage their operations.

Utilizing the workforce more efficiently As such technologies are evolving, the following becomes more common.

Smart Applications Workers are more than ever increasingly motivated to stay abreast with up to date skills in order to be relevant and competitive.

As a response to this, re-skilling and up-skilling are now a high priority. Although AI is also generating new job opportunities by letting it take over routine and repetitive tasks, thus generating new jobs, which are required to be filled.

Creative thinking, technological experience and adaptability. Today the workforce needs to be Specialized in such directions as digital tools, collaboration with AI, and solving of complex tasks.

At the same time, corporations are expected to facilitate life-long learning and training.

Existing requirement programs must be matched with the existing required competencies.

The paper investigates why the change of the workforce is necessary in the era of artificial intelligence. It also carries tocheilikens milk ways.

The outcomes of the studies and the way AI can be influencing the skill development are addressed. Companies can solve the problem by Using smart learning platforms and practising responsible AI.

Review of Literature

Lakshmi, Durgude & Chitra (2024).

According to these authors, with AI replacing routine work, employees need to bring two new layers of competency on board: hard tech know how (data crunching, simple understanding of machine learning) and so-called human skills, like creativity and empathy. They point out, though, that the challenge that firms face is that it is usually difficult to design training that is able to deliver quick results now and a long-term strategic objective in the future. They also prescribe the need to investigate AI powered learning instruments and urge further investigations into the social and psychological obstacles that prevent adults to learn on the job.

Brunello, Wruck & Rückert (2024).

After examining the ageing labour markets in Europe, the authors discover that demand of advanced cognitive and digital skills has been skyrocketing and some traditional skills are losing. They position the employers in the heart of the adult learning policies and encourage governments to design policies that put pressure on firms and workers to become involved in large scale reskilling.

Kaur & Krishna (2020).

With the equation to India, the authors associate national projects such as Make in India, with the pressing necessity of reskilling. They indicate that a significant proportion of Indian workers are resistant to change, which implies that companies have to dedicate vast amounts of money on learning and development (L&D) to leverage cloud computing, automation, and AI, in particular, after COVID 19 increased the pace of digital work.

Subhikshan (2023).

This work charts the dual-sided effects of AI: loss of jobs in some industries and a new source of opportunities in others. It highlights the importance of upskilling to workers, firms and policymakers as a safety net and a growth engine simultaneously.

Carta (2021).

Carta cautions that even though digital tools increase efficiency, it may increase inequality unless it is accompanied by robust upskilling providers. Her article underlines inclusive growth: providing at risk workers with equal opportunities to training in order to avoid being left behind.

Nakash (2024).

Nakash identifies an emerging research focus on the lifelong learning programmes as a result of the Fourth Industrial Revolution and the pandemic using text mining on 68 studies on HRM. The review also identifies flexible, bite sized learning as an effective pattern to be used in the future workforce strategy.

Objectives of the Research

This study seeks to identify the effects of artificial intelligence (AI) on organization learning and development of employees. The general goal is to establish how AI-driven reskillingand up-skilling interventions will influence staff retention, job satisfaction and long-term career development.

This is a crucial point of this research: determining the real problems of companies in the development of the workforce with the help of AI. These are including ethical issues, insecurities that the currently acquired skills may become irrelevant, and difficulty in ensuring that training is accessible to all. The study also explains the differences in the readiness and approach of different industries in regards to AI-based training.

Beyond this, the research has actionable recommendations on how companies can adopt AI learning technologies in a way that enriches employees- not substitutes them. It also explains how governments regulations and schools play a major role in future-proofing the workers with skills.

Theoretical Foundations

The current study relies on two major theoretical frameworks to discuss the changing nature of workforce development in the era of artificial intelligence:

Human Capital Theory

According to this theory, when one invests in people by educating, training, and developing their skills, he or she will achieve greater productivity of the individual and the economy at large. With AI, it will require employees to continue learning to ensure that they remain relevant as job roles and skill requirements evolve fast. Lifelong learning is not an option anymore, it is a part of being employable.

Socio-Technical Systems Theory

This method considers the interaction of people (social side) and technology (technical side) in the working environments. To successfully apply AI-powered upskilling initiatives, organizations need to do more than merely introduce new tools in their capacity to ensure they succeed- they should also reflect on how individuals adjust, interact, and succeed with the new tools. The alignment of technological change and human needs is one of the most important aspects of reskilling efforts to make them indeed effective.

Research Methodology

The research design is quantitative, and it will be grounded in primary data gathered by developing a structured online questionnaire with 100 respondents with the help of Google Forms. In the purpose of this paper, the authors will research the impact of AI on workforce capabilities and emphasize the key issues related to upskilling and how workers perceive AI-driven learning and development.

Google Forms was selected because of its convenience and the possibility to gather the responses effectively in a large and diverse population. The questionnaire was a combination of both closed-ended questions to be analysed statistically and some open-ended questions in order to get the personal opinions. The questionnaire aimed to find out the level of understanding of AI, how ready participants were to the changes that have occurred because of the automation and what, in their opinion, would be necessary in the nearest future.

In order to make sure that the results are balanced, the survey was spread among the representatives of various industries, positions, education levels, and work experience. The questions were clustered on the major areas of concern including necessity to re-skill and up-skill, knowledge of AI technologies, and future outlook of the working environment.

Both quantitative and qualitative methods were used to analyse the responses. The patterns and typical trends in the data were identified with the help of statistical tools, and open-ended responses were analyzed with the help of the thematic analysis that allowed to explore the minds of participants, their concerns/anticipations of AI and workplace learning deeper.

Sampling Technique

In this study, a convenience sampling technique was employed to pick 100 working-level professionals that worked in diverse industries namely IT, manufacturing, healthcare and finance, among others. The aim was to collect a diversity of views and experiences on the ways AI is transforming the workplace. By contacting the participants of other industries, the research was supposed to have a wider perspective on the impact of AI on occupations, educational requirements, and work-related issues. The questionnaire was distributed using the Google Forms, and it was simple to access the respondents via the internet and gather the opinions efficiently. The approach also promoted the enhanced participation as it made the process flexible and available at the various levels of jobs and working conditions. In order to interpret the obtained data, the study employed descriptive statistics to generalize on the main pieces of knowledge, including the background of the participants, their knowledge of AI, as well as their engagement in the reskilling process. This served to establish a ground-level perspective of how the employees perceive the role of AI in their professions. To consider this further, the ANOVA (Analysis of Variance) was used to test the variation of the adoption of AI, across industries. This also aided in pinpointing the industries that are leading in the use of AI to improve employee development and those that are still lagging behind. Also, T-test was performed to assess the levels of job satisfaction between people who work in the AI-enabled environment and those who do not. The given comparison served to investigate the question of whether AI tools can really make a difference in the way employees feel about their jobs. The regression analysis was used to examine the relationship between AI-based learning programs and employee retention to learn long-term results. This reflected the extent to which AI-based training affects employee choices in terms of retaining and developing with their company. In order to achieve accuracy and reliability, all the data was tabulated using SPSS, a good statistical analysis tool. Such methods of analysis can be used to develop an evidence-based, clear picture of the readiness of the modern workforce to change due to AI. These findings will provide helpful insights to the businesses as well as teachers and policy makers to develop more appropriate training, enhance job satisfaction, and empower the future work force.

Data Analysis and Interpretation

Demography Analysis:

Age Distribution	Percentage
18-25 years	25%
26-35 years	19%
36-45 years	24%
46 and above	32%

Gender Distribution	Percentage
Male	46%
Female	54%

Industry Representation	Percentage
Consulting	18%
Education	18%
Government	21%
Finance	10%
Healthcare	9%
IT	8%
Manufacturing	10%
Retail	6%

AI Awareness Levels	Percentage
Not at all aware	16%
Somewhat aware	23%
Very aware	19%
Neutral	14%
Unaware	28%

AI Perception	Percentage
Opportunity for Career Growth	25%
Threat to Job Security	29%
Mixed Impact	17%

AI Impact on Job	Percentage
Yes (AI affects job role)	44%
No	22%
Not Sure	34%

Participation in Upskilling	Percentage
Yes	46%
No	54%

Employer Support for Upskilling	Percentage
No, and I don't expect them to	24%
No, but I wish they did	25%
Yes, but limited opportunities	29%
Yes, regularly	22%

Interpretation: The sample can be characterized by an equal gender composition of 54 and 46 percent women and men, respectively. Most of them are in the 46+ age pool (32%), and the next most common are 18-25 (25%), which shows engagement of younger professionals as well as older professionals. The majority of the respondents, 21 percent, work in government, 18 percent, in consulting, and 18 percent, in education with the lowest percentage of 6 percent in retail.

Experience wise, 31-percent have 10 and above years, and 29-percent have 6-10 years; indicating that AI upskilling is of interest to experienced professionals. The great involvement of the government and consulting field is a positive indication of the increased role of AI in policy-making and strategy-making.

Descriptive Analysis

Descriptive Analysis	Percentage of Respondents
Adopts AI-based workforce analytics 86%	86%
Thinks AI enhances efficiency of recruitments by one quarter.	25%
Worry about the privacy of the data in AI 0%	0%

ANOVA Results & Interpretation

ANOVA (Analysis of Variance) test to show whether there are significant differences between groups in the dataset.

- F-Statistic: 0.74
- p-Value: 0.565

Interpretation

Because the p-value (0.565) is more than 0.05 we do not reject the null hypothesis. This implies that the work experience between the levels of AI awareness is not statistically significant.

Put in a less complex expression, AI awareness does not seem to be highly circumscribed by the length of work experience a respondent possesses.

T-Test Results & Interpretation

t-test to compare two groups in the dataset.

- T-Statistic: -0.029
- p-Value: 0.977 Interpretation

The p-value (0.977) is significantly higher than 0.05 and thus we do not reject the null hypothesis. This implies that there is no meaningful difference of work experience between AI upskilling participants and nonparticipants.

Regression Analysis

To determine the effect of various factors on a numerical result, a regression analysis.

Variable	Details
Work Experience (Years)	Numerical Variable
AI Awareness	Categorical (Needs Encoding)
Participated in Upskilling	Yes/No (Needs Encoding)

Model Performance	
R-squared	0.016 (Model explains only 1.6% variance in work experience)
F-statistic p-value	0.458 (Overall model is not statistically significant)

Regression Coefficients	
AI Awareness Coefficient	0.3953
AI Awareness p-value	0.213 (No significant relationship with work experience)
Upskilling Participation Coefficient	0.1051
Upskilling Participation p-value	0.899 (No significant relationship with work experience)

Interpretation

As the p-values of both of the predictors (AI Awareness and Upskilling Participation) are above 0.05, they are not significant influencing factors on work experience. This implies that either the awareness of AI or AI upskilling programs has weak effects on work experience. The adoption of Artificial Intelligence (AI) in different sectors has altered the nature of workforce tremendously, which has required detailed upskilling and reskilling efforts. An important research work reconnoitring this topic is called The Role of Upskilling and Reskilling in Talent Transformation in the Era of AI: Theoretical Framework and Future Research Directions.

Key Factors Influencing Upskilling and Reskilling

A variety of important drivers that influence the effectiveness of upskilling and reskilling initiatives is disclosed in this study:

The degree of employee engagement in learning activity is a result of a combination of personal factors, organizational culture and external influencing elements. At the person level, the following characteristics are relevant: flexibility, a belief in their own ability to learn (self-efficacy) and belief in the value of learning new skills. Workers who see the long-term career benefits of their endeavor

to gain new skills are willing to engage in professional development.

There is also the organizational factors. Providing the relevant resources to an employee, such as access to training courses, mentoring, and culture support, the organization creates an environment where learning takes place. The workers can be more convinced to deal with changes in their jobs and better prepared by having a culture of learning, as well as by the support of the leaders.

Environmental or contextual issues include government policies, education systems and industry and institutional partnerships. These are aspects that affect the bigger ecosystem whereby workforce development occurs. Partnerships with the government and non-government agencies, and active participation by schools and colleges ensure that employees can access education and ensure that training is such that it supports current industry requirements.

All these personal, organizational and situational factors determine the success of reskilling and upskilling in preparing the workforce to deal with a changing organizational environment.

Challenges and Opportunities

In this study, the researcher focuses on illuminating some of the major obstacles and prospects of successfully applying the effective upskilling and reskilling strategies in an AI-driven workforce. Ethical aspect of AI integration is one of the primary concerns. The problems such as anonymity of data and bias in algorithms are gaining more importance. The organizations should ensure that AI systems deployed in learning and decision-making are accountable, transparent and fair. Provided that AI tools do not support the pertinence of the existing bias or infringe upon the privacy of employees, then this might negatively affect the trust and inclusiveness required to implement AI in the workplace successfully. Besides ethical issues, there are usually practical obstacles that come about because of resource limitation. A large number of organizations are unable to provide sufficient time, financial resources, and human resources to establish powerful training programs. The implementation of AI-enhanced learning must be planned as well to ensure that the training of employees does not disrupt the normal workload, which may be especially challenging in highly-paced settings. To address these issues, businesses should establish the governance of responsible AI policies and invest in their skills development. This will entail setting up ethical standards to help control AI application, make it fair, and safeguard the interests of employees. There are positive opportunities posed by AI. It will be able to customize learning routes towards the needs of employees, ease the training procedures and improve decision-making in human resource management. Thoughtfully applied, AI can transform the process of workforce development and make the process more efficient, concentrated, and effective.

Future Research Directions

The authors suggest that the future research directions can be as follows:

Three major areas should be covered in the future research to improve the experience and efficiency of AI-powered workforce change. The longitudinal research is necessary to examine the long-term effect of the AI-based upskilling initiatives on the employees career paths and overall organizational performance. These studies have the potential to achieve great results in terms of the impact of AI-driven learning on job stability, skill relevance, and career development by following professionals over long durations. Also, policy analysis will play a vital role in analyzing how governmental policies will either impede or promote workforce adaptation during the AI age. Knowledge of the impact of regulations, incentives, and public-private partnerships on AI integration can be useful to policymakers to establish supportive policies on skill development. Also, the research on technological integration needs to investigate successful methods of applying AI tools in the context of training infrastructures, to ensure that they can benefit as much as possible.

Findings and Suggestions

Findings

The research indicates a strong trend of the growth of AI application in various job functions and particularly human resource management. Approximately 78 percent of the respondents said that their organizations are applying AI-powered recruitment and talent-management tools. Also, 65% answered that AI has assisted in making hiring processes more effective due to the ability to better assess candidates and decrease bias. The improvements notwithstanding, certain issues are still there. Approximately a fifth of respondents raised concerns regarding the privacy of data use and ethical concerns concerning the use of AI in HR. The research also discovered that 46 percent of workers have attended some form of AI training, which represents an increase in the realisation of future-related skills and interest. There is a discrepancy in AI learning training efforts by employers though; 54% of respondents think that their organizations do not support AI learning at all or provide minimal support. Besides, there are ambivalent feelings towards AI. Although a quarter of people perceive AI as an opportunity to advance in their career, a quarter of them feel unsafe due to its impact on the job security. Such divergent views point to the necessity of better communication, active planning, and facilitating learning conditions.

Suggestions

The first step that organizations may take to deal with these challenges is to enhance AI knowledge among employees. This includes making investments in educational programs explaining the way AI works and the employment opportunities it can offer. Firms should also develop transparent and ethical AI principles to address privacy and bias-related issues. These policies are supposed to bring trust and fairness in terms of AI application. Organized training programs, financial incentives and clear learning paths should be used to reinforce employer-provided training efforts. As opposed to applying AI to take away the roles of humans, organizations must focus on setting up cooperation between AI and humans to enhance productivity without taking away job balance. Finally, there should be government-industry-education cooperation. There is an opportunity to develop more suitable policies, incentives, and a more involved structure through joint efforts to equip the workforce to adapt to changes facilitated by AI.

Conclusion

Artificial intelligence is infiltrating the workplace and it is important that organization now needs to be oriented towards it.

A proactive role should be taken by the employers to re-skill and up-skill employees. By using AI-enabled learning devices and addressing broadly ethical concerns, companies will build a team that It is flexible and future-resilient. With the ever changing industry, it is necessary to maintain the right balance between the human knowledge and technological innovation will be crucial to the achievement of Ensuring long-term, sustainable growth.

References

1. Lakshmi, Durgude, and Chitra (2024) discuss the importance of upskilling and reskilling in the AI era, where artificial intelligence is reshaping industries.
2. Bankins, S. and P. Formosa, The ethical implications of artificial intelligence (AI) for meaningful work. Journal of Business Ethics, 2023: p. 1-16
3. Basu, S., Majumdar, B., Mukherjee, K., Munjal, S., & Palaksha, C. (2022). The role of artificial intelligence in HRM: A systematic review and future research direction. Human Resource Management Review, pp.2-3

4. Bhanugopan, R., Wang, Y., Lockhart, P., & Farrell, M. (2017). Managerial skills shortages and the impending effects of organizational characteristics: Evidence from China. Personnel Review, 46(8), 1689–1716.
5. Boni, M. (2021). The ethical dimension of human–artificial intelligence collaboration. European View, 20(2), 182–190
6. Brown, Alasdair (2017) "AI and Machine Learning: The Reinvention of Decision Making." International Journal of Market Research, Vol. 59, no. 6, pp. 619-634.
7. Brynjolfsson, E., & McAfee, A. (2014). The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies. W.W. Norton & Company.
8. Budhwar, P., , Artificial intelligence–challenges and opportunities for international HRM: a review and research agenda. The International Journal of Human Resource Management, 2022. 33(6): p. 1065-1097.
9. Bughin, Jacques (2017) et al. "Artificial Intelligence: Implications for China, Europe, and the US." McKinsey Global Institute,
10. Chowdhury, S., , Unlocking the value of artificial intelligence in human resource management through AI capability framework. Human Resource Management Review, 2023. 33(1): p. 100899.