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Rethinking AI-supported Skilling Strategies in Companies

Ileana Hamburg

1. IAT, Westfälische Hochschule Gelsenkirchen, Germany

Abstract: Companies should understand and accelerate the adoption of Artificial Intelligence (AI) to unlock innovation, build employees' trust in their work, and strengthen their competitive position. With the rise of AI-driven technologies, the importance of developing skilling strategies based on a comprehensive, interdisciplinary, continuous approach to training and supporting lifelong learning in companies has increased. AI impacts skilling and upskilling processes and contributes significantly to personalized learning. AI supports the delivery of "on-demand" training, providing short, relevant learning content when needed. AI-based mentors or chatbots offer personalized coaching and simulate real-world scenarios, helping employees learn and apply new skills more quickly. But AI also presents opportunities for foreign information, AI-supported manipulation, and interference. Therefore, developing early-detection systems for modern technologies like AI and implementing corresponding flexible, modular training and learning opportunities are necessary. Digital communication frameworks should guide the development of competencies to handle AI-driven technological advancements and adapt them to enhance effectiveness and anticipation in combating disinformation and foreign interference in the information environment. AI is central to business strategies, and organizations that adopt it early gain a competitive advantage in operational efficiency and leadership excellence. Hiring key AI skills in companies is necessary to make them more innovative and help to develop new products, services, or business models. This paper first presents AI-supported skilling strategies in companies, including AI's positive impacts such as identifying skills gaps, personalized learning, mentoring, and fostering a culture of lifelong learning and adaptability. It then explains the importance of developing strategies to address the challenges posed by AI-driven disinformation in this context. The paper also outlines the advantages of hiring for AI skills earlier to support competitiveness, operational efficiency, and leadership excellence within companies. The paper methodology bridges the gap between academic rigor within study publications and industrial practice. The results of studies, interviews, and discussions with project partners are included in the paper and show that companies' understanding of AI-driven disinformation remains highly fragmented. A few countries are investing in the skills required to master AI, starting to hire for AI skills early, aiming to position themselves as future sources of skilled professionals in the field.

Keywords: Companies, AI, Skilling strategies, Training, Disinformation, AI adoption, Hiring AI talent.

INTRODUCTION

The rise of Artificial Intelligence (AI)-driven technologies has increased the importance of developing skilling strategies [1] based on a comprehensive, interdisciplinary approach to training and continuous learning in companies, including lifelong learning [2]. Such strategies also aim to build technical and critical thinking skills to use these technologies innovatively.

In this presentation, in addition to the development of AI-supported regular skilling strategies in companies, some problems and requirements for AI use in this context are given. Enforcing measures to promote AI use offers many advantages but creates opportunities for foreign information manipulation and interference. So, the development of early detection systems for modern technologies, as well as the implementation of corresponding flexible, modular learning opportunities, is necessary. This should ensure that professionals and citizens can address emerging threats and disinformation, which poses a significant security threat.

Another problem is that early adoption of AI in companies is no longer a technological advantage. It is a strategic one, the launchpad for businesses that should lead the future, not simply adapt to it. Prioritizing hiring for key AI skills is necessary, as it provides a foundation for future AI initiatives, making companies more likely to innovate and develop solutions that differentiate them from competitors. This can lead to new products, services, or business models that give companies a competitive edge, but many do not take this into account.

METHODOLOGY

The objective of this study is to identify the advantages and challenges of using AI to address emerging training needs and to develop AI-supported skilling strategies within companies, while highlighting positive aspects and necessities and minimizing negative impacts.

The study methodology should bridge the gap between the academic rigor of the publications studied and industrial practice. In this context, twelve in-depth interviews with a representative sample of stakeholders involved in the implementation of AI strategies in companies' businesses, consultants, business leaders, and policy architects have been conducted. These interviews provided rich, practically oriented insights into the implementation paths of such strategies. The information has been combined with secondary data from the corresponding literature published between 2022 and 2025.

The experts emphasized that AI-based employee learning, upskilling, and reskilling programs differ from traditional, one-size-fits-all training, offering personalized, continuous training and learning models that can be integrated directly into the work.

The results of studies, interviews, and discussions with project partners have been included in this study and show that companies' understanding of AI-driven disinformation remains very fragmented. There is also a big need for improved digital competencies and skills to address the threat of AI-driven disinformation, to update educational frameworks, and for continuous training measures to improve this situation. Few countries are investing in AI technology, in the skills required to master it, and/or starting to hire for AI skills early, aiming to position themselves as future sources of skilled professionals in the field.

AI-SUPPORTED SKILLING TRAINING STRATEGIES IN COMPANIES

Companies should understand and accelerate AI adoption, unlocking innovation, building employees' trust with their workforce, and strengthening the company's competitive position.

AI-supported skilling strategies in companies should use these technologies [1] to identify, create, deliver, and manage employee learning, upskilling, and reskilling programs. These differ from traditional, one-size-fits-all training, offering personalized, continuous training and learning models that can be integrated directly into the work.

One important impact of AI on skilling and upskilling is its contribution to personalized learning. AI algorithms could analyze datasets, support adaptive learning platforms that tailor educational content to individual learning styles and preferences, and support lifelong learning [2], [3]. This personalized approach could enhance employees' engagement and training effectiveness, ensuring that individuals acquire skills closely aligned with their specific career objectives.

Another aspect in this context is the support of Learning in the Flow of Work because AI delivers "on-demand" training, providing short, relevant learning content precisely when needed (e.g., during a project work task).

AI-based mentors or chatbots provide personal coaching and simulate real-life scenarios for firsthand practice, helping employees learn and apply new skills faster.

Companies are also leveraging AI to identify skills gaps and foster a culture of lifelong learning and adaptability [4]. The significance of AI in conducting skill gap analyses is significant, enabling organizations to invest in strategically targeted upskilling. By analyzing current and future skill requirements, AI supports forecasting industry trends and so an initiative-taking approach to workforce development [4].

AI-powered learning platforms like Coursera and edX have an important role in skilling and upskilling.4 Such platforms suggest learning paths, assess individual progress, expand the accessibility of learning materials, and help to accommodate continuous learning. The learners could upskill at their own pace and convenience.

Within vocational training and simulation, AI plays a key role in creating immersive learning opportunities. The use of AI in virtual reality (VR) and augmented reality (AR) applications enables first-hand training in risk-free environments. This learning enhances skill acquisition and retention, particularly in industries with complex and dynamic operational environments.

Despite the positive contributions of AI in skilling and upskilling, there are significant challenges and ethical problems to be considered, such as concerns related to data privacy, algorithmic bias, and the potential for job displacement. These problems underscore the importance of ensuring equitable access to AI-enhanced educational opportunities. AI technologies are versatile tools for transforming education and professional development, but addressing the ethical implications and challenges is essential to using AI successfully.

Upskilling in using AI is important because it helps employees understand the language, tools, and risks of this technology, equipping them to embed AI into daily workflows and change how work gets done in the company [5].

The latest McKinsey Global Survey on AI [6], shows that 78 percent of respondents say their organizations use AI in at least one business function. Most companies spend disproportionately more time on AI literacy because it is visible and easy to measure; fewer lean into adoption, which is messier and requires leadership courage, and few are consistently connecting upskilling and reskilling to innovation and real performance. Some

examples where companies are training employees on both technical AI proficiency and non-technical AI literacy are [6]:

- Prompt Engineering & AI Communication: Learning to interact effectively with GenAI tools (e.g., ChatGPT, Claude) to produce actionable outcomes.
- Data Literacy & Analysis: Understanding data trends, anomalies, and insights produced by AI to inform decisions.
- AI Tool Selection & Integration: Assessing which AI tools address specific problems and integrating them into existing workflows.
- Critical Thinking & Output Evaluation: Human evaluation of AI-generated content to identify biases, hallucinations, or errors.
- Workflow Automation & Process Design: Identifying and redesigning repetitive tasks for automation.
- Ethical AI Use: Understanding compliance, data privacy, and the responsible use of AI tools.

Recent initiatives [6], [7], [8] show that large-scale reskilling programs have a competitive advantage by

- Reducing recruitment time,
- Cost-Efficiency: Training current staff using AI is 23% more cost-effective than hiring new talent to meet skill needs,
- Faster Time-to-Productivity: Employees already familiar with the company culture reach proficiency more quickly through targeted AI training,
- Improved Retention & Loyalty: Providing clear growth paths through AI upskilling increases employee engagement and lowers turnover,
- Competitive Advantage: Organizations that leverage AI for training can adapt faster to changing market demands.

Most employees expect their roles to shift due to AI in the next five years, but only 45 percent have received recent upskilling that training alone cannot bridge. Reframing upskilling and reskilling for AI as a change journey brings some new implications in companies, i.e., leaders must go first [5].

Other problems in this context are:

- Cultural Resistance: Shifting to a skills-based, continuous learning culture requires overcoming traditional hierarchical, rigid approaches to job descriptions,
- Data Quality & Privacy: Effective AI requires accurate data, necessitating robust privacy and ethical standards,
- Need for Continuous Training: Because AI tools evolve rapidly, training is not a one-time initiative but a permanent, ongoing process.

ADDRESSING THE THREAT OF AI-DRIVEN DISINFORMATION: STRATEGIES AND CHALLENGES

The increasing power and use of AI also offer opportunities for foreign information manipulation and interference, i.e., the instrumentalization of synthetic content through the presentation of AI-generated audiovisual objects, audio, images, text, videos, or a combination of them. Statements by malicious actors for political aims or economic purposes are a security threat [9]. These practices have been assessed as harmful and contradictory to European values, rights, and freedoms [10].

AI technological developments can enhance the spread of anti-EU or anti-Western propaganda, promoting and amplifying populist narratives, or providing a boost to digital authoritarianism. But they also offer new ways for detecting and combating information manipulation. The study of Aktar & al. [11] analyses and anticipates the evolving disinformation processes, particularly in the context of AI-assisted technologies, identifies training needs, defines a framework of specific competencies, and describes necessary competencies to effectively combat misinformation and disinformation, referring to new and developing technologies. It also recommends initiative-taking measures, including the development of early detection systems for modern technologies and the implementation of flexible, modular learning opportunities, to ensure that professionals and citizens can adapt to emerging threats. The experts found that the publics and policymakers' understanding of AI-driven disinformation is still very fragmentary. This study underlines the importance of improving digital skills of all populations, and a comprehensive, interdisciplinary approach to learning that incorporates both technical and critical thinking skills necessary to address this important challenge is the implementation of disinformation and training programs for adults. It is also important that people outside the formal education systems participate in such training. Additionally, acquiring an interdisciplinary understanding of dangers and creating a common basis for specialists from different fields, both in technology and the social sciences, is necessary.

A solution for the existing situation is to improve current digital communication competence frameworks, which guide the development of necessary competencies. AI technological advancements have to be handled and adapted to enhance their effectiveness and anticipation in combating disinformation and foreign interference in the information environment. This adaptation is a complex process that requires multiple layers of competencies [12], i.e., the ability to recognize disinformation, to critically analyse argumentation patterns and belief structures, and often also to have the necessary background knowledge about the content of manipulative claims, as recommended. One example in this context is the RICHDATA Framework [13].

Based on these findings, several policy recommendations are given in [14], the implementation of which policymakers and educators could help both citizens and professionals to mitigate the impact of misinformation:

- Expand and update the competency frameworks. Include new skills and knowledge areas that are important for combating misinformation through AI.
- Promote continuous training in these areas. Develop specific study plans per profile. Design curricula adapted to diverse groups (university students, professionals,

vulnerable people) to ensure content adaptability and the acquisition of advanced skills across the population.

- Promote interdisciplinary and systemic training approaches.
- Implement monitoring systems for early detection of new technological developments and their potential misuse to create and spread disinformation.

EARLY AI ADOPTION

Today, AI is at the center of business strategies, and organizations that adopt it early have advantages in terms of competitiveness, operational efficiency, and leadership excellence. So, early AI adoption is not only a technological advantage but also a strategic one for future businesses. Companies that are early adopters of AI can have big benefits. The internet is transformative for businesses; AI can be transformative as well. Companies addressing early AI adoption to drive growth, manage costs, and deliver greater value to customers will win.

Some advantages of early AI adoption:

- Forecasts are more precise; AI can analyze more than humans.
- Operational predictions are becoming more precise; patterns in supply, inventory, maintenance, energy usage, and customer behavior surface early.
- Cost structures become clearer, and inefficiencies invisible to traditional tools could be found.
- Risk management is easier; AI can detect anomalies long before they influence costs.
- AI adoption succeeds with clarity, intent, and the right starting point. Some businesses expand quickly, only to slow down due to unclear goals or disconnected efforts.

Successful AI adoption depends less on the technology used and more on strategy. In this context, AI use should be oriented to real business outcomes, corresponding to the right use cases, and empower teams early. AI becomes a growth catalyst and not an experiment.

Some steps in this context:

- Define clear goals,
- Start with specific business challenges you want to solve (e.g., “reduce customer churn” or “optimize inventory management”) rather than broadly implementing AI for its own sake,
- Invest in infrastructure and talent,
- Ensure that the company has the necessary IT infrastructure to support AI technologies and invest in training employees or hiring experts who can manage and leverage these new systems,
- Start small, then scale,
- Begin with pilot projects to demonstrate AI’s value. Lessons learned from successful initial implementations should also be used.

Hiring AI talent early is important, allowing companies to build a strong basis for future AI initiatives [15]. Early adopters of AI expertise are more likely to innovate and develop new solutions that differentiate them from competitors. This leads to new products, services, or business models that give a competitive advantage to corresponding companies.

One question is: what skills are necessary to be hired?

Examples of such key AI skills are machine learning, data science and analytics, natural language processing (NLP), AI ethics and fairness, big data, and cloud computing, corresponding to existing requirements [16].

Some explications are:

- Machine learning requires deep technical expertise, and there is a big existing skills gap. It is at the core of most AI systems in various industries, such as finance, healthcare, and e-commerce. If someone on the team knows machine learning it can help automate tasks, forecast outcomes, and add machine learning-powered features, i.e., image recognition capabilities to products.
- Data science and analytics skills are essential for gaining insights and shaping the models for AI decision-making. In 2023, the World Economic Forum 16 appreciated Data Analysts and Scientists' roles as growing fast until 2027. Data science and analytical skills help uncover trends, run simulations, create interactive dashboards, and profile customer segments based on behaviors.
- Natural language processing (NLP) is central to creating systems where humans can interact with AI. These skills can help to develop chatbots to respond to customer queries, create tools that can accurately transcribe spoken language into text, and build models that automatically analyze large legal documents for compliance.
- AI ethics is important to take into consideration aspects like bias, fairness, and transparency, especially in areas like healthcare, finance, and law. Hiring someone with AI ethics skills helps to identify biases in AI models, ensure fairness, avoid discrimination, advise on data collection, and provide AI ethics training.
- Big cloud and data computing skills are essential for handling and processing large datasets, which is key for training complex AI models and making AI accessible. Hiring a professional with big cloud and data computing skills means helping to design scalable cloud architectures, support batch processing and real-time data streams, and build and optimize data pipelines for machine learning workflows.

Some countries are investing in AI technology, hiring the skills required to master it, aiming to position themselves as future sources of skilled professionals in the field [17], [18].

CONCLUSIONS

Within skill development, particularly upskilling, integrating artificial intelligence (AI) is increasingly important so the workforce can meet evolving demands in the digital era. Skilling and upskilling make a big contribution to personalized learning, and the identification of skill gaps within organizations and industries should be done with the assistance of AI, facilitating a proactive approach to workforce development.

AI-powered learning platforms have significant importance in skilling and upskilling, as well as in vocational training and simulation. AI plays a role in creating immersive learning opportunities, but there are significant challenges and ethical considerations in this context.

Advanced forms of disinformation using AI and other technologies are prevalent; there is a big gap in the understanding of disinformation. In this context, the importance of increasing digital knowledge and skills for all populations and the development of corresponding measures should be increased.

To be innovative, companies need to prioritize hiring for key AI skills such as machine learning, data science and analytics, natural language processing (NLP), AI ethics and fairness, big data, and cloud computing.

REFERENCES

[1]. M. U. Tariq, *The Role of AI in Skilling, Upskilling, and Reskilling the Workforce*. https://www.researchgate.net/publication/381136210_The_Role_of_AI_in_Skilling_Upskilling_and_Reskilling_the_Workforce, 2024.

[2]. Hamburg, *Lifelong learning and continuous training as remote work requirements*. Proceedings, 46010 Valencia, Spain, 2025: p. 857-864.

[3]. W. Strielkowski, A. Samoilova, L. Smutka, L. Civan, S. Lieonov, *Dominant trends in intersectoral research on funding innovation in business companies: A bibliometric analysis approach*. Journal of Innovation & Knowledge, 7(4), 2022.

[4]. J. Eastwood, *How companies can use AI to find and close skills gaps*. https://mitsloan.mit.edu/ideas-made-to-matter/how-companies-can-use-ai-to-find-and-close-skills-gaps, 2024.

[5]. MyBlockchainExperts, *Top AI Learning Platforms to Boost Your Skills*. https://myblockchainexperts.org/2025/11/27/top-ai-learning-platforms-to-boost-your-skills, 2025.

[6]. McKinsey Company, *The state of AI: How organizations are rewiring to capture valu*e. Retrieved from https://www.mckinsey.de/capabilities/quantumblack/our-insights/the-state-of-ai-how-organizations-are-rewiring-to-capture-value, 2025.

[7]. J McAlister, *How to upskill your workforce with competency frameworks*. https://synergy-learning.com/blog/upskill-workforce-competency-frameworks, 2025.

[8]. Tan Moorthy, *Why AI Success Depends on a Skills-First Workforce Strategy*. Retrieved from https://www.hrmorning.com/articles/skilled-workforce-strategy-ai-success, 2026.

[9]. ENISA, *ENISA THREAT LANDSCAPE 2024*. https://www.enisa.europa.eu/publications/enisa-threat-landscape-2024.

[10]. European Parliament, *Breaches of EU values: how the EU can act*. https://www.europarl.europa.eu/topics/en/article/20180222STO98434/breaches-of-eu-values-how-the-eu-can-act-infographichic, 2018.

[11]. Akhtar, P., Ghouri, A. M., Khan, H. U. R., Haq, M. A. U., Awan, U., Zahoor, N., Khan, Z. et Ashraf, A. *Detecting fake news and disinformation using artificial intelligence and machine learning to avoid supply chain disruptions*. Annals of Operations Research, 327(2), p. 1–25, 2022.

[12]. Bontcheva, K. *Generative AI and Disinformation: Recent Advances, Challenges, and Opportunities*. https://edmo.eu/wp-content/uploads/2023/12/Generative-AI-and-Disinformation_-White-Paper-v8.pdf 2023.

[13]. Sedova, K., McNeill, C., Johnson, A., Joshi, A., & Wulkan, I. *AI and the future of disinformation campaigns: part 1 - the RICHDATA framework. CSET Policy Brief. Centre for Security and Emerging Technology.* https://cset.georgetown.edu/wp-content/uploads/CSET-AI-and-the-Future-of-Disinformation-Campaigns, 2021.

[14]. Arribas, C. M., Arcos, R., M. Gertrudix, *Rethinking education and training to counter AI-enhanced disinformation and information manipulations in Europe: a Delphi study*. Cogent Social Sciences, 11(1). Researchgate.net/publication/391669482_Rethinking_education_and_training_to_counter_AI-enhanced_disinformation_and_information_manipulations_in_Europe_a_Delphi_study, 2025.

[15]. GP products, *Your Guide to the Top AI Skills and Where to Find Them*. https://www.globalization-partners.com/blog/guide-hiring-ai-skills, 2026.World Economic Forum .

[16]. World Economic Forum, *The Future of Jobs Report 2023*. https://www3.weforum.org/docs/WEF_Future_of_Jobs_2023.pdf.

[17]. Globalization Partners, *Harnessing the Power of HR Technology — Argyle Webinar Recap*. Retrieved from https://www.globalization-partners.com/blog/harnessing-the-power-of-hr-technology-argyle-webinar-recap/ 2024.

[18]. Study International, *The best countries to study AI aside from the US and China*. https://studyinternational.com/news/best-countries-to-study-ai/, 2024.