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ARTIFICIAL INTELLIGENCE ADOPTION IN THE WORKPLACE AND ITS IMPACT ON THE UPSKILLING AND RESKILLING STRATEGIES

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Abstract

The technology innovation, especially in the case of artificial intelligence, has significantly transformed the work processes and how they are organised and performed. Even if the adoption of advanced technologies usually leads to a higher work performance, there are risks of negative disruptions in the working systems, such as non-ethical use and social negative effects. The paper presents the results of an ethnographic research conducted by the authors, with the objective to identify the impact of the artificial intelligence adoption in the workplace on the professional knowledge and skills requirements and on the upskilling and reskilling strategies. Three different domains were considered: information technology, education, and scientific research. One relevant conclusion of the research is that knowledge and skills requirements should be studied from multiple perspectives, such as profession dynamics, not only from the technology innovation perspective. The research originality mainly consists in the way in which the concept of the level of upskilling/reskilling importance is defined and applied, based on professional knowledge and skills development requirements. By using the assessed level of upskilling/reskilling importance, strategies and related actions may be defined and undertaken. By substantiating this manner of setting up

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the upskilling and reskilling strategies and actions, the research has a theoretical and practical impact in the domain of talent management.

Keywords: upskilling, reskilling, artificial intelligence, competence, ethnography, talent management

JEL Classification: I25, J21, I29, M53, O33

Introduction

The adoption of artificial intelligence (AI) in organisations reshapes the work processes, leading to significant changes in the requirements regarding the professional knowledge and skills. While AI adoption can lead to new opportunities and improved job satisfaction, it also raises challenges and risks. Adopting AI can facilitate automation and improvement of the recruitment strategies, but it can also engender fear and distrust among recruiters. It can also change how employees perceive their role regarding expectations relating to AI adoption. This may cause uncertainty for those who do not fully grasp information technology and those whose job consists of repetitive low-engagement tasks such as data entry.

Using AI systems and tools in the workplace can revolutionise the integration of natural and artificial learning (Laat et al., 2020). AI systems can be designed to provide real-time feedback and workplace learning analytics to support complex problem-solving (Laat et al., 2020). Integrating AI in the workplace can lead to a surge in a skilled workforce that can effectively use AI in an ever-complex environment (Ameen et al., 2022). Integrating AI in the workplace also has implications for skill acquisition and development. AI systems can automate individualised adjustments to work environments and facilitate healthier worker behaviours (Fukumura et al., 2021). This can lead to improvements in worker performance, health, and well-being. However, it is essential to recognise that using AI systems does not automatically lead to systematically improving employee skills. While AI systems can bring many benefits to the workplace, their use must be accompanied by efforts to upskill and reskill employees (Morandini et al., 2023).

To address the changes in the requirements regarding the professional knowledge and skills, the professionals have the alternatives of upskilling and reskilling. Upskilling means the expanding of existing skill set and reskilling represents the development of new skills, often closed to the existing ones, but not necessarily. The new developed skills may lead the professionals to embrace a completely different career path. Both upskilling and reskilling are achieved through the means of different education and training actions; what is different is only the result of these learning actions.

Although the professional development seems to be a well-defined endeavour, there is still a need to research how the requirements about the professional knowledge and skills evolved due to the AI adoption, in comparison with other factors also affecting the competence requirements, such as the knowledge dynamics and other labour market specificities and, based on that, how to assess the importance of upskilling/reskilling, in terms of priority and urgency. To define a proper upskilling/reskilling strategy, it is not sufficient to identify the needs for professional knowledge and skills development, but also to assess the importance of these needs, in terms of their priority and urgency. A better understanding of the connection between the upskilling/reskilling importance and different categories of actions

for knowledge and skills development is still needed. To fill this research gap, the authors decided to conduct the ethnographic research that is presented in the paper.

The paper is contributing to the existing theory of talent management by defining the concept of level of upskilling and reskilling importance, in relation to different requirements for professional knowledge and skills development. Many references to can be found in the literature about the importance of upskilling and reskilling (Xu, 2011; Kim, 2017; Sawant et al., 2022; Li, 2022)., but most of the time, the adopted approaches are very generic and difficult to be operationalised and applied in the context of talent management activities. The paper defines four levels of upskilling/reskilling importance, by combining the requirements related to AI adoption with those independent to AI adoption. This is an original way of substantiating the concept of level of upskilling/reskilling importance.

After the introduction section, the paper presents the main relevant concepts and topics identified in the reviewed literature. The main sections of the literature review are AI adoption and employment prospects, professional development/reskilling, and educational and training actions. The paper presents and justifies the methodological approach of the research, mentioning the characteristics and requirements of ethnographic research and the main stages and methods of a research of this type. The research findings are then presented and discussed. The research started by identifying the work processes that have undergone transformations through the adoption of AI. According to the participants' statements, the benefits obtained by using AI systems and tools vary depending on the field of work, but most of the respondents referred to time savings and improved work quality. The pressure of professional development requirements is clearly perceived by specialists, as it is directly related to professional performance. A method based on requirement relevance classes was defined in the research. Based on the relevance classes of requirements, the level of importance of professional development and the strategy of professional development are established, with the recommendation of educational actions. Three levels of importance of upskilling/retraining were defined based on respondents' reflections: low importance, medium importance, and high importance. This working method represents an original contribution of the authors. Based on the research findings, conclusion and future research directions are included. The reference section and Acknowledgements represent the final parts of the paper.

1. Literature review

The use of AI systems and tools may potentially enhance the workplace productivity and efficiency across various domains, including IT, research, and education (Fukumura et al., 2021). AI may add value to managers' work by supporting decision-making through extensive data analysis and search and discovery activities (Yu et al., 2022). Additionally, integrating AI in the workplace can drive future research and understanding of collaboration with AI, particularly regarding employees' identity and relevant factors when introducing AI (Mirbabaie et al., 2021). In research, AI systems have the potential to revolutionise the integration of human and artificial learning, particularly in complex problem-solving scenarios. Technological solutions and workplace learning analytics systems have been designed to aid decision-making processes, and recent developments in AI can further enhance this integration (Laat et al., 2020). In education, AI has the potential to significantly impact the higher education. AI can improve teaching effectiveness by automatically scoring

tasks such as English writing and supporting innovative approaches to teaching professional courses (Slimi, 2021; Su et al., 2022). Integrating AI in education requires adopting modern teaching methods and technologies, and it can significantly impact student subjectification and pedagogical practices (Loftus and Madden, 2020; Ahmad et al., 2021). AI-assisted writing has also been identified as a potential area for enhancing productivity and efficiency in the workplace. The benefits include increased efficiency and better idea generation in writing tasks, and students are encouraged to develop AI literacy to succeed in the workplace (Cardon et al., 2023). In the IT sector, AI systems have been applied in various domains, including retail, where intelligent automation of process change can improve operational efficiency and productivity (Manasa and Jayanthila-Devi, 2022). The use of AI in the workplace also raises ethical challenges, particularly regarding worker surveillance and productivity-scoring tools. Implementing AI systems can extend and systematise ethical failings and fundamentally change the relationship between workers and their managers (Hickok and Maslej, 2023). Additionally, the use of AI in the gig economy has implications for worker rights and the potential for bias and discrimination (Tan et al., 2021).

1.1. AI adoption and job prospects

Jetha (2023) discusses the work changes in the context of AI and proposes a research agenda to examine how AI affects the relationship between socioeconomic, political, and working conditions and worker health and employment outcomes. Braganza et al. (2021) focus on the impact of AI adoption on psychological contracts, job engagement, and employee trust. The study suggests that AI adoption can lead to new opportunities for productive employment and decent work. It highlights how new online platforms can help employees and organisations find more opportunities in the global marketplace. Naudé (2020) discusses the potential impacts of AI adoption, highlighting that the effects are unlikely to be utopian or apocalyptic soon. The study cautions against underestimating the long-term impacts of AI and highlights the need to consider the potential consequences of AI adoption. Regona et al. (2022) focus on the construction industry and explores AI's opportunities and adoption challenges. Jain et al. (2021) focus on AI's employability implications in the healthcare ecosystem. Ore and Sposato (2021) explore the opportunities and risks of AI adoption in recruitment and selection processes. The study highlights how AI can facilitate the adequate performance of routine tasks through automation. Tursunbayeva and Renkema (2022) investigate the impact of AI applications in the healthcare sector on the job design of healthcare professionals. Jetha (2023) highlights the implications of AI adoption for employment opportunities, work environments, and worker health, safety, well-being, and equity. Jaiswal et al. (2021) discuss the upskilling of employees for AI adoption in multinational corporations. In the study conducted by (Nguyen and Malik, 2021), the attitudes and readiness towards AI adoption and usage across different levels and geographies of organisations were discussed.

1.2. Upskilling and reskilling

One of the challenges is organisational readiness. Alami et al. (2020) emphasise the importance of studying organisational readiness to integrate AI into healthcare delivery. They argue that organisational readiness should be carefully considered to ensure the successful implementation of AI systems in healthcare organisations. Another challenge is the impact

of AI on job attitudes and career behaviours. Presbitero and Teng-Calleja (2022) discuss how incorporating AI in the workplace can lead to new types of jobs requiring new competencies. Wilkens (2020) points out that while AI has the potential to support these processes, it can also have unintended effects. AI systems may reinforce specific learning patterns, which can be both beneficial and detrimental to individuals and organisations. AI can also support lifelong learning and education. Poquet and Laat (2021) discuss the role of AI in lifelong learning and highlight the opportunities for technology-mediated education. They argue that AI can facilitate personalised learning experiences and provide learners access to various resources and learning materials.

AI and machine learning technologies can enhance and replace specific job roles, leading to changes in the demand for specific skills (Muhammad et al., 2023). The impact of AI on skill development and learning is not limited to specific industries or sectors. The use of AI in the workplace is on the rise across various domains, and it is essential to understand the consequences of AI adoption and application (Yu et al., 2022). The use of AI in the workplace requires organisations to understand its capabilities and shortcomings and address the predicted impact on skills, roles, and employee morale (Treacy, 2022).

Integrating AI systems in the workplace significantly impacts skill development and learning. AI technologies have the potential to revolutionise the integration of human and artificial learning, leading to a surge in a skilled workforce that can effectively use AI in complex environments. However, using AI systems does not automatically lead to a systematic improvement in employees' skills, and efforts to upskill and reskill employees are necessary. The impact of AI on workforce skills and economic mobility has been studied in various contexts, including developing countries and medical education.

1.3. Education & training actions

One important factor in organisational AI readiness is adopting AI technologies. Adoption refers to the organisation's decision to use an innovation, such as AI, in its operations (Jöhnk et al., 2020). To effectively adopt AI, organisations must consider various factors, including the readiness of their employees and the organisational structure. A centralised organisational structure has been found to support the effective adoption of AI principles (Kelley, 2022). However, the design and implementation of AI in education require a learning sciences-driven approach to ensure the effective use of AI algorithms (Luckin and Cukurova, 2019). Adopting AI in human resource management (HRM) also impacts employee training and support. AI adoption in HRM can enhance HR system effectiveness, but it requires careful consideration of the impact on HR systems (Agarwal, 2022). Factors influencing the adoption of AI in organisations have been studied using diffusion of innovation and technology-organisation-environment theories (Kurup and Gupta, 2022). AI adoption can potentially improve efficiency and effectiveness. AI-based hiring practices can contribute to the underdeveloped, yet emerging paradigm of AI-based hiring in practice and research (Bhatt, 2022). Organisations must establish AI governance frameworks to ensure AI's ethical and responsible use. AI governance at the organisational level should be defined and integrated into existing governance areas, such as corporate governance, information technology governance, and data governance (Mäntymäki et al., 2022). This ensures that AI adoption is aligned with organisational values and principles.

Although the professional development seems to be well known, there are still a need to research how the requirements about the professional competences evolved due to the AI adoption, in comparison with other factors affecting the competence requirements, such as knowledge dynamics and other labour market specificities and, based on that, how the importance of upskilling/reskilling might be assessed. It is not sufficient only to identify the need for upskilling/reskilling but, for an adequate strategy in career development it is relevant to assess the importance and urgency of this need. Also, there is still needed a better understanding of the connection between the upskilling/reskilling importance and different categories of competence development actions. To fill this research gap, the authors defined the following two research questions:

RQ1: How are the requirements regarding the professional knowledge and skills changing due to the AI adoption in the workplace?

RQ2: How is the level of upskilling/reskilling importance assessed and applied for defining the upskilling/reskilling strategies and related educational actions due to the AI adoption at workplace?

To properly address these research questions, the authors defined the research model presented in Figure no. 1, which highlight the main factors under consideration. The research was conducted at the level of working places, by the means of ethnography.

Considering that the topic under investigation is the impact of AI on the competence requirements, we consider that the most adequate level for the research is the working place, because only at this level it is possible to better understand the impact of AI adoption in a large variety of contexts and for many professional competence categories.

Ethnography was chosen as the research approach, due to the possibility to collect a large variety of data on the experiences, thoughts, and feelings from the professionals who are using the AI technologies in their professional activities and were impacted by the AI adoption. The experiences as reflected by the participants in this research are a valuable information source that may reveals many relevant aspects of the topic.

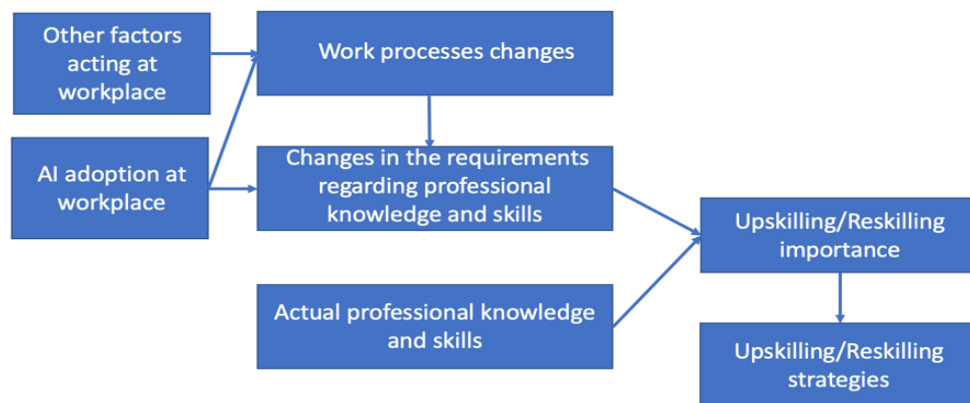


Figure no. 1. The research model

Ethnography has been applied for the study of the AI emergence, especially for the study of AI social implications. Hagerty and Rubinov (2019) conducted a literature review on the

social impact of AI and connected technologies. They concluded that it is very likely AI to socially impact differently the specific regions, and to lead to the increase of social inequality, especially for the marginalised population. The AI negative social impact is more likely in the countries with low income than in the countries with middle and high income. Marda and Narayan (2021) advocate the importance of ethnography to understand the impact of AI at society level, due to the focus on the societal actors and institutions that gain more influence by using the AI technologies.

2. Research methodology

Any profession has its own dynamic, in terms of associated knowledge and professional practices. The profession dynamics requires professional to develop their working skills and abilities. Technological innovation is an important factor of transforming the profession. It is widely accepted that when disruptive technologies, such as AI technologies are adopted, the requirements regarding professional knowledge and skills may become even more relevant and urgent.

The ethnographic investigation a qualitative research method that allows the study of behaviours and events, within a day-by-days context/setting, based on data collected from multiple sources (Bardi, 2021). The researchers must immerse in the research context for a significant period. This prolonged involvement in the investigated context allows researchers to conduct observations and to gain a deep understanding of behaviours and events, even in the absence of knowledge included in the existing theory.

The research activities carried out are presented in figure no. 2 (Xu, 2011; Yu et al., 2022).

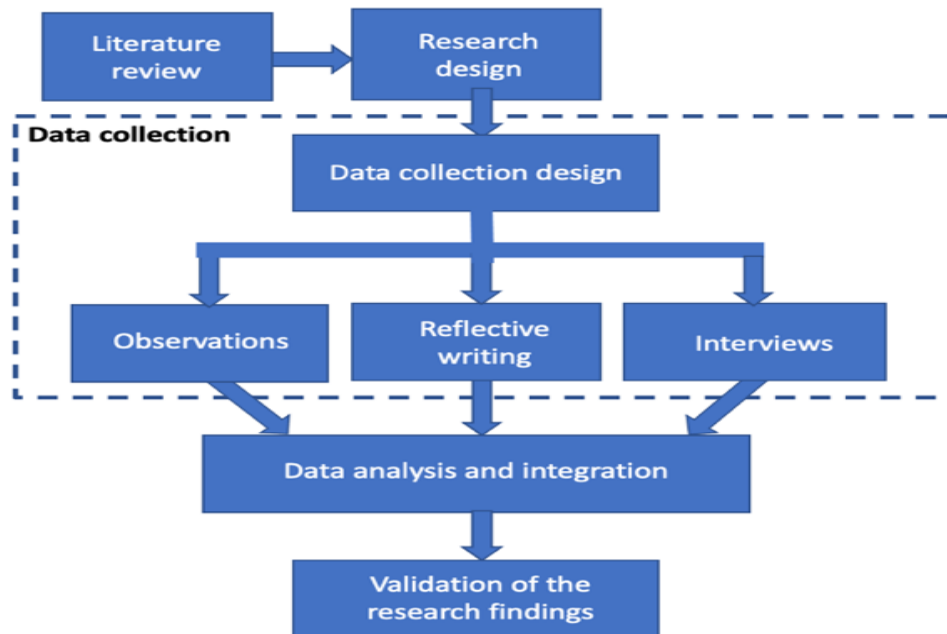


Figure no. 2. The research activities

Attempting to establish the impact of AI adoption on competence requirements, the research collected data based on the observations performed by the authors during February-June 2023, the reflective reports filled by 12 responders selected from the participants group during August 2023 and interviews conducted in early September 2023, mostly for clarifying some of the reflective reports. The validation of the research findings was also performed in early September 2023.

Observations were made of the activities carried out by 45 specialists who use AI systems and tools in the following three fields: education, scientific research and information technology (IT), including the authors of this paper and 41 specialists with whom the authors have coordination responsibilities, or they are their colleagues. Of the 45 participants, 30 are from Romania, 5 are from Ireland and 10 are from Slovenia.

From the participants group, 12 professionals were selected mainly based on their availability to contribute to the research, but also to have a balance between different work domains and work experience. The selected professionals received a reflection guide, and they were asked to reflect on their experience in using AI systems and tools at the working places. The respondent profiles are shown in Table no. 1.

Table no. 1. The respondents' profile

ID	Job title	Domain	Career stage*	AI systems/tools used at work	No. of years using AI systems/tools
R1	IT system analyst	IT	LC	Chat-GPT plus	1
R2	IT technical leader	IT	LC	Python, Chat-GPT plus	1
R3	IT consultant	IT	LC	Python, Chat-GPT plus, Google Bard	1
R4	Data scientist	IT	MC	Python, SQL, Neo4j, Airflow, Kubernetes, Docker	4
R5	Researcher	Research	LC	Oracle products for BI Suite	10
R6	Researcher	Research	EC	Chat-GPT, Google Bard	1
R7	Researcher	Research	MC	Power BI	2
R8	Researcher	Research	LC	Biopython, InterMine, R Suite	6
R9	Professor	Education	MC	ChatGPT, SnatchBot (Chatbot)	4
R10	Professor	Education	MC	SnatchBot (Chatbot) Flow XO, IBM Watson(x) Assistant/Services, WEKA (datamining), ZEUS (intelligent software agents)	11
R11	Professor	Education	MC	Custom-based software to build students' team for projects, Turnitin with AI functions	2

ID	Job title	Domain	Career stage*	AI systems/tools used at work	No. of years using AI systems/tools
R12	Career counsellor	Education	MC	CAS++ (psychological assessment platform), CareProfSys (recommender system using AI and virtual reality)	2

Note: *Career stage: EC–Early Career, MC–Mid Career, LC–Late Career

The main data collection instrument was the reflection guide, applied to capture reflections (personal experience, thoughts, and feelings). The structured of the reflection guide include one section with questions about the professional profile and the following sections, one for each reflection topic:

- Changes in the work processes (job content);
- Requirements for reshaping the professional competences' profile;
- Strategies for reshaping the professional competences' profile;
- Incentives and rewards offered by the organisation;
- Perceived outcomes;
- Further expectations about AI adoption at the working place.

The interview protocol follows the structure of the reflection guide, considering that the interviews were performed only for getting a better understand of the reflective reports. The structure of the observation diary was a standard one, including a section for the field notes and one section for questions and answers. The collected data collections were the following: twelve reflective reports, four interview transcripts, and five observation diaries.

In the case of reflective reports and interview transcripts, data analysis was performed using the coding technique. Table no. 2 presents an example for the transition from codes to categories and themes. The observation diaries were inductively and deductively analysed. First, the content was annotated using codes, that were later grouped to set up larger sematic units. The semantic units were compared and integrated with themes identified from reflective reports and interview transcripts.

Table no. 2. Sample of the results obtained from coding

Codes	Category	Theme
<ul style="list-style-type: none"> - Adoption (AI systems/tools) - Change (work processes) - Revise (procedures) - Extend (knowledge) - Improve (communication) - Improve (critical thinking) 	<ul style="list-style-type: none"> Knowledge and skills requirements criticality, before AI adoption Knowledge and skills requirements criticality, after AI adoption 	Upskilling/reskilling importance

To validate the data analysis results, they were sent to three respondents. Based on the received feedback, another data analysis cycle was performed.

3. Research findings and discussion

This section is organised by themes, as they were identified during the data coding. For each theme, the associated categories guided the interpretation and discussion of the research findings. The themes include the answers to the two research questions.

3.1. Work processes transformation

Tables no. 3 and no. 4 present the respondents' testimonials about the changes in their workplace.

Table no. 3. The impact of AI adoption on the work processes in the IT domain

Domain/ role	Work processes affected by the adoption of AI systems/tools (with quotes included)
IT/system analyst	<ul style="list-style-type: none"> • Translating business requirements into technical requirements • Summarisation of large text that need to be digested (for example, agreements, contracts) • Analysing project reports, for discovering patterns • Communication. „<i>English is not my first language. I use Chat-GPT-4 to reframe my writing and adapt it to a specific audience</i>”. (R1) • Producing professional presentations, including text and diagrams/images.
IT/technical leader	<ul style="list-style-type: none"> • Organising testing and acceptance testing internally within the IT team and business unit • Generating testing scenarios and adapting to testing systems. • Writing and debugging complex SQL queries to create reports from a database. “<i>Chat-GPT-4 is not perfect in this regard, so it is not always a time-saving method, but it is helpful most of the time</i>”. (R2)
IT/consultant and data science	<ul style="list-style-type: none"> • Managing external development partners (R3) • Summarisation of large text that need to be digested (R3) • Improving the analytical machine learning (ML) models that allow stakeholders to make better decisions (R4) • “<i>Due to the increasing complexity of a ML project, the focus is on best software development practices and in keeping up to date the new releases</i>”. (R4)

Table no. 4. The impact of AI adoption on the work processes in the scientific research and education domains

Domain/ role	Work processes affected by the adoption of AI systems/tools (with quotes included)
Scientific research/ PhD student	<ul style="list-style-type: none"> • Identification of research topics/sub-topics and associated references • Summarisation of text, for structuring the literature review • Producing professional presentations, including not only text but also diagrams/images
Scientific research/ Experienced researcher (MC or LC)	<ul style="list-style-type: none"> • Improving the analytical machine learning (ML) models (R8) • Analysing large data sets, for discovering patterns (R5, R8) • Producing professional presentations, including text and diagrams/images (R7)
Education/ teaching	<ul style="list-style-type: none"> • Assessment of students (based on the annual exams, tests during the semester, bachelor's, or master's theses). “<i>I periodically change the student evaluation methods to avoid situations in which the result of the exam/verification test, of</i>

Domain/ role	Work processes affected by the adoption of AI systems/tools (with quotes included)
	<p><i>the bachelor's thesis or master's degree may not truly reflect the student's competences". (R9)</i></p> <ul style="list-style-type: none"> • <i>"I introduced chatbots use, during tests or exams, to ask students some questions based on predefined scenarios. I update periodically these scenarios to create the student's impression that the set of questions he is answering is unique". (R9)</i> • <i>"I am teaching AI discipline for almost 15 years, and I constantly updated the content of my lectures, considering that a lot of AI tools and platforms have appeared. To teach this discipline, I performed a constant documentation regarding the latest news in the AI field as well as the identification of tools that could be used for the lab activities". (R10)</i> • <i>"In order to use a new AI system/tool for educational purpose, I have to check if the platform provider requests fee for certain facilities at any time. Also, I must develop training data sets". (R10)</i> • <i>"I am teaching Systems Engineering discipline. The course is a complex one, in which students are learnt how to develop and manage interdisciplinary and challenging projects, such as Apollo aircraft. At the practical part, they must work in teams and to develop a report and a prototype of a complex project. For a better composition of teams, I decided to use a specialised AI tool". (R11)</i> • <i>"I started using Turnitin to check if the students' reports were generated with AI tools, such as ChatGPT. I had to use this plagiarism checker, as the students extensively exploited ChatGPT for any academic task". (R11)</i>
Education/ Services on Career Counselling and Guidance	<ul style="list-style-type: none"> • <i>"I ask students who come to CCOC (Career Counselling and Guidance Centre of our university) to use CAS++ platform, which gives them an individualised feedback report based on Jackson Vocational Interest Survey and MLQ – Multifactor Leadership Questionnaire. Further on, we will discuss this report face-to-face. The students are more interested in discovering their potential using modern tools and more open to further discussions". (R12)</i> • <i>"A tool was developed by our fellow colleagues from IT departments, which offers virtual reality games containing specific activities for the recommended profession: CareProfSys automatically assesses the user profile and recommends suitable professions, then allows the user to test activities which he/she may do in that profession. I noticed that the automated feedback given by these advanced platforms are accurate enough". (R12)</i>

In addition to the identification of the transformed work processes, the participants made an estimation of the percentage of the total work time that is spent on transformed processes and the impact on the work productivity.

"Around 20% of the working time is related to the performance of transformed processes. And I can say that using AI tools, I save around one-two hours per day on average, depending on the type of work." (R1)

The benefits achieved by using AI systems and tools varies according to the domain of work, but most of the responders have referred to saving time and improving the quality of their work.

3.2. Organisational formal policy regarding the AI systems and tools use

Some of the responders declared that there is no formal policy regarding the AI tools usage. But, in relation to the AI systems, there are always clear responsibilities and rules.

“In my company, there is not a formal policy on the AI tools usage, and, for this reason, nobody knows how many people are using such tools and in what capacity. I have informed my colleagues and my manager from the IT department that I am using Chat-GTP, with different add-ons. The reaction was mixed; some were interested and wanted to know more, but others found it interesting, but weren’t keen on using it without a formal announcement from the management. My manager was OK with that.” (R2)

3.3. Upskilling/Reskilling importance

Usually, the professionals perceive the difference between the regular upskilling/reskilling and that related to technological innovation.

“In IT, the work methods and tools are changing all the time, so I constantly must learn. It is OK, because I perceive this as an opportunity for personal and professional development.” (R3)

The AI adoption may have a different impact on the knowledge and skills development.

“For using an AI tool, I must learn how this tool is working, which are the benefits but also the risks of using it.” (R3)

“The AI systems and tools usage represents the core of my professional responsibilities. For improving my work performance, I must constantly learn new AI analytical methods and procedures.” (R4)

The requirements’ criticality for upskilling/reskilling is clear perceived by the professionals because it relates to work performance.

“Some of the new AI methods that I adopt in my daily work impose to revisit my mathematical or statistical background, which is not easy to be done. But I perceive it as being a critical requirement, so I dedicate the time that is needed for do that.” (R8)

But technological innovation is not the only factor that determines the emergence of new requirements for upskilling/reskilling. Suppose that a new method of quantitative analysis of project risks has been introduced in project management, the application of which requires advanced knowledge of statistics. The requirement to expand the knowledge of the project manager is justified by ensuring better results in estimating the probability of occurrence of risks. The more risks associated with the project, the greater the relevance of the knowledge expansion requirement might be, as it has a greater impact on the professional performance of the project manager. We also assume that the project manager also wants to use an AI tool to ensure better risk identification in projects. Therefore, the project manager must learn to use that tool and improve his communication with the relevant parties to build confidence that he is using AI ethically. These latter requirements are synchronised with the acquisition of new statistical knowledge, so they must be considered together as a set of professional development requirements. But they are not as critical as the first requirement. In this case,

the question is how to determine the relevance of the whole set of requirements and how to decide the professional development strategy?

The separate identification of professional development requirements in relation to the factors involved, allows comparisons to be made between the impact of different factors, so that different decisions to make organisational changes can be better substantiated, from the perspective of the professional development requirements of employees. Most of the respondents involved in the research stated that the professional development requirements associated with the adoption of AI in the workplace are greater than the requirements independent of the adoption of AI.

To combine upskilling/reskilling requirements, a method based on the requirements' relevance classes was defined (Figure no. 3). The method involves the use of four classes of requirements, defined based on the scale "low relevance, medium relevance and high relevance" for each of the two types of requirements (those resulting from the adoption of AI and those independent of AI). Requirements with the same level of relevance are included in each class. Let us assume that the requirement to expand statistical knowledge belongs to class 3, while the accumulation of knowledge to use the AI tool belongs to class 2, and the requirement to improve communication with stakeholders regarding the ethical use of AI belongs to class 3.

Starting from the relevance classes of the requirements, the level of upskilling/reskilling importance is established, according to figure no. 3. For the given example, the level of importance is "medium importance". Based on the level of importance, the professional development strategy may be established, and educational actions may be recommended.

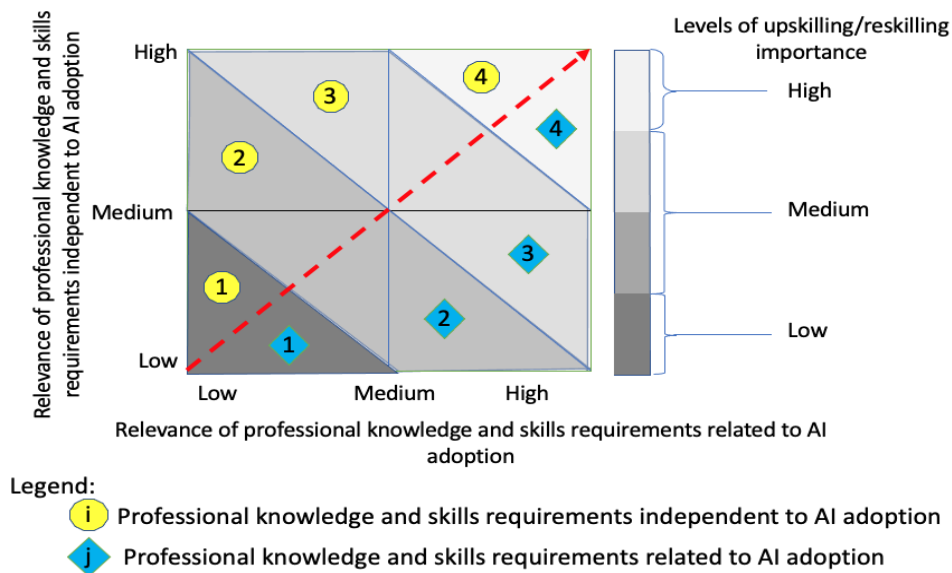


Figure no. 3. The classes of professional development requirements and the levels of upskilling/retraining importance

Based on the respondents' reflections, three levels of upskilling/retraining importance were defined: low importance, medium importance, and high importance. This method represents an original contribution of the authors, although it bears some similarity to the work of Jaiswal et al. (2021), but they defined the importance of upskilling/reskilling as a combination of future and current competence requirements, there being no levels of importance, but a continuum of values of the upskilling/reskilling importance.

According to the respondents' testimonials, the low importance level of upskilling/reskilling includes most of the hard skills, the medium importance level includes most of the transversal skills, and the high importance level includes skills, such as: critical thinking, especially for discriminating between ethical and non-ethical professional behaviour, building trust in teams, effective communication, agility, and resilience.

3.4. Upskilling/Reskilling strategies

The upskilling/reskilling strategies are different in relation to the importance given to improvement/retraining, but also to the practices in a certain field. For example, in the field of IT most improvement efforts are based on courses and trainings paid for by the organisation.

"The company where I work now actively supports my professional development and offers me access to various courses (for example on Udemy) that can help me improve my skills and knowledge and pays the fees for AI/ML conferences." (R4)

In the research and education domains, the preference is for conferences, discussions with peers, in formal or informal context. The expected support coming from organisation is related to the attendance publication fees. Only for high importance level of upskilling, the professionals attend courses and trainings.

"I prefer free opportunities to reshape my competence profile. My preferred strategy is to participate at workshops, conferences, and ad-hoc discussions with my colleagues. Also, I am reading scientific literature and software documentations. Regarding the university support, I expect to pay the conference fees and the publication fees, for disseminating my professional results." (R11)

"I read many scientific papers. I have extended meetings with my colleagues, for exchanging ideas. I also participate in international conferences and projects meetings. I expect my company to pay the access fee to the scientific database, to pay for data that I use for testing the analytical models, and to pay for conference fee and to cover the attendance costs at project meetings when they are taking place outside my city/country." (R8)

No respondents declared that their organisations are running mentorship and consultancy programs.

According to the statements of the research participants, in the case of a high level of importance of upskilling/reskilling, long-term professional development strategies with high associated costs are preferred, while in the case of a low importance of upskilling/reskilling, the strategy of discussions and peer feedback is preferred, and the self-learning improvement strategy.

Conclusions

The research was conducted by the authors to gain a deeper understanding of the implications of adopting AI systems and tools in the workplace. Using an ethnographic approach allowed the phenomenon to be investigated within those workplaces where AI systems and tools have already been adopted. The research was based on the collection of a significant volume of data with the help of observations and interviews organised by the authors, as well as with the help of reflective reports written by 12 people selected from among the 46 research participants.

First, the ethnographic investigation allowed to identify an important number of work processes that were affected by the adoption of AI, in three important fields, namely: IT, scientific research and the educational field. Secondly, it was possible to characterise the level of involvement of organisations in the adoption of AI. If in the case of AI systems, they are implemented in most cases through decisions of the organisation, regarding the use of AI tools, in many cases the decision belongs directly to specialists, who may or may not inform colleagues and/or managers.

The research enabled a clear differentiation between the knowledge and work skills requirements due to the adoption of AI versus those due to other factors. This is relevant when defining professional development and retraining strategies. Also, to substantiate this type of strategies, the authors identified the need to introduce the concept of the level of the importance of professional knowledge and skills development. This concept is different from that proposed by Jaiswal et al. (2021), who defined the importance of upskilling/retraining as a combination of future and current competence requirements, without considering levels/steps of importance, but only a continuum of importance, which makes that concept more difficult to operationalise. For this reason, the research is original and has a theoretical and practical relevance in the talent management domain. And finally, based on the data collected in the research, the authors analysed the conditions under which the various strategies for professional development and retraining can be adopted.

Regarding the research limitations, the first one is related to the targeted fields, respectively: IT, education, and scientific research. As is known, AI has been adopted in many fields of activity, which justifies the extension of research to other fields as well. Secondly, the research did not aim at an analysis of country differences, even though the research participants come from three different countries, namely: Romania, Ireland, and Slovenia. And finally, the research only covers the situation in 2023.

As future research, the authors consider the use of this methodological approach for other fields of activity where AI systems and tools have begun to be used on a large scale, such as journalism and the field of artistic creation. Also, the authors consider conducting longitudinal research, for a duration of 5-7 years, to see to what extent the accelerated trend of adopting AI systems and tools will be maintained in the future.

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