The Necessary Skillset Based on the Use of Artificial Intelligence in Czech Top Organisations

DOI: 10.12776/qip.v28i2.2030

Zdenek Kronberger, Lucie Depoo, Gabriela Rihova

Received: 2024-06-17 Accepted: 2024-06-21 Published: 2024-07-31

ABSTRACT

Purpose: The rapid advancement of artificial intelligence (AI), is transforming the required skills in the workforce. This article presents research findings from large organisations that have adopted AI.

Methodology/Approach: The aim is to identify the skills driven by the utilization of AI. The paper pinpoints the key skills for effective AI implementation, and creates a model that delineates the specific groups related to AI utilization. The data were obtained from the Top 100 organisations in Czechia, focusing on those actively leveraging AI.

Findings: The outputs show orientation of use of AI skills in marketing and human resources and basic administrative tasks. Significant gap was found in relation with emotional and interpersonal skills as not yet emhasised in studied organisations.

Research Limitation/Implication: This paper formulates future-oriented, successful approaches to skill development with the wider use of AI. The limitation is first approach to technologically oriented Czech top orgnaisations and limited sample due to a specific approach and early phase of AI use in operations.

Originality/Value of paper: The results yielded a new framework of AI-required skills, reflecting the changing competency requirements for effective AI utilization. This research contributes to the academic domain by providing an integrated and fundamental framework for competency development that incorporates technological advancements.

Category: Research paper

Keywords: artificial intelligence; employee; development; human resources; management.

Research Areas: Management of Technology and Innovation; Quality by Innovation.

1 INTRODUCTION

Artificial intelligence (AI) will have a major impact on the nature of work over the next decade. Technology has a huge impact on the world economy, business and society making it to be one of the most unprecedented developments in history. As stated by Einola and Khoreva (2023) scholarly authors have posited that AI encompasses the ability of machines to execute cognitive functions that have conventionally been linked to human cognition, including but not limited to learning, interaction, and problem solving. Haenlein and Kaplan (2019, p. 1) define AI as "a system's ability to interpret external data correctly, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation". AI can be thought of as a complex set of algorithms that allow for the collection and analysis of data in a sophisticated way, which can then be used to make predictions and evaluations. This machine is able to interact with its environment and may even be more intelligent than a human (Einola and Khoreva, 2023). All in all, these definitions suggest (rather expansively) that AI is adaptive, self-determining, like (or better than) human, takes over tasks, learns, accomplishes specific objectives, makes predictions and evaluations, interacts with the environment. AI is a new type of technology used in management research that can interact with the environment by collecting data from outside sources, like natural language or other computer systems. It can then interpret this information, recognize patterns, create rules, or predict events. It can also generate results, answer questions, or give instructions to other systems. Finally, it can measure the results of its actions and make changes to its decision systems to help it reach its goals (Glikson and Woolley, 2020).

Because AI has the potential to dramatically change the overall workforce structure as well as the way organisations and jobs are established, decisions are made, and knowledge is managed, this revolution and its implications highlight new theoretical and empirical questions that organisational researchers must address, which was mentioned by Glikson and Woolley (2020). The precise nature of these modifications has yet to be defined; this offers potential for an open, interdisciplinary discourse that should study human-AI interaction and further enhance the development of AI.

Across the output of various authors, there is a wide-ranging discussion about the impact of artificial intelligence and human skills on the future of work roles, positions and the general co-existence between AI and humans, with the authors agreeing that as part of the transformation in the nature and content of work, there will be changes also to fields of necessary skills (Gekara & Thanh Nguyen, 2018; Jaiswal et al., 2022; Martinaitis et al., 2021; Spöttl & Windelband, 2021; Tsiligiris and Bowyer, 2021).

Therefore, the aim is to identify change in competence models based on the use of AI. The aim of this paper is to identify key competencies and create a model describing use of specific groups of competencies related to use of AI in qualified

and non-qualified jobs to form future-oriented successful approaches to competency development.

2 THEORETICAL BACKGROUND

The authors Long and Magerko (2020) summarize the 16 essential competencies needed for artificial intelligence literacy. Before presenting specific competencies, the authors defined the term AI literacy as follows: "AI literacy as a set of competencies that enables individuals to critically evaluate AI technologies; communicate and collaborate effectively with AI; and use AI as a tool online, at home, and in the workplace" (Long and Magerko, 2020, p. 2). Among the important competencies mentioned by the authors are Recognizing AI, Understanding Intelligence, Interdisciplinary, General vs. Narrow, Decision-Making, ML Steps, Human Role in AI, Data Literacy, Learning from Data, Critically Interpreting Data, Action and Reaction.

Authors highlight the importance of adapting education and training to meet future job demands, focusing on developing AI literacy and related technical skills. The discussion includes strategies for bridging these skills gaps to ensure that the workforce is prepared for the changes AI will bring to various industries. This article details the importance of specific AI-related skills in the future workforce, including data analysis, strategic and critical thinking, interpersonal skills. It emphasizes the need for training to adapt to these emerging demands, ensuring individuals and teams are equipped with the necessary knowledge and competencies to thrive in an AI-driven market. The focus is on cultivating a techsavvy workforce capable of navigating the challenges and opportunities presented by AI technologies in various sectors.

Soft skills are of utmost importance to humans. The workforce of the future will need to lock up intelligence for more complex tasks, such as intuitive intelligence (complex, chaotic, situation-specific tasks) and empathic intelligence (tasks that require a high degree of emotion and empathy). AI experts are continually inventing and training machine learning algorithms to replicate human talents, but also to create higher-level skills such as communication, connection building, solving problems, reasoning, empathy, and meaning creation (Huang and Rust, 2018; Jaiswal et al., 2022). This is very difficult for AI to imitate. Thus, workers will need to deconstruct their current skill sets and create new ones in order to compete and stay employable. As it follows from the research described above in today's businesses, artificial intelligence (AI) is not seen as a threat to human workers; rather, the complementary relationship between people and AI is emphasized. Technology supplements and expands the capacities of humans, hence contributing to the expansion of businesses (Huang and Rust, 2018).

2.1 The Use of AI in Business

Artificial Intelligence (AI) has become a transformative force across various business activities, revolutionizing how organisations operate, innovate, and compete (Delina, Macik, 2023). In recent years, AI applications have permeated diverse sectors including Human Resources (HR), education, finance, marketing (including sales), customer service, retail, logistics, purchasing and supply, manufacturing, research and development (R&D), administration, and the legal area. AI offers new opportunities for efficiency, personalization, and strategic decision-making.

AI is streamlining administrative tasks by automating scheduling, document management, and communication processes. AI-powered virtual assistants manage calendars, schedule meetings, and handle routine inquiries, increasing productivity and reducing administrative burdens. Document management systems using AI organize and retrieve documents efficiently, improving information accessibility and compliance (The Future of AI in Workplace Automation and Administration, 2024).

In HR, AI is utilized to streamline recruitment processes, enhance employee engagement, and improve talent management. AI-driven recruitment tools can analyze vast amounts of data to identify the best candidates, reducing time-to-hire and mitigating human biases in the selection process (Pereira et al., 2023). Moreover, AI-powered chatbots and virtual assistants are enhancing employee experience by providing instant responses to HR-related queries, facilitating onboarding, and supporting continuous learning and development initiatives (Fenech et al., 2019).

AI is reshaping marketing and sales strategies through personalized advertising, customer segmentation, and sentiment analysis. AI algorithms can analyze consumer behavior and preferences to deliver targeted advertisements, increasing the relevance and effectiveness of marketing campaigns (Davenport et al., 2020). AI-powered customer relationship management (CRM) systems help sales teams by providing insights into customer behavior, predicting sales trends, and automating routine tasks (Ledro et al., 2022). AI is enhancing customer service by providing quick and accurate responses to customer inquiries, personalizing customer interactions, and predicting customer needs. AI-powered chatbots and virtual assistants can handle a wide range of customer service tasks, from answering frequently asked questions to processing orders and resolving issues (Huang and Rust, 2018).

AI is transforming customer experiences and inventory management. AI-powered recommendation systems analyze customer preferences and behavior to suggest products, increasing sales and customer satisfaction (Grewal et al., 2017). Additionally, AI-driven demand forecasting and inventory management systems help retailers maintain optimal stock levels, reducing waste and improving supply chain efficiency (Choi et al., 2018). AI is enhancing logistics and supply chain management by optimizing route planning, improving demand forecasting, and

automating warehouse operations. AI algorithms analyze traffic patterns and delivery data to determine the most efficient routes, reducing delivery times and costs (Foster and Rhoden, 2020). Automated warehouse systems using AI and robotics improve picking accuracy and speed, enhancing overall operational efficiency (Wang et al., 2016). AI is also optimizing purchasing processes by analyzing purchasing patterns and market trends to make better buying decisions and negotiate better terms with suppliers (Handfield et al., 2019).

AI applications in manufacturing are driving improvements in production efficiency, quality control, and predictive maintenance. AI-powered robots and automation systems are enhancing production lines by performing repetitive tasks with high precision and speed (Industry 4.0, 2020). Machine learning algorithms predict equipment failures and schedule maintenance, reducing downtime and maintenance costs (Zonta et al., 2020). AI is accelerating R&D processes by facilitating data analysis, simulation, and experimentation. AI-driven data analytics tools enable researchers to process and analyze large datasets quickly, uncovering insights and trends that drive innovation (Jordan and Mitchell, 2015). Administrative roles benefit from expertise in using AI-powered virtual assistants to manage calendars, schedule meetings, and handle routine inquiries, as well as deploying AI-driven document management systems for efficient organisation and retrieval of documents (Whiting, 2023; Willige and Markovitz, 2023).

Overall, the integration of AI in business activities is not only streamlining operations but also enabling organisations to innovate and deliver more personalized and effective services. As AI technologies continue to evolve, their applications across different sectors will likely expand, further transforming business landscapes.

2.2 Skills for the AI in Business

Artificial Intelligence (AI) has permeated various business activities, necessitating a blend of specific human skills to ensure effective coexistence and collaboration between humans and AI systems. The integration of AI across sectors such as Human Resources, education, finance, marketing, customer service, retail, logistics, manufacturing, research and development, administration, and legal areas demands both general and specialized skills.

Across all business activities, certain skills are universally essential. AI literacy is critical, as understanding AI principles, capabilities, and limitations enables employees to grasp how AI systems function and where human oversight is necessary (Long and Magerko, 2020). Data literacy is equally important, requiring proficiency in data analysis and interpretation. Employees must be able to work with data, understand data-driven insights, and leverage these insights in decision-making processes (Jaiswal et al., 2022). Effective collaboration between humans and AI also demands strong interpersonal skills, ensuring clear communication and efficient knowledge sharing. Critical thinking is vital for evaluating AI outputs and making informed decisions based on these evaluations, while adaptability is

necessary for quickly adjusting to technological advancements (Li, 2022). Additionally, ethical awareness is crucial, as employees need to understand the ethical implications of AI deployment, including potential biases, privacy concerns, and societal impacts (Tsiligiris and Bowyer, 2021).

Management benefit from skills in utilizing AI algorithms for route optimization to reduce delivery times and costs, and managing AI and robotics systems to improve warehouse picking accuracy and speed (Gekara and Thanh Nguyen, 2018). Professionals need expertise in AI-powered robots and automation systems to enhance production efficiency and precision, as well as deploying machine learning algorithms for predictive maintenance to reduce downtime and costs. Proficiency in using AI-driven data analytics tools to process large datasets and uncover insights that drive innovation is crucial, alongside skills in leveraging AI for simulating and experimenting with new ideas and products (Betti and Kuepper, 2023; El-Jawhari et al., 2020).

The integration of AI into various business activities demands a diverse set of skills from employees. While AI literacy, data literacy, collaboration, critical thinking, adaptability, and ethical awareness are essential across all sectors, specialized skills tailored to specific business activities are equally important. As AI technologies continue to evolve, ongoing training and development will be crucial to equip the workforce with the necessary skills for effective human-AI coexistence.

3 METHODOLOGY

This study employs an empirical survey approach, gathering data from 34 organisations. Primary data was obtained through quantitative research methods, involving data collection via questionnaires. The research targeted organisations from the TOP100 companies operating in the Czech Republic. The questionnaire focused on the competencies and skills necessary for leveraging AI in business operations, including their description, connection to performance, management, and support. The survey design was grounded in theoretical foundations and current research on AI adoption in business settings (Jaiswal et al., 2022; Tsiligiris and Bowyer, 2021; Betti and Kuepper, 2023; El-Jawhari et al., 2020).

Each competency was analyzed to assess its current utilization and unveil its relationships with AI adoption. Associations were tested, and Cronbach's Alpha and correlations between variables were employed to evaluate the consistency and reliability of the competencies and the model (Bell et al., 2019). Upon obtaining satisfactory consistency results, the model was deemed suitable for competency analysis. Factor analysis, a multidimensional method, was subsequently utilized to further evaluate the results, as the criteria for its application were met. The use of factor analysis is described in the "Data Processing" section.

The data was collected using Computer-Assisted Web Interviewing (CAWI) and subsequently evaluated, cleaned, and processed into a data matrix. The final data

matrix was analyzed according to identification questions. For the statistical methods employed, refer to the "Data Processing" section.

3.1 Sample

The sample comprised 34 respondents, with one respondent representing each organisation. Only organisations actively focusing on and utilizing AI were included in the research. The respondent organisations were selected across various sectors and regions within the TOP100 companies in the Czech Republic to ensure a representative sample. Respondents were contacted via email and requested to complete an online web-based questionnaire. Organisations were identified based on their location, size, business sector, and ownership structure. The final sample presented in this case study is representative of the companies operating in the Czech Republic. The primary objective of this paper is to identify key competencies and create a model describing the utilization of specific competency groups related to AI adoption in both skilled and unskilled job roles, thereby facilitating the development of future-oriented, successful approaches to competency building. Respondents were asked to indicate the competencies necessary for successful AI implementation in various job positions. All respondents were employed in full-time positions and held managerial roles specializing in Human Resources (HR). according to sector, the organisations were represented as follows: primary sector 6.25%, secondary sector 15.62% and tertiary sector 78.13%. This distribution reflects and represents the actual distribution of sectors in the Czech Republic.

3.2 Data Analysis

For the evaluation of results, descriptive statistics tools, correlation and association tests were employed. A multidimensional statistical method, namely factor analysis, was utilized. The process of calculation and interpretation of results was conducted in accordance with the guidelines provided by Anderson et al. (2019), Mishra (2019).

The reliability of the questionnaire was assessed, along with the validity of its content and construct. The reliability of the data was tested using Cronbach's Alpha, which yielded a sufficient value above 0.8. Furthermore, the Kaiser-Meyer-Olkin test was performed, resulting in a value exceeding 0.7, indicating that the data was appropriate and pertinent for conducting factor analysis.

Factor analysis was employed to classify the analyzed competencies, each with a number of answer variants per question. The studied variants of competency utilization were evaluated to replace them with fewer variables that summarize the primary attributes derived from the data. The newly designed factors aimed to simplify the overall results of the questionnaire. Factors explain the variability and dependence of the considered variables. Factor analysis was used to create factors that summarize the competencies into coherent groups. The conditions for running the analysis were met based on the test results recommended by Mishra et al.

(2019). The analysis was utilized as a confirmatory statistical method, as the proposition to create fractional areas where competencies are interconnected was designed based on the correlation analysis. Theoretical factors were created and subsequently tested by factor analysis. The factors were constructed with regard to their merits in terms of theory and practice in human resources. The resulting data from the analysis were compared to the respondents' reactions to minimize distortion. These prerequisites preceded the design and calculation of results for this study. Factors were constructed based on their content and the relationships between similar competencies and their simultaneous utilization.

The number of monitored variables (factors) was reduced using the Maximum Likelihood Factor Analysis with Kaiser Varimax Rotation with a goodness of fit. For the selection of substantial factors, the Kaiser-Guttman rule was applied (i.e., substantial factors having a value within the range higher than 1), and subsequently, the Sutin test was applied. The correlation coefficients range from <-1; 1>. If the correlation coefficient is positive, it indicates a direct proportion (negative – indirect proportion). For the evaluation, the value of variable correlation higher than 0.3 (moderate correlation) was used, according to Anderson et al. (2019). The data analysis was performed using IBM SPSS Statistics 22.

The use of factor analysis allowed for a deeper exploration of the underlying structure and relationships among the competencies required for effective AI adoption. By identifying these distinct factors, the analysis provided valuable insights into the key areas organisations should focus on when developing their competency frameworks and training programs. Furthermore, the validation of the data through the Kaiser-Meyer-Olkin test and the establishment of validity and reliability ensured the robustness and trustworthiness of the results. These preliminary checks ensure that the factor analysis was conducted on suitable data, lending credibility to the identified factors and their interpretations.

4 **RESULTS**

According to the respondents, 72% of the surveyed organisations are actively utilizing AI in their operations. An additional 13% of organisations have plans to implement AI in the near future. The remaining 15% of the respondent organisations intend to adopt AI solutions within a longer-term horizon.

The areas of AI utilization within the surveyed organisations were investigated, and the results are presented in Table 1. The most widely adopted features are customer support and service, including chatbots or virtual assistants, employed by 68.75% of the organisations surveyed. Content generation, such as automated compilation of data summaries, article writing, or product descriptions, is utilized by 59.38% of the organisations. Language translation and localization services are leveraged by 56.25% of the respondent organisations. Data analysis and processing, including predictive analysis, are employed by 53.16% of the organisations. Additionally, 53.13% of the surveyed organisations have

implemented AI solutions for HR processes, such as recruitment automation. Other areas of AI utilization have not exceeded 50% adoption within the sample.

Table 1 – The use of AI in organisations

Use of AI	Frequency	Percent
Customer support and service: e.g. chatbots or virtual assistants	22	68.75
Data analysis: e.g. processing large amounts of data and predictive analysis	17	53.125
Sales and marketing: e.g. personalization of purchasing processes	12	37.5
Supply chain management: e.g. demand forecasts or optimization of distribution routes	4	12.5
Production and operation: e.g. quality control or predictive maintenance	3	9.375
Human resources: e.g. recruitment automation	17	53.125
Finance and risk management: e.g. automated invoice mining, fraud detection or algorithmic trading	10	31.25
Construction and engineering: e.g. project management, quality control or planning	2	6.25
Healthcare: e.g. assistance in determining the diagnosis and treatment of the patient	2	6.25
Education: e.g. personalized learning or connected administrative tasks	8	25
Legal services: e.g. contract analysis or legal research in the field of searching for relevant cases and laws	2	6.25
Content generation: e.g. automated compilation of data summaries or writing of articles, product descriptions, etc.	19	59.375
Language translations and localization: e.g. content localization or language translations supported by artificial intelligence	18	56.25
Security: e.g. anomaly detection or face recognition	8	25
Transport: e.g. traffic management or autonomous vehicles	3	9.375

On the other hand, the least utilized AI tools among the surveyed organisations are legal services, such as contract analysis or legal research involving relevant case laws and regulations, as well as construction and engineering applications like project management, quality control, or planning, and healthcare applications such as assistance in determining patient diagnoses and treatment plans; all represented by only 6.25% of the sample. Additionally, AI solutions for production and operations (e.g., quality control or predictive maintenance) and transportation (e.g., traffic management or autonomous vehicles) are used by merely 9.375% of the organisations in the sample.

The correlation analysis using Spearman's coefficient revealed a statistically significant relationship between the use of AI in language translations and generative content (r=0.425, p=0.015). Surprisingly, organisations utilizing AI for language translations do not seem to employ AI in HR processes (r=-0.509, p=0.003). According to the results, the surveyed organisations tend to use AI either for marketing or HR practices, but not simultaneously (r=-0.362, p=0.042). This finding suggests that within the surveyed organisations, the use of AI is primarily focused on their main organisational purpose rather than being widely adopted across all processes.

To investigate the main skills that employees and managers need to efficiently use AI, the presented case study focused on their importance for searched organisations. The Table 2 shows the overview of the results. Surveyed organisations mainly place attention on analytic thinking (84.38% of respondent organisations), digital skills (78.13%), critical thinking (65.63%) and strategic thinking (50%).

Skills for AI use	Frequencies	Percent	
interpersonal skills	12	37.5	
analytical skills	27	84.375	
strategic thinking	16	50	
critical thinking	21	65.625	
digital skills	25	78.125	
communication	12	37.5	
problem solving ability	10	31.25	
interpersonal skills	3	9.375	
emotional skills	4	12.5	
team skills	1	3.125	

Table 2 – The skills for AI

The results in Table 2 indicate that the least attention is currently being paid to team skills, interpersonal skills, and emotional skills within the surveyed organisations. Contrary to theoretical expectations, these skills are still not considered crucial for organisational development in the context of AI utilization. Remarkably, the Czech organisations surveyed do not perceive these skills as key competencies required for the effective use of AI.

This finding suggests a potential disconnect between the theoretical understanding of the importance of interpersonal and emotional competencies in the era of AI adoption and the practical perspectives of the surveyed organisations. While technical and analytical skills are undoubtedly essential for developing and implementing AI systems, the successful integration and utilization of AI within organisations also require strong interpersonal, collaborative, and emotional intelligence competencies.

Organisations may need to reevaluate their competency models and prioritize the development of these often-overlooked skills to foster a more holistic and effective approach to AI adoption. Effective teamwork, clear communication, and emotional intelligence will be crucial in navigating the challenges and changes brought about by AI implementation, enabling organisations to leverage the full potential of these technologies while maintaining a human-centric approach.

The correlation analysis further corroborated these findings. The results reveal a negative correlation between the utilization of digital skills and emotional skills

(r=-0.486, p=0.005). This inverse relationship suggests that as organisations place greater emphasis on digital competencies, they tend to overlook the development of emotional intelligence skills. Additionally, the lack of emphasis on emotional and team skills was substantiated by a moderately strong positive correlation (r=0.475, p=0.006).

These statistical findings underscore the potential imbalance within the organisations' competency frameworks. While digital and technical skills are undoubtedly essential for leveraging AI technologies, the neglect of emotional and team-based competencies may pose significant challenges.

To further elaborate on the results, factor analysis was employed. The conditions for utilizing factor analysis were fulfilled and confirmed by the Kaiser-Meyer-Olkin test, which assessed the adequacy of the data for factor analysis. Additionally, the validity and reliability of the data entering the analysis were established. The results are presented in Table 3. The analysis revealed four significant factors, grouping the competencies into four main areas related to AI skills utilization. The analysis explained 56% of the approaches to the use of AI in the sample.

Variable	Factor 1	Factor 2	Factor 3	Factor 4
Data analysis	0.779	0.172	0.173	-0.209
Sales and Marketing	0.665	0.268	-0.164	-0.406
Human Resources	0.051	0.497	-0.358	-0.220
Content generation	0.555	-0.225	0.084	0.059
Language translations	0.481	-0.018	0.342	0.259
Strategic thinking	-0.301	0.411	0.282	-0.315
Critical thinking	0.359	0.010	-0.719	0.127
Digital skills	0.391	-0.548	0.337	-0.080
Training/retraining of employees	-0.407	0.237	0.168	0.546
Emotional skills	0.304	-0.526	-0.545	-0.132
Team skills	0.443	0.107	-0.285	0.633
% of variance	19.329	14.677	12.168	9.710
Name of factor	Analysis for marketing	Strategic HRM	Simplification of tasks	Lack of team development

Table 3 – Model of skills for AI

The first factor shows emphasis on skills related to marketing analysis and use of AI for data analysis, content generation, language translations for sales and marketing purposes. Additionally, the factor shows that this use of AI is for individual work as team skills are completely lacking in this area. This factor explains almost one fifth of the sample (20%).

The second factor groups skills relevant for strategic use of human resource management. The variables connected within this factor relates mostly to HR and

strategic thinking. It is therefore important to mention that HR activities using AI are strategically connected to the future of searched organisations and such HR practices are strongly related to future orientation of these organisations. This approach is typical for 15% of the sample.

The third factor pointed out use of AI for simplification of job tasks. The factor connects lack of critical thinking, language translation and lack of emotional skills. Such approach is typical to simple use of machine generation of text or translations. This approach to simple use of AI is typical for 12% of surveyed organisations.

The fourth factor pointed out again the lack of emotional and team skills approach in the surveyed organisations (10% of the sample). The factor shows lack of team development and a gap in this area in the use of AI in searched Czech organisations.

5 DISCUSSION

The analysis shown the two main areas where searched organisations use AI: marketing and HR, which is in line with the theory (Pereira et al., 2023; Fenech et al., 2019; Davenport et al., 2020; Ledro et al., 2022), as long as confirmed use of AI for simple administrative tasks (Whiting, 2023; Willige and Markovitz, 2023). When discussing the results with theoretical background, the survey findings reveal a concerning oversight, as team skills, interpersonal abilities, and emotional competencies currently receive the least attention within the organisations studied. Contradicting theoretical principles (i.e. Huang and Rust, 2018; Jaiswal et al., 2022), these skills are not yet recognized as pivotal for organisations surveyed fail to acknowledge these aptitudes as key requirements for effectively leveraging AI technologies.

This discrepancy between theoretical underpinnings and practical perspectives highlights a potential blind spot in the organisations' approach to AI implementation. While technical and analytical proficiencies are undeniably essential for developing and deploying AI systems, the successful integration and utilization of AI within organisational structures demand a strong foundation of interpersonal, collaborative, and emotional intelligence competencies (Jaiswal et al., 2022).

Organisations may need to critically re-evaluate their competency frameworks and prioritize the cultivation of these often-overlooked skills to enable a more comprehensive and effective approach to AI adoption (Long and Magerko, 2020). Fostering effective teamwork, clear communication, and emotional intelligence will be paramount in navigating the challenges and transformations brought forth by AI implementation (Huang and Rust, 2018). By doing so, organisations can harness the full potential of these cutting-edge technologies while maintaining a human-centric approach that recognizes the importance of soft skills in driving

successful technological adoption (Jaiswal et al., 2022; Martinaitis et al., 2021; Spöttl and Windelband, 2021; Tsiligiris and Bowyer, 2021).

6 CONCLUSION

Results of this study presented the impact of AI in current skills of Czech top organisations. The correlation and factor analyses show the main areas emerging and offer a comprehensive and organized perspective on the essential competency areas for AI skills utilization. The revealed skill set helped to create competency models based on the use of AI in sales and marketing based on automated data analyses and strategic approaches to HR. Outputs show that surveyed Czech organisations use AI for simple automation of tasks, such as translations and text generation. The analysis also found lacking focus on emotional and team skills within the use of AI as there is an inverse correlation between the deployment of digital skills and the emphasis on emotional skills. This negative relationship suggests that as organisations intensify their focus on digital competencies, they inadvertently diminish their investment in cultivating emotional and team skills was substantiated by a moderately strong positive correlation.

These statistical findings illuminate a potential disharmony within the organisations' competency development strategies. While proficiency in digital and technical domains is undoubtedly paramount for harnessing AI technologies, the concurrent disregard for emotional and team-based competencies may pose formidable impediments. Successful integration of AI solutions necessitates not merely technical adroitness but a harmonious fusion of interpersonal, collaborative, and emotional intelligence aptitudes.

To navigate the complexities of AI adoption effectively, organisations should conscientiously strive towards a balanced approach, recognizing the symbiotic importance of both hard and soft skills. By intentionally nurturing emotional intelligence, fostering teamwork, and honing interpersonal competencies in tandem with digital skills, organisations can pave the way for a more cohesive and sustainable assimilation of AI technologies within their operational fabric.

Based on the findings presented in the text, there are several practical implications and recommendations for organisations aiming to effectively implement AI while developing a well-rounded competency framework: (1) Balanced Competency Development: Organisations should adopt a balanced approach to competency development, ensuring equal emphasis on both technical/digital skills and interpersonal/emotional intelligence skills. This balanced approach will better equip employees to navigate the challenges and changes brought about by AI adoption. (2) Revise Competency Models: Organisations should review and revise their existing competency models to incorporate the identified key competencies related to AI adoption. This includes technical skills, managerial and strategic skills, and interpersonal and communication skills. By understanding and addressing these distinct areas, organisations can develop targeted strategies and initiatives to cultivate the necessary competencies within their workforce, ultimately enhancing their preparedness for successful AI adoption and integration.

The theory can benefit from identification of key skill areas necessary for AI use and the necessity to further study development of skills related to AI use. Practical benefits of the research results indicated that balanced approach of organisations focusing not just on technical, but also team skills will better equip employees to navigate the challenges and changes brought about by AI adoption.

REFERENCES

Anderson, V., Fontinha, R., and Robson, F., 2019. *Research methods in human resource management*. London: Kogan Page.

Bell, E., 2019. Business research methods. Oxford: Oxford University Press.

Betti, F., and Kuepper, D., 2023. *4 ways artificial intelligence could transform manufacturing*. World Economic Forum. Available at: https://www.weforum.org/agenda/2023/01/4-ways-artificial-intelligence-manufacturing-davos2023/[Accessed: 18 May 2024].

Choi, T.-M., Wallace, S. W., and Wang, Y., 2018. Big Data Analytics in Operations Management. *Production and Operations Management*, 27(10), 1868–1883. https://doi.org/10.1111/poms.12838.

Davenport, T., Guha, A., Grewal, D., and Bressgott, T. (2020). How artificial intelligence will change the future of marketing. *Journal of the Academy of Marketing Science*, 48(1), 24–42. https://doi.org/10.1007/s11747-019-00696-0.

Delina R., Macik M., 2023. Quality of Artificial Intelligence Driven Procurement Decision Making and Transactional Data Structure. *Quality Innovation Prosperity*, 27 (1), pp. 103 - 118. https://doi.org/10.12776/QIP.V27I1.1819.

Einola, K., and Khoreva, V., 2023. Best friend or broken tool? Exploring the coexistence of humans and artificial intelligence in the workplace ecosystem. *Human Resource Management*, 62(1), 117–135.

https://doi.org/10.1002/hrm.22147[Accessed: 18 May 2024].

El-Jawhari, B., Halbe, S., Whyte, M., Cobbaert, K., and Odenkirchen, A., 2020. *An introduction to implementing AI in manufacturing*. PwC. https://www.pwc.com/gx/en/industrial-manufacturing/pdf/intro-implementing-ai-manufacturing.pdf[Accessed: 18 May 2024].

Fenech, R., Baguant, P., & Ivanov, D., 2019). The Changing Role of Human Resource Management in an Era of Digital Transformation. *Journal of Management Information and Decision Sciences*, 22, 166.

Foster, M.N., and Rhoden, S.L.N.H., 2020. The integration of automation and artificial intelligence into the logistics sector: A Caribbean perspective. *Worldwide Hospitality and Tourism Themes*, *12*(1), 56–68. https://doi.org/10.1108/WHATT-10-2019-0070.

Gekara, V.O., and Thanh Nguyen, V.-X., 2018. New technologies and the transformation of work and skills: A study of computerisation and automation of Australian container terminals. *New Technology, Work and Employment*, *33*(3), 219–233. https://doi.org/10.1111/ntwe.12118.

Glikson, E., and Woolley, A.W., 2020. Human Trust in Artificial Intelligence: Review of Empirical Research. *Academy of Management Annals*. https://doi.org/10.5465/annals.2018.0057.

Grewal, D., Roggeveen, A.L., and Nordfält, J., 2017. The Future of Retailing. *Journal of Retailing*, 93(1), 1–6. https://doi.org/10.1016/j.jretai.2016.12.008.

Haenlein, M., and Kaplan, A., 2019. A Brief History of Artificial Intelligence: On the Past, Present, and Future of Artificial Intelligence. *California Management Review*, *61*(4), 5–14. https://doi.org/10.1177/0008125619864925.

Handfield, R., Jeong, S., and Choi, T., 2019. Emerging procurement technology: Data analytics and cognitive analytics. *International Journal of Physical Distribution and Logistics Management*, 49. https://doi.org/10.1108/IJPDLM-11-2017-0348.

Huang, M.-H., and Rust, R., 2018. Artificial Intelligence in Service. *Journal of Service Research*, 21, 109467051775245. https://doi.org/10.1177/1094670517752459.

Industry 4.0: The Future of Productivity and Growth in Manufacturing Industries. (2020, August 19). BCG Global.

https://www.bcg.com/publications/2015/engineered_products_project_business_i ndustry_4_future_productivity_growth_manufacturing_industries[Accessed: 18 May 2024].

Jaiswal, A., Arun, C. J., and Varma, A., 2022. Rebooting employees: Upskilling for artificial intelligence in multinational corporations. *The International Journal of Human Resource Management*, *33*(6), 1179–1208. https://doi.org/10.1080/09585192.2021.1891114.

Jordan, M.I., and Mitchell, T.M., 2015. Machine learning: Trends, perspectives, and prospects. *Science*, *349*(6245), 255–260. https://doi.org/10.1126/science.aaa8415.

Ledro, C., Nosella, A., and Vinelli, A., 2022. Artificial intelligence in customer relationship management: Literature review and future research directions. *Journal of Business and Industrial Marketing*, *37*(13), 48–63. https://doi.org/10.1108/JBIM-07-2021-0332.

Li, L. (2022). Reskilling and Upskilling the Future-ready Workforce for Industry 4.0 and Beyond. Information Systems Frontiers. https://doi.org/10.1007/s10796-022-10308-y

Long, D., and Magerko, B., 2020. What is AI Literacy? Competencies and Design Considerations. *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*, 1–16. https://doi.org/10.1145/3313831.3376727.

Martinaitis, Ž., Christenko, A., and Antanavičius, J. (2021). Upskilling, Deskilling or Polarisation? Evidence on Change in Skills in Europe. *Work, Employment and Society*, *35*(3), 451–469. https://doi.org/10.1177/0950017020937934.

Mishra, P., Pandey, C.M., Singh, U., Gupta, A., Sahu, C. and Keshri, A., 2019. Descriptive statistics and normality tests for statistical data. *Annals of Cardiac Anaesthesia*, 22(1), 67.

Pereira, V., Hadjielias, E., Christofi, M., and Vrontis, D., 2023. A systematic literature review on the impact of artificial intelligence on workplace outcomes: A multi-process perspective. *Human Resource Management Review*, *33*(1), 100857. https://doi.org/10.1016/j.hrmr.2021.100857.

Spöttl, G., and Windelband, L., 2021. The 4th industrial revolution – its impact on vocational skills. *Journal of Education and Work*, *34*(1), 29–52. https://doi.org/10.1080/13639080.2020.1858230.

ThinkML, 2024. *The Future of AI in Workplace Automation and Administration*. (2024, February 12). ThinkML. https://thinkml.ai/the-future-of-workplace-automation-ai-driven-administrative-solutions/[Accessed: 18 May 2024].

Tsiligiris, V., and Bowyer, D., 2021. Exploring the impact of 4IR on skills and personal qualities for future accountants: A proposed conceptual framework for university accounting education. *Accounting Education*, *30*(6), 621–649. https://doi.org/10.1080/09639284.2021.1938616.

Wang, G., Gunasekaran, A., Ngai, E.W.T., and Papadopoulos, T., 2016. Big data analytics in logistics and supply chain management: Certain investigations for research and applications. *International Journal of Production Economics*, *176*, 98–110. https://doi.org/10.1016/j.ijpe.2016.03.014.

Whiting, K., 2023. *AI is helping to identify skills gaps and future jobs. An expert explains how.* World Economic Forum. Available at: https://www.weforum.org/agenda/2023/05/ai-skills-gaps-future-jobs/ [Accessed: 18 May 2024].

Willige, A., and Markovitz, G., 2023. *The future of jobs: 2 experts explain how technology is transforming 'almost every task'*. World Economic Forum. Available at: https://www.weforum.org/agenda/2023/05/future-of-jobs-technology-skills-workplace/ [Accessed: 18 May 2024].

Zonta, T., da Costa, C.A., da Rosa Righi, R., de Lima, M.J., da Trindade, E.S., and Li, G.P., 2020. Predictive maintenance in the Industry 4.0: A systematic literature

review. *Computers and Industrial Engineering*, 150, 106889. https://doi.org/10.1016/j.cie.2020.106889.

ABOUT AUTHORS

Zdeněk Kronberger ⁰⁰⁰⁹⁻⁰⁰⁰²⁻⁸⁶²⁵⁻⁹²⁸⁵ (Z.K.) – Ph.D. candidate, Assistant Professor, Prague University of Economics and Business, Faculty of Business Administration, Department of HR Management, Czech Republic, e-mail: zdenek.kronberger@vse.cz.

Lucie Depoo ^{0000-0003-4296-875X} (L.D.) – Ph.D., Associate Professor, Prague University of Economics and Business, Faculty of Business Administration, Department of HR Management, Czech Republic, e-mail: lucie.depoo@vse.cz.

Gabriela Říhová ⁰⁰⁰⁰⁻⁰⁰⁰¹⁻⁸⁷⁹⁶⁻²⁶⁵⁶ (G.Ř.) – Ph.D., Assistant Professor, Prague University of Economics and Business, Faculty of Business Administration, Department of HR Management, Czech Republic, e-mail: gabriela.rihova@vse.cz.

AUTHOR CONTRIBUTIONS

Conceptualisation, L.D. and Z.K.; Methodology, L.D.; software, L.D.; Validation, L.D., Z.K. and G.Ř.; Formal analysis, L.D. and Z.K.; Investigation, Z.K. and G.Ř.; Resources, Z.K.; Data curation, Z.K. and G.Ř.; Original draft preparation, L.D. and Z.K.; Review and editing, L.D.; Visualization, L.D.; Supervision, L.D.; Project administration, L.D. and Z.K.; Funding acquisition, L.D.

CONFLICTS OF INTEREST

The authors declare no conflict of interest. The funders had no role in the design of the study, in the collection, analyses, or interpretation of data, in the writing of the manuscript, or in the decision to publish the results.



© 2024 by the authors. Submitted for possible open-access publication under the Terms and Conditions of the Creative Commons Attribution (CC-BY) license (http://creativecommons.org/licenses/by/4.0/).