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Research Paper

The Importance of AI Training for Workforce Competency in the Digital Age

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Abstract: This study applies a qualitative case study methodology to explore how artificial intelligence (AI) training influences workforce competency at a Hungarian IT services company. Through structured interviews with AI trainers and managers, the research identifies specific barriers to effective training, such as rapid technological change, employee resistance, and outdated learning content. The findings demonstrate that AI training enhances adaptability, fosters essential digital skills, and supports organizational growth. Key success factors include the use of tailored learning paths, real-time feedback systems, and foundational AI education. These components not only address misconceptions about AI but also prepare employees to thrive in digitally transformed environments. The study contributes practical insights to developing training programs that support long-term workforce resilience.

Keywords: artificial intelligence, training, digital skills, key success factors, qualitative.

1. Introduction

The accelerating integration of artificial intelligence (AI) into organizational processes is fundamentally reshaping the nature of work across sectors, driving both operational efficiencies and profound changes in workforce expectations (Bankins et al., 2024; Alekseeva et al., 2021). As AI technologies automate routine tasks and augment decision-making, employees are increasingly required to develop advanced digital competencies and adapt to rapidly evolving workplace environments (Leon, 2023; Park, 2024). This transformation has elevated the strategic importance of targeted training programs designed to foster AI literacy and workforce adaptability, positioning continuous learning as a cornerstone of organizational resilience in the digital age (Markus et al., 2024).

Despite the proliferation of AI training initiatives, recent scholarship highlights persistent challenges in their design and implementation. Organizations frequently struggle to keep training content current amidst rapid technological advancements, while employees often encounter barriers such as resistance to change, misconceptions about AI, and uneven access to tailored learning resources (Golgeci et al., 2025; Ukwandu et al., 2025). Moreover, the effectiveness of AI training is contingent upon its alignment with diverse employee roles, skill levels, and organizational contexts—a complexity that is seldom addressed in existing frameworks (Plass & Froehlich, 2025; Bhumika et al., 2024).

A critical review of the literature reveals a notable research gap: while prior studies have examined the general impact of AI on workforce skills and organizational outcomes, there is limited empirical evidence on how AI training programs can be optimized to address the specific challenges faced by organizations and to support long-term workforce competency (Bankins et al., 2024; Leon, 2023). In particular, there is a paucity of qualitative research that explores the lived experiences of AI trainers and managers, identifies actionable strategies for overcoming implementation barriers, and evaluates the role of personalized learning paths and feedback mechanisms in enhancing training effectiveness.

This study responds to this gap by employing a qualitative case study methodology to investigate the influence of AI training on workforce competency within a Hungarian IT services company. Through structured interviews with AI trainers and managers, the research aims to (1) elucidate the mechanisms by which AI training contributes to employee skill development

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and organizational adaptability, (2) identify the principal challenges encountered in delivering effective training, and (3) propose evidence-based recommendations for optimizing AI training programs. By addressing these objectives, the study seeks to advance both theoretical understanding and practical guidance for organizations navigating the complexities of digital transformation.

2. Literature Review

2.1 Theoretical framework

Kirkpatrick and Kirkpatrick's (2006) model of four levels of training evaluation offers a clear structure for measuring the impact of training programs on both individual participants and overall organizational performance. The model includes the stages: reaction, learning, behaviour and results. 'Reaction' assesses participants' initial impressions, 'learning' evaluates the knowledge or skills acquired, 'behaviour' examines the way skills are applied in the workplace, and 'results' measures organizational outcomes. This model is a widely accepted framework and is particularly useful when evaluating the effectiveness of AI training (Kirkpatrick & Kirkpatrick, 2006).

2.2 The need for competency development and AI training

As AI technologies advance, employees are increasingly expected to update and expand their skillsets. Ukwandu et al. (2025: 9) state that adapting to this new shift requires "a deliberate retooling of our contemporary teaching and learning practices." They also note that educators should revise existing curricula and develop AI-focused programs to meet new challenges.

Leon (2023) emphasizes that a large share of today's workforce will need to update or expand their skills within the coming decade as many existing job requirements become outdated. Sharing the same idea, Alekseeva et al. (2021) observe that AI will drive significant transformations in the labour market over the next decade. These points stress the need for organizations to prepare workers for AI training that supports adaptability and shows the importance of continuous learning and targeted upskilling.

Training plays an essential role in helping employees strengthen their digital skills and adapt to the growing presence of AI in the workplace. Park (2024) explains that employee development should go beyond simple resources and should focus on structured upskilling programs that build lasting competencies. Artificial intelligence has become an integral part of this process and offers new ways to enhance training and improve learning outcomes. Likewise, Bankins et al. (2024) emphasize that collaboration between humans and AI will increasingly define the workplace and will make AI literacy a vital skill for the future. They conclude that AI should support creativity and be paired with continuous skill growth.

2.3 Challenges and methods for implementing AI workforce training

AI training initiatives face several ongoing challenges. Ukwandu et al. (2025) warn that "emerging skill gaps in AI industries will lead to the need for dynamic (yearly changing) curriculum in teaching and learning." This makes it difficult to design training that remains current while serving multiple skill levels. In addition, Golgeci et al. (2025) report that many employees experience resistance towards AI systems as they may feel uncertain or may lack confidence. Concerns about job loss and privacy can also reduce trust and discourage participation. Effective AI training must help staff overcome these barriers by combining technical instruction with support that builds confidence and readiness to learn.

To improve training effectiveness, scholars have proposed various innovative methods. Plass and Froehlich (2025) describe personalized learning as an approach that adjusts instruction to match each learner's specific needs and goals. They explain that due to recent advances it is easier to make AI automatically generate and adapt learning materials, which removes one of the main barriers to true personalization in training. Additionally, Bhumika et al. (2024) explore how gamification, virtual reality (VR), and microlearning can enhance user

experience and knowledge retention. Gamification increases engagement through elements like badges and points, VR provides immersive simulations that support hands-on learning, and microlearning delivers short, accessible lessons that support mobile and on-demand training. These approaches are particularly effective for addressing the short attention spans and dynamic learning needs of today's workforce. Furthermore, Bankins et al. (2024) highlight the value of AI-enabled feedback systems and note that intelligent responses help workers refine skills and connect progress to organizational goals.

2.4 Effects of AI training on workforce competency

Recent research shows that AI training plays an important role in improving workforce capability across different sectors. Bankins et al. (2024) note that employees benefit when AI is applied in ways that increase autonomy and reduce role strain. Markus (2024: 1) finds that "training promotes both understanding of AI and AI literacy." This allows employees to use intelligent systems with greater confidence and purpose. The study also explains that AI literacy programs aim to help workers think critically about AI technologies and remain aware of such technologies' ethical impact. AI training also influences how employees feel about technology. Markus (2024) observes that providing accurate information and closing knowledge gaps reduce misconceptions about AI and help replace anxiety by more positive attitudes. This shift builds confidence and makes employees more willing to engage with digital tools.

3. Research Methodology

3.1 Research approach and rationale

This study adopts a qualitative research methodology using a case study approach supported by interviews. According to Gerring (2004: 1), "[a] case study is best defined as an in-depth study of a single unit (a relatively bounded phenomenon) which aims to shed light on features of a larger class of similar phenomena." This framework allows for a detailed exploration of how professionals perceive and experience AI training and reveals insights that may inform broader efforts to enhance workforce competency in the digital age.

3.2 Research instrument

Structured interviews were selected as the primary data collection method due to their ability to capture detailed personal insights about AI training's impact. Interviews are a widely recognized qualitative method that offers depth and nuance. Martinus and Hedgcock (2015) note that one-to-one anonymous semi-structured interviews are the most appropriate for producing rich qualitative data when there is potential institutional sensitivity in relation to the information being sought. During the interviews, the discussions were guided carefully to maintain focus while allowing participants to express their views freely. Conducting interviews individually ensured a personalized setting, and care was taken to document key insights.

3.3 Sample methodology

Permission was obtained to interview both AI trainers and managers. With their consent, in-depth discussions were conducted that focused on their professional experiences and perspectives regarding AI training. The sample included both male and female participants united by a shared commitment to delivering effective training programs. Due to confidentiality agreements, participants are identified using letters (e.g., Participant A, Participant B) throughout the study.

While this sample offers valuable insight into how AI training is designed and implemented from an organizational standpoint, it does not include the views of employees who received the training. Recognizing this limitation clarifies the scope of the study and suggests that future research should capture employee experiences to provide a fuller picture of AI training outcomes. The small sample size of seven participants also limits the

generalizability of the findings, and since I am employed within the organization, there is a risk of bias despite efforts to maintain objectivity. These factors should be considered when interpreting the results.

3.4 Pilot

To validate the interview questions, a pilot test was conducted with a manager external to the main sample group. The pilot questions used in this study can be found in Appendix 1. Feedback revealed that certain questions were too technical. Based on these suggestions, the questions were revised for clarity and relevance. The final version of the interview questions, i.e. post-pilot, can be found in Appendix 2.

3.5 Data analysis

Data analysis was conducted using a thematic analysis approach. (Braun & Clarke, 2012) point out that thematic analysis (TA) is a powerful tool for the analysis of qualitative data. This approach is the process of systematically gathering and interpreting patterns or themes within a dataset so that a researcher can understand the meanings embedded within the data collected (Braun & Clarke, 2012). This allows for a more well-rounded understanding of the narratives and trends presented and provides a clear guide for me for the interpretation of complex qualitative information. Therefore, after finalizing the interviews and collecting the data, I carefully reviewed the data to identify recurring keywords, ideas, and patterns. These recurring elements were then organized into key themes as emphasized by Braun and Clarke (2012). A thematic analysis "moves beyond describing what is said to focus on interpreting and explaining it" (Maguire & Delahunt, 2017: 84). A key principle of thematic analysis is to move away from building themes merely around the main interview questions, which constitutes a common pitfall highlighted by Braun and Clarke (Clarke & Braun, 2013). Based on this, the data is approached with a more thorough and meaningful engagement: such that themes can rise from the data and the participants' opinions rather than within the initial structure of the interview. By focusing on the richness of the participants' responses and allowing their insights to shape the analysis, the aim is to uncover a deeper understanding that reflects the complexities of participants' viewpoints.

3.6 Anticipated problems

One anticipated problematic issue was scheduling constraints due to participants' professional responsibilities. To address this, flexibility was maintained by proposing shorter or segmented meetings depending on availability. This adaptability helped ensure participation while respecting the time limitations of the interviewees.

4. Results

Due to the interviewees' demanding schedules, the interviews lasted for about half an hour and were conducted either in person or via Microsoft Teams. Prior to each interview, explicit consent was obtained to transcribe the discussions to ensure ethical transparency and compliance with data privacy standards. After reaching saturation through identifying recurring themes, data collection concluded after interviewing seven participants. The following table (table 1) provides additional details about the interviewees and offering context for participants' demographic diversity.

Table 1: Demographic overview of the AI trainers and managers. *Source: authors' own*

Names	Age	Gender	Date of Interview	Role
Participant A	29	Female	12.11.2024	Trainer
Participant B	47	Male	08.11.2024	Manager
Participant C	42	Male	13.11.2024	Manager
Participant D	48	Male	05.11.2024	Manager
Participant E	48	Male	08.11.2024	Manager
Participant F	37	Male	13.11.2024	Trainer
Participant G	32	Male	08.11.2024	Trainer

In the following section, findings are presented based on the thematic analysis of the interview transcripts. Three key themes emerged that reflect participants' experiences and perspectives.

4.1 Theme 1: Perceived value of AI and impact of AI training

Participants highlighted the significant value of AI in enhancing workplace efficiency and innovation. Many participants described how AI tools were integrated into daily workflows and into the organizational benefits that followed. Participant A mentioned that AI tools are effective for reducing time spent on repetitive tasks and increasing productivity. For instance, she demonstrated how AI powered tools could quickly create meeting summaries, which allows employees to focus on more complex work. She identified "Copilot" as an example of such a tool. Similarly, Participant G also added that the integration of AI into daily workflows reshapes how businesses function. He noted that automation through AI tools enables faster task completion and better resource management, which leads to transformative operational improvements.

AI training was found to be a major transformative force for several participants. It equips employees with essential skills to remain competitive in a fast-changing technological landscape. Participant C explained, "AI is really around the corner… if we do not develop our capabilities or knowledge which defines our future, then we are not forward-looking". Participant C also stressed the importance of viewing AI competency development as a continuous process. Sharing the same ideas, Participant D stated that AI training is meant to "prepare the people…to be ready for the change," which empowers employees to adapt more effectively.

Participants noted that AI training generates measurable improvements in efficiency and innovation. Participant B mentioned "we enable you to be more productive, focus on the more complex tasks instead of the daily repetitive ones". Participant F linked AI training to real world process improvements, such as better documentation and data analysis. Generative AI tools allow workers to complete routine tasks faster and with greater accuracy. As Participant F noted: "If you have more efficient employees then the company will benefit from it … for example processing writing documents, working with Excel, Word, PowerPoint, doing reports, so, these can be enhanced, and we can make it faster with using generative AI tools".

4.2 Theme 2: Challenges in providing AI training

Participants identified key barriers to effective AI training, such as widespread misconceptions and rapid technological evolution. Participant E observed "there are a lot of people afraid of AI currently because of the hype and there are a lot of misunderstandings related to that." Similarly, Participant D shared the same thought when he mentioned "a lot of people think…I know very well AI because I can use ChatGPT… but this is only a narrow area of AI". Participant D clarified that ChatGPT represents only a fraction of AI, yet many believe

it to be comprehensive. He emphasized the need for trainers to tailor AI content to the audience's understanding.

In addition, fear, disinterest, and misinformation also impact training participation. Participant G mentioned that some employees are reluctant to adopt to changes driven by AI because of fear, lack of interest, or wrong understanding about the true meaning of AI. He observed "many people do not really know what AI is… some people just don't want to go into that because it's seen as very complex". Several participants raised the issue of keeping training material up to date as AI evolves rapidly. Participant A highlighted that new developments appear almost daily, which requires trainers to constantly update content to ensure relevance. Similarly, Participant B shared this sentiment as he acknowledged that it is almost infeasible to have a team that is always up to date with the latest AI news but argued that training should still focus on practical and applicable AI skills.

Moreover, Participant D noted that the frequency of updates depends on training level. He noted "basic training levels can be relevant for months… but in the narrow area, the material can be only relevant for a couple of weeks". This perspective further evokes the challenge of customizing the update cycle in accordance with complexity and specificity of training.

4.3 Theme 3: Different ways of optimizing AI training programs

Participants emphasized the importance of customization in AI training. Participant F highlighted the importance of tailoring training programs by stating that "there won't be a one size fits all training, so you also have to segment your employees into groups, which can be quite challenging". He discussed using personas to design structured learning paths that align with employees' roles and expertise. Participant D supported this and stressed that understanding the audience is essential. He elaborated on the persona model: the model is created as virtual representations of employees that share the same characteristics to enable the creation of targeted learning paths to cater for a specific persona's needs.

Additionally, participants also emphasized building a strong foundational understanding of AI to counter misconceptions. Participant G mentioned that AI tools are increasingly user-friendly and do not require every employee to have deep technical expertise. He noted that modern AI training focuses on using existing tools effectively rather than developing new ones. However, both Participant G and Participant F agreed that basic literacy in AI remains necessary. Participant F added that some aspects of AI training remain stable over time. He explained "there is another aspect of AI, which is the historic aspect…I think those are quite stable".

Moreover, Participant C stressed the importance of adapting training to organizational needs. Similarly, Participant A pointed out "each organization is slightly different… I see your examples, but I don't know where I can use these". Both participants emphasized the role of feedback in refining training quality. Participant A underlined that collecting and analysing feedback are key to identifying areas of improvement. Participant F agreed and stated that "we can collect feedback and then we can optimize our training program to meet the needs of the participants." Furthermore, personal storytelling and analogies were cited as effective tools for engagement. As Participant C mentioned: "it's better to have an interactive session, and I think stories are pretty good when you have analogous stories to make a point."

5.0 Discussion

The findings of this study underscore the critical role of AI training in equipping employees with the skills required to remain competitive and adaptable in the rapidly evolving digital landscape. While the benefits are clear, several challenges were also identified alongside strategies for improving training delivery and impact.

5.1 Transformative value of AI and effect of AI training

Participants consistently emphasized the transformative potential of AI training in fostering personal growth, career resilience, and organizational performance. As highlighted in the results section, participants believed that structured training prepares employees to adapt to new technologies. This aligns with Park (2024), who highlights the importance of

continuous learning and reskilling as key strategies for helping employees remain adaptable in digital environments. For instance, Participant C described the importance of being "forward-looking," which reflects Kirkpatrick's first level of evaluation, Reaction by showing positive trainee attitudes toward AI learning. This positive reaction highlights how motivation and openness support early success in AI training. This perspective also aligns with Alekseeva et al. (2021), who observe that AI is transforming industries by increasing demand for AI-skilled professionals. Participant C shared a similar view and noted that AI is becoming unavoidable and that developing new capabilities is essential for the future. As seen in previous research, Leon (2023) also notes that a large share of the workforce will need to reskill or upskill within the next decades and stresses the importance of focused training to match evolving job demands. The strong initial engagement and enthusiasm for AI training reported by participants reinforce Kirkpatrick's first level and demonstrate employee openness to developing AI-related competencies.

From an organizational standpoint, participants reported that AI training leads to smoother workflows. For example, Participant B noted the practical application of AI in streamlining processes, which shows that training outcomes extended beyond simple knowledge acquisition. These outcomes represent Kirkpatrick's second level, Learning, where employees gain concrete knowledge and skills that improve their job performance. Moreover, participants including B and F described how AI tools boost efficiency by automating reporting and documentation. These findings are in line with Markus (2024), who notes that AI training helps employees use intelligent tools more efficiently and confidently. This progression from learning to practical use reflects Kirkpatrick's third level of evaluation 'Behaviour', which assesses the application of training in real job contexts. Participants also linked AI training with tangible organizational gains such as improved productivity and operational efficiency. This aligns with Kirkpatrick's fourth level of evaluation, Results, which highlights measurable organizational benefits from training initiatives.

5.2 Challenges in providing AI training

Despite the positive impact, several challenges emerged from the interviews. Participants E and D pointed out prevalent misconceptions about AI, especially the tendency to equate it solely with tools like ChatGPT. This narrow understanding can hinder broader engagement with AI capabilities. Golgeci et al. (2025) explain that such misunderstanding often stems from uncertainty and fear toward new technologies, which discourages participation. They also note that feelings of self-doubt and mistrust in AI systems can create additional barriers to adoption, especially when staff struggles to keep up with rapid technological changes. Another challenge lies in maintaining training relevance. Participant A stressed that content must be frequently updated, while Participant D noted that advanced modules require updates every few weeks. Ukwandu et al. (2025) confirm that AI training must evolve continuously to close skill gaps, which remains a key challenge for educators and organizations. Additionally, participants noted the difficulty of designing inclusive training that meets diverse job roles. Participant F and others acknowledged the limitations of a uniform training model and pointed out that a single and uniform approach often fails to meet the varied needs of employees. This supports Ukwandu et al. (2025), who argue that flexible curricula are needed to reflect different professional contexts while supporting organizational goals. These challenges connect with the first two levels of Kirkpatrick's model, 'Reaction and Learning', since confusion about AI and outdated content can lower motivation and reduce the knowledge employees gain from training.

5.3 Approaches to improving AI training effectiveness for workforce competency

Participants offered several strategies to enhance AI training. Foundational education was repeatedly mentioned as a necessary first step to reduce fear and confusion surrounding AI. Participant E emphasized that strong introductory content builds confidence among employees. Tailoring training to fit specific organizational needs was seen as vital, with Participant F noting the inefficacy of one-size-fits-all programs, and with Participant A underscoring the importance of aligning the training materials to specific organizational contexts.

To support personalization, many participants supported a persona-based segmentation strategy that groups employees by role, skill level, and learning objectives. This aligns with Plass and Froehlich (2025), who describe personalized learning as a method that adapts content to each learner's experience to improve motivation and skill retention.

Feedback also emerged as a core component. Participant A described structured feedback processes as essential for improving future training sessions. This matches Bankins et al. (2024), who note that AI enabled feedback systems help link learning progress to organizational outcomes. Markus (2024) adds that building AI literacy through such programs strengthens employee confidence and openness to ongoing digital learning. Although literature suggests incorporating gamification, virtual reality (VR), and microlearning for enhanced engagement (Bhumika et al., 2024), none of the participants reported using such tools. This can be attributed to Pulze's early-stage operations, where managers may not yet have the resources or readiness to adopt these advanced methods. These tools could play an important role in future training. As Pulze's programs grow, adding interactive elements can help employees stay engaged and remember what they learn better. Such methods also match the current direction of AI-based education where technology supports more personalized and flexible learning experiences.

6.0 Implications

6.1 Implications for practitioners

Businesses should prioritize foundational AI education to eliminate misconceptions and fears and to boost employee confidence and productivity in adopting AI technologies. Practitioners are advised to apply tailored training approaches, since both the findings and the literature suggest that personalized training enhances engagement and relevance. A persona-based model that groups employees by role or skill level allows for training delivery that fits individual needs. Moreover, establishing consistent feedback mechanisms is essential for refining training materials and keeping them aligned with workforce requirements. In addition, organizations should maintain flexible structures for updating content in line with technological change. These updates must match the different responsibilities of employee groups. Finally, tracking measurable learning outcomes helps assess training success and guides future adjustments based on evidence.

The results of this study underscore the necessity for organizations to move beyond generic AI training frameworks and embrace a more nuanced, adaptive approach to workforce development. Practitioners should recognize that the rapid pace of technological change, coupled with diverse employee backgrounds and roles, demands a dynamic and segmented training strategy. One key implication is the importance of establishing robust mechanisms for ongoing curriculum updates. As participants noted, advanced AI modules may require revision every few weeks, while foundational content remains stable over longer periods. This calls for practitioners to implement agile instructional design processes, leveraging feedback loops and real-time monitoring of technological trends to ensure training remains relevant and impactful.

Moreover, the study highlights the value of persona-based segmentation, where employees are grouped by role, skill level, and learning objectives. Practitioners should invest in developing detailed employee personas and use these to tailor learning paths, thereby maximizing engagement and knowledge retention. The integration of structured feedback mechanisms is also critical; regular collection and analysis of participant feedback can guide iterative improvements to training programs, ensuring alignment with evolving workforce needs.

Another implication is the need to address misconceptions and resistance to AI through foundational education and transparent communication. Practitioners should prioritize introductory modules that demystify AI, clarify its scope beyond popular tools like ChatGPT, and foster a culture of openness and curiosity. Additionally, organizations should consider piloting advanced engagement techniques—such as gamification, microlearning, and virtual reality—once foundational structures are in place and resources permit. These methods, although not yet widely adopted in the studied context, have the potential to further enhance motivation and learning outcomes as programs mature.

Finally, practitioners must establish clear metrics for evaluating training effectiveness, focusing not only on immediate skill acquisition but also on long-term organizational outcomes such as productivity, adaptability, and employee confidence. By embedding these practices, organizations can foster a resilient, future-ready workforce capable of thriving amid ongoing digital transformation.

6.2 Implications for researchers

Future research could examine how AI training supports long-term professional growth and how it contributes to organizational learning. Studies should also compare AI training practices across industries or countries to identify shared patterns and unique challenges. Using larger samples researchers could use quantitative designs to test how AI training affects skill development and job performance. Exploring these areas would provide stronger and more practical evidence for improving AI-based workforce training.

The study's findings also open several avenues for future research that extend beyond the immediate organizational context. Researchers are encouraged to explore the longitudinal effects of AI training on workforce competency, examining how sustained exposure to tailored programs influences career trajectories, job satisfaction, and organizational learning over time. Comparative studies across industries and national contexts would be particularly valuable, as they could reveal both universal patterns and sector-specific challenges in AI training implementation.

Another implication is the need for methodological innovation. While qualitative case studies provide rich, context-sensitive insights, future research should incorporate mixed-methods or quantitative designs to test hypotheses about the causal relationships between training interventions and measurable outcomes such as productivity, retention, and innovation. Larger sample sizes and multi-site studies would enhance the generalizability of findings and allow for more robust statistical analysis.

Researchers should also investigate the efficacy of emerging training modalities, such as gamification, VR, and microlearning, in fostering digital skills and overcoming resistance to AI adoption. Experimental studies could assess the impact of these techniques on engagement, knowledge retention, and behavioural change, providing evidence-based recommendations for practitioners.

Finally, there is a need to examine the interplay between organizational culture, leadership, and training effectiveness. Future studies could explore how leadership styles, communication strategies, and organizational values shape employee attitudes toward AI and influence the success of training initiatives. By addressing these areas, researchers can contribute to a deeper understanding of how AI training can be optimized to support both individual and organizational growth in an increasingly digital world.

7.0 Conclusions

This study set out to examine how targeted artificial intelligence (AI) training initiatives influence workforce competency and organizational adaptability within a Hungarian IT services company. The research was guided by three central questions: (1) How does AI training affect workforce competency? (2) What challenges do organizations encounter in providing AI training? (3) How can AI training programs be optimized to meet evolving organizational needs? Through a qualitative case study methodology, supported by structured interviews with AI trainers and managers, the study identified key barriers to effective training, such as rapid technological change, employee resistance, and outdated learning content. The findings demonstrated that AI training enhances adaptability, fosters essential digital skills, and supports organizational growth. Notably, the use of tailored learning paths, real-time feedback systems, and foundational AI education emerged as critical success factors.

Despite these insights, several limitations must be acknowledged. First, the study's scope was confined to a single organizational context, which restricts the generalizability of its findings. The sample size was modest, comprising only seven participants, and did not include the perspectives of employees who received the training, thereby limiting the breadth of experiential data. Furthermore, the exclusion of advanced training modalities—such as gamification, microlearning, and virtual reality—means that the study does not address the

potential impact of these emerging technologies on training effectiveness. The risk of researcher bias, given the author's employment within the organization, also warrants consideration, despite efforts to maintain objectivity.

These limitations point to several promising avenues for future research. Scholars are encouraged to pursue longitudinal studies that investigate the sustained effects of AI training on workforce competency, career trajectories, and organizational learning. Comparative research across industries and national contexts would help to identify both universal patterns and sector-specific challenges in AI training implementation. Methodological innovation is also needed; future studies should incorporate mixed-methods or quantitative designs to test causal relationships between training interventions and measurable outcomes such as productivity, retention, and innovation. Larger sample sizes and multi-site studies would enhance the robustness and generalizability of findings.

Additionally, there is a need to empirically evaluate the efficacy of advanced training modalities—including gamification, VR, and microlearning—in fostering digital skills and overcoming resistance to AI adoption. Experimental research could provide evidence-based recommendations for practitioners seeking to enhance engagement and knowledge retention. Finally, future studies should explore the interplay between organizational culture, leadership, and training effectiveness, examining how these factors shape employee attitudes toward AI and influence the success of training initiatives.

In sum, while this study contributes practical insights into the design and delivery of AI training programs, its limitations underscore the importance of continued empirical inquiry. By addressing these gaps, future research can advance a more comprehensive understanding of how AI training can be optimized to support both individual and organizational growth in an increasingly digital world.

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Appendices

Appendix 1: Pilot Interview questions

How does AI training influence workforce competency?
What are the measurable long-term effects of AI training on employee productivity?
What are the measurable long-term effects of AI training on HR employees for example that you provided training for?
Can you give examples of times when there was a significant boost in the company performance that was due to employees being more skilled in AI?
What metrics should be used to measure the indirect benefits of AI training?
How different is it to make AI training materials to employees from different age groups and different positions?
What has been the effective way so far to capture the participants' attention during the trainings?
What role can AI play in personalizing the AI training material to participants?

Appendix 2: Post-Pilot Interview questions

Question 1:
How does AI training influence workforce competency?
Sub-questions:
How does AI training influence employees' productivity?
How does AI training influence the overall performance of the organization?
Can you give examples of times when there was a significant boost in company performance that was due to employees being more skilled in AI?

Question 2:
What challenges do organizations encounter regarding providing AI training?
Sub-questions:
Why are companies always trying to integrate AI in their processes while this approach always comes with a lot of challenges?
How do advancements in AI make it a challenge to create up-to-date materials for trainings?
Since there are always advancements in AI technologies, do you think we will still have the same challenges for the future?

Question 3:
How can AI training programs be optimized to meet the evolving needs of customers?
Sub-questions:
How different should AI training materials be that target employees of different age groups and different positions?
What has been the effective way so far to capture participants' attention during the trainings?
What role can AI play in personalizing the AI training materials for participants?