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AI-Enabled Organizational Culture and Leadership: Linear and Non-Linear Effects on Employee Training, Engagement, and Team Performance in Slovenian Enterprises

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Abstract

This study primarily investigates five major constructs—organizational culture, AI-enabled leadership, AI-supported employee training, team performance, and employee engagement—focusing on their interrelations through the framework of artificial intelligence within medium and large Slovenian enterprises. A secondary goal is to evaluate the suggested conceptual model using two statistical methodologies within the domain of structural equation modeling (SEM): one assessing linear connections (PLS-SEM) and the other non-linear relations (CB-SEM). The empirical analysis included responses from 437 Slovenian companies, where either the CEO or owner took part. The findings from both analytical approaches indicate that organizational culture did not significantly influence AI-based employee training, yet it did have an effect on AI-enabled leadership. The link between AI-driven leadership and AI-assisted training of employees was confirmed only within the PLS-SEM framework. Moreover, AI-enabled leadership showed a positive association with team outcomes, whereas its influence on business-related teams was found to be insignificant. In both instances, AI-oriented training exhibited a strong and positive impact on teams. Additionally, employee engagement had a significant positive relationship with team performance in both PLS-SEM and CB-SEM models. This study offers critical insights for firms aiming to integrate artificial intelligence effectively in their daily operations. It highlights the pivotal role of AI-driven leadership in fostering outcomes such as enhanced employee learning and superior team performance. Businesses should therefore focus on cultivating leaders adept at employing AI tools to build highly skilled and motivated workforces. Embracing data-centered decision processes and drawing on SEM results can aid organizations in crafting robust AI adoption strategies. These findings contribute to refining human resource management practices and advancing successful AI implementation across enterprises. Ultimately, this research extends the understanding of AI integration in organizations and outlines the HR areas that require improvement for smoother technological adoption.

Keywords: Leadership, Organizational culture, Employee engagement, Artificial intelligence

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Introduction

Modern business conditions have become increasingly dynamic and complex, demanding mastery over vast streams of information, continuous knowledge acquisition, and adaptation to rapidly evolving markets where competitive products and services emerge faster than ever before [1]. Consequently, firms are pressured to innovate swiftly amid disruptions such as pandemics (e.g., COVID-19), geopolitical conflicts, and rising energy costs [2].

The advent of digital technologies, often referred to as digitalization, has become a defining trend shaping future economies and corporate innovations [3]. To remain competitive, businesses must design effective digital strategies and emphasize key

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success factors for digital transformation [1]. In recent years, technologies such as mobile connectivity and artificial intelligence (AI) have expanded far beyond professional use and have become integral to daily human life [4].

Artificial intelligence represents a broad spectrum of techniques that simulate human cognitive processes [5]. It refers to computer systems capable of performing tasks that usually require human intellect—such as visual analysis, speech understanding, decision-making, and data interpretation. By learning from available information, AI systems develop new competencies that allow them to adapt to various work settings and accomplish numerous objectives [6].

In recent years, AI has undergone a significant resurgence, largely due to the rise of innovative algorithms and the growing availability of digital data [7]. For instance, in digitally advanced manufacturing environments, AI solutions are becoming increasingly prevalent [8]. These systems improve efficiency, quality control, planning, maintenance, and resource utilization [5]. Furthermore, automation helps employees by reducing repetitive tasks, increasing accuracy, and enhancing overall flexibility [6].

Given the pace of global change, digital transformation has become essential for maintaining competitive advantage [9]. This transformation calls for a reconfiguration of traditional structures to align with the dynamic nature of digital technologies. Achieving such adaptability necessitates an organizational culture that values continuous innovation and embraces change [10].

Organizational culture constitutes a critical foundation of digital transformation and plays a defining role in shaping its overall success [11]. To establish a strong organizational culture within the digital economy, firms must cultivate core values and operational principles that emphasize swift adaptability to change and resilience against external disruptions [12]. Consequently, leadership capable of integrating and supporting artificial intelligence has become a fundamental necessity for businesses facing ongoing technological and competitive challenges [13]. Organizations that recognize the advantages of advanced digital technologies and adopt them effectively will enjoy substantial competitive superiority. The question for modern enterprises is no longer whether to invest in digital innovation [14], but how efficiently and rapidly to execute digital transformation—supported by well-trained and competent employees.

From this standpoint, comprehensive AI-related training and education are vital [15]. Properly trained teams can innovate and respond to problems dynamically. Creating such an environment requires engaged employees who actively embody the values and behaviors that sustain this culture. Without such involvement, companies are likely to encounter major barriers during their transformation toward digital operations [16].

For businesses to unlock the full benefits of artificial intelligence, they must develop a data-centric culture, where analytical thinking and data interpretation are seamlessly embedded into daily operations and accessible across all organizational levels [17]. Organizational culture itself represents a cohesive system that encompasses shared norms, beliefs, procedures, attitudes, behavioral expectations, goals, and internal/external interactions [18, 19]. Through these interconnected elements, organizational culture both evolves and influences the emergence of appropriate leadership structures [20].

Although numerous scholars acknowledge the influence of culture on leadership, there is limited research specifically examining AI-oriented organizational culture, its impact on AI-supportive leadership, and its role in establishing innovative AI-based employee training systems. In today's competitive and uncertain business environment, successful digital transformation is indispensable for ensuring long-term competitiveness. Achieving it requires a distinctive structure built upon rapidly advancing digital technologies. For that to happen, organizations must redefine their cultural foundations—modifying values, habits, and collective experiences. The reconfiguration of culture remains one of the most complex challenges in achieving successful digital business transformation [15].

Furthermore, several authors [21-23] underline the growing relevance of teamwork in an increasingly digitalized environment. Contemporary business contexts are far more volatile, ambiguous, and interconnected than just a few years ago. Managing interdependencies between organizations is becoming increasingly intricate due to the constant emergence of disruptive technologies. At the same time, competition for creative, high-performing talent—capable of transforming innovative ideas into customer-oriented solutions—is intensifying. Successful teams rely on members with diverse expertise and complementary personalities. According to Kossyva *et al.* [24], Wijayati *et al.* [16] and Shelke & Shaikh [25], engaged employees are typically motivated, satisfied, productive, and loyal; they contribute new ideas and display a strong commitment to organizational goals. This principle is further emphasized in internal marketing theory, which comprises three interconnected dimensions: focus on employees, focus on customers, and focus on the organization itself [26].

This study seeks to address the existing gap in literature concerning the importance of AI-oriented leadership and its effect on team performance and employee engagement. In an increasingly diverse and fast-changing environment, employee engagement has become an essential determinant of organizational success. To date, few studies have comprehensively examined, from a theoretical and empirical standpoint, how organizational culture, AI-supportive leadership, AI-based employee training, team performance, and employee engagement interact as part of an integrated system.

Hence, this interdisciplinary study aims to contribute to both AI-driven human resource management and internal marketing research by offering a systematic exploration of these relationships.

The core objective of this research is to explore the interconnection among five primary constructs—organizational culture, AI-supported leadership, AI-driven training, team performance, and employee engagement—within the framework of artificial intelligence adoption in Slovenian organizations.

The motivation stems from the increasing prominence of AI technologies and the need to understand how these constructs collectively function in shaping organizational outcomes. By investigating these links, the study aims to generate new insights and perspectives that clarify how human resource processes and managerial practices can be optimized in the era of artificial intelligence.

The main research question seeks to determine how organizational culture, AI-based leadership, AI-driven employee training, team effectiveness, and employee engagement are interrelated within AI integration.

Accordingly, the specific objectives of this study are:

1. To examine the impact of organizational culture on AI-driven employee training.
2. To assess the influence of organizational culture on AI-supported leadership.
3. To evaluate the relationship between AI-based leadership and AI-supported employee training.
4. To determine the effect of AI-driven leadership on team performance.
5. To analyze the impact of AI-supported training on teams' effectiveness.
6. To explore the influence of team performance on overall employee engagement.

Digitization and organizational transformation

The process of digitalization presents a powerful avenue for forward-thinking and development-driven organizations; however, it demands competent human capital, a well-defined managerial vision, and a proactive approach to implementing change. Transforming organizational culture is not a superficial adjustment but a deep, systemic shift. A transformation as extensive as digital business adaptation necessitates a supportive environment that fosters customer orientation, embraces technological innovation, and encourages collaboration across the entire business ecosystem. To establish such an ecosystem, organizations require employees who are informed, motivated, and actively engaged in shaping a digital culture through individual contributions. Without this human and cultural foundation, digital transformation initiatives risk failing.

Accordingly, the primary objective of this research was to design a comprehensive model encompassing these dimensions and evaluate their interrelationships using data from large and medium-sized enterprises in Slovenia. The Information Society Strategy serves as one of Slovenia's pivotal strategic frameworks aimed at reducing developmental disparities and accelerating digital progress across all sectors [27]. The competitive global technological landscape compels nations like Slovenia and the wider European Union to leverage digital technologies extensively within all spheres of social and economic life [28]. When digitalization is executed correctly and at the right time, it significantly boosts national competitiveness, enhances administrative efficiency, and improves overall societal functioning—impacting individuals, businesses, and public institutions alike. The market, users, and customers are now the main driving forces behind digital transformation, emphasizing personalized user experiences enabled by technology. Nevertheless, Slovenian firms still encounter substantial challenges in strengthening value creation, especially in innovation, marketing, and the customization of offerings.

Model testing and statistical approach

The second objective of this study was to empirically assess the proposed model using two distinct statistical methodologies within the framework of structural equation modeling (SEM)—allowing for an examination of both linear and non-linear interactions between constructs. While most studies rely on SEM to explore variable relationships, they often neglect comparing potential variations between linear and non-linear models. A non-linear relationship arises when the association between two factors changes depending on the value of one variable [29]. In contrast, a linear relationship reflects a direct and proportional change between variables x and y, typically illustrated as a straight line [30]. Understanding these patterns clarifies how the interdependence between two dimensions influences outcomes [31]. To extend methodological knowledge and enhance originality, this research examined whether the use of non-linear modeling provides a stronger explanatory power for the studied constructs compared to linear modeling. Consequently, this paper enriches existing scholarship by contributing fresh methodological insights related to artificial intelligence (AI) integration within firms and by evaluating whether non-linear analytical approaches yield improved results.

Exploration of artificial intelligence and organizational dynamics

This investigation also seeks to bridge a significant methodological gap concerning AI implementation in organizations. By examining the distinctions between linear and non-linear interactions among multidimensional factors—including organizational culture, AI-based leadership, AI-supported employee training, team efficiency, and employee engagement—the study provides novel theoretical and empirical contributions. One of the core research aims was to determine whether differences exist between linear and non-linear relationships within these interconnected variables.

Practical and theoretical implications

The study's outcomes hold meaningful implications for organizations striving to effectively merge artificial intelligence with human resource management strategies. The findings emphasize the centrality of organizational culture in ensuring successful AI integration. Moreover, results stress the importance of implementing customized training programs that embed AI tools to strengthen employee competence and productivity. Firms should proactively identify gaps in knowledge and skill sets where AI can provide measurable improvements.

Another key insight is the strong link between employee engagement and team performance. To capitalize on this relationship, companies should invest in programs that encourage engagement through career development, recognition systems, and purpose-driven work experiences. Engaged employees contribute to improved collaboration, which translates into higher performance outcomes.

This study also offers practical guidance for businesses dealing with AI adoption challenges. Considering the combined effects of organizational culture, AI-based leadership, AI-supported learning, team functionality, and employee engagement can help organizations design effective AI integration strategies aligned with broader strategic goals. Furthermore, the paper demonstrates the value of data-driven decision-making, highlighting how advanced statistical tools such as PLS-SEM and CB-SEM enable deeper comprehension of complex variable relationships.

Although the research sample was limited to Slovenian companies, the implications are globally relevant. Organizations worldwide, across various sectors, can draw lessons from these insights to enhance their own AI implementation practices, optimize workforce effectiveness, and achieve superior performance outcomes.

Literature Review, Conceptual Framework, and Hypotheses

Organizational culture as a foundation for effective training and leadership through the lens of artificial intelligence

Organizational culture represents a comprehensive system of norms, values, beliefs, and employee attitudes that shape behavior and responses to organizational changes [32]. Understanding these cultural attributes allows leaders to better guide their teams toward achieving corporate objectives [33]. Building a strong organizational culture demands continuous innovation, the refinement of efficient processes, well-structured procedures, and substantial intellectual and financial resources [11]. A dynamic culture that promotes learning, innovation, adaptability, and holistic employee development enhances an organization's growth, performance, and competitiveness [12]. Conversely, a restrictive culture that suppresses learning and professional growth undermines productivity, limits innovation, and weakens competitiveness [32].

According to Shea *et al.* [19] and Hautala-Kankaanpää [34], technology alone does not guarantee successful digitalization. What is required is a culture that embraces change, fosters innovation, and supports artificial intelligence. Developing a digital mindset among employees is essential for long-term success in the modern business environment [35]. Overlooking the role of organizational culture can slow down digital progress and create barriers to success. To transform culture, organizations must first invest in their people [36]. Although technological tools have existed for years, implementing them remains a major challenge. Thus, firms should provide extensive education and training programs on digital transformation and artificial intelligence to all staff members [14].

Digital transformation relies on the alignment of people, processes, and technology. Shifting employees' attitudes toward innovation is often crucial. When an organization succeeds in cultivating a culture that supports artificial intelligence, it enhances both competitiveness and success [1, 5]. Westerman *et al.* [37] describe digital transformation as the use of digital technologies to fundamentally improve organizational performance. Similarly, Liu *et al.* [38] regard it as a structural transformation that merges technology with business processes. Organizational transformation typically involves significant and simultaneous changes in strategy, structure, business models, and operations executed swiftly [6]. Therefore, digital transformation can be understood as a process of altering core business components—models, strategies, structures, processes, and culture—by leveraging modern technologies [8].

Introducing new digital tools and automating processes is demanding, but changing employee habits, enhancing digital skills, and motivating them toward transformation are even greater challenges. Unclear expectations about the outcomes and benefits of digitalization further complicate this process [9]. Hence, organizations must design a well-defined digitalization strategy and clarify objectives. Employees need to recognize the practical advantages of adopting new methods and AI-based solutions to fully appreciate their benefits [10]. Companies must realize that artificial intelligence represents a strategic and cultural challenge, requiring transformations in human resources, operations, and business models [11].

In the near future, artificial intelligence will profoundly influence global productivity and competitiveness. Therefore, organizations must develop a culture that aligns with AI-driven business processes [15]. A digital organizational culture comprises the values and behavioral norms guiding operational practices [19]. Such a culture provides employees with behavioral standards that facilitate appropriate decision-making, accelerating the implementation of integrated digital strategies [16]. A well-developed digital culture plays a key role in sustaining and speeding up digital business transformation

[39]. To cultivate this, companies must embrace values and business practices that prioritize quick adaptability to change and resilience to disruption [34].

This involves fostering customer responsiveness, nurturing digital leadership, stimulating innovation, offering extensive digital training, promoting openness to advanced technologies, and creating superior employee experiences [1, 3, 5].

Research confirms that supportive, learning-oriented cultures enhance the success of AI-based training initiatives [1]. Yu *et al.* [40] noted that organizations valuing continuous learning are more inclined to adopt AI tools for workforce training, resulting in improved competencies and job performance. Bilro *et al.* [41] further demonstrated that inclusive cultures encouraging teamwork and communication positively influence employees' willingness to use AI technologies, leading to greater adoption and skill advancement. Likewise, Tharkude [42] found that innovative, risk-taking cultures promote experimentation with AI-driven training programs. Firms that view mistakes as learning opportunities are more likely to invest in AI-enabled training and utilize advanced technologies to enrich learning [40, 42].

Based on these insights, the following hypotheses are proposed:

H1: Organizational culture positively influences AI-supported employee training.

H2: Organizational culture positively influences AI-supported leadership.

AI-Supported leadership in dynamic work environments for enhanced employee training and team effectiveness

Organizations today must continually adapt to fast-changing work conditions, as new digital solutions and software platforms emerge almost daily. Nevertheless, many still encounter serious obstacles when attempting to undergo digital transformation [43]. Data from the Statistical Office of the Republic of Slovenia [44] indicates that 60% of firms employing ten or more individuals, including self-employed entities, experience difficulties implementing digital transformation initiatives. Around one-third of them lack sufficient skilled personnel, while 31% face financial limitations. Moreover, only 12% of companies utilize artificial intelligence technologies. SURS [44] further emphasizes that about a third of organizations still struggle to find qualified workers capable of managing digital transitions.

Regarding strategic readiness, 17% of companies with ten or more employees have established formal digital transformation strategies—broken down as 14% of small, 29% of medium-sized, and 48% of large firms. As highlighted by Wijayati *et al.* [16], successful AI adoption in business operations requires leaders to endorse AI initiatives and design targeted employee training programs. The pace of digital transformation has dramatically raised the need for ICT professionals to design and deploy digital tools that drive productivity and preserve competitive positioning [45].

AI adoption presents both opportunities and challenges in data governance and analytics management [8]. Therefore, leadership must ensure the creation of specialized AI training initiatives so that skilled personnel are available where and when they are needed [46]. In addition to training, team collaboration fosters idea exchange and innovative problem-solving. Each team member must engage actively and creatively to develop solutions and accomplish shared organizational objectives [47].

Employee training curricula should balance theoretical understanding with hands-on skills. Early training phases should cover foundational analytical literacy, offering an overview of how data-driven approaches can resolve operational challenges and providing insight into the data analytics development process [6, 48].

Addressing business challenges through AI should extend beyond isolated departments and be integrated across the entire organization [10]. Successful implementation involves building robust data ecosystems and cultivating organizational trust in AI systems. Every employee should grasp AI's potential implications for business performance [15, 16].

Digital transformation depends not only on technology but on human capability and adaptability [20]. It represents a strategic developmental domain involving all departments—from HR to operations—requiring new competencies and leadership mindsets [49]. Leaders play a crucial role in shaping employees' attitudes and guiding teams toward understanding AI-driven business opportunities [23]. By aligning suitable analytics workflows with the right tools and expertise, companies can achieve higher levels of AI maturity and sustain competitive superiority [21].

Schick *et al.* [50] and Jatobá *et al.* [51] demonstrated that AI-enhanced learning tools, under effective leadership, substantially improve training efficiency, reinforcing the positive association between AI-based leadership and employee learning outcomes. They also noted that leaders must foster an encouraging atmosphere for technology acceptance, highlighting the dynamic relationship between human and artificial intelligence.

AI-driven leadership also significantly influences team productivity. Through automation of repetitive duties, AI frees employees to focus on analytical and strategic tasks [52]. Furthermore, AI-assisted decision-making systems enhance team coordination and minimize internal conflicts [51]. According to Giuggioli and Pellegrini [53], leaders who adopt AI-driven performance metrics can identify existing skill deficiencies and offer precise training to address them, resulting in ongoing improvement in team outcomes.

H3: AI-supported leadership positively affects AI-based employee training programs.

H4: AI-supported leadership positively influences team performance effectiveness.

AI-Supported training for building high-performance teams and strengthening employee engagement

Artificial intelligence solutions demand extensive design and experimentation, and not all potential outcomes can be foreseen in advance. The modern marketplace pressures organizations to respond swiftly and cohesively [54].Traditional hierarchical divisions within firms are becoming less viable. The rapid advancement of technology accelerates the integration of information and operational systems [55]. As AI technologies become more accessible, they amplify competitive pressure by enabling the rapid processing of massive data sets and automating analytical learning. Organizations that employ these technologies display higher levels of innovation and competitiveness [16].

Both AI adoption and volatile market dynamics require stronger organizational commitment, cultural evolution, new management models, and updated training frameworks that foster teamwork and adaptability [34, 35, 49].

Proper AI-related employee training directly enhances team productivity. When a company provides well-designed training programs, employees feel appreciated and recognize the organization's investment in their professional development. This recognition strengthens their sense of belonging and encourages collaborative knowledge exchange across the company [5, 7, 46]. Effective teams are those where members share perspectives, ideas, and expertise openly.

High-performing teams exhibit key attributes—strong leadership, well-defined goals, agility, and transparent communication—all of which contribute to greater employee commitment [56]. Once organizational objectives are clear, leaders should motivate every team member to participate actively. Employees must have access to diverse training programs that align with the firm's emerging business areas [57].

In today's rapidly evolving environment, creativity is often essential for both team and corporate survival. Innovative perspectives on production methods, product design, and operational processes allow firms to remain competitive. Each team can cultivate creative strategies that improve efficiency and problem-solving capacity [58].

Successful teams are characterized by outcomes that go beyond the combined knowledge, skills, and expertise of their members, which enhances their overall work engagement [16]. Employees who are engaged demonstrate passion, dedication, and a strong emotional connection to their organization. Such employees are motivated, loyal, satisfied, and deeply committed to their work. In today's dynamic and diverse business environment, employees who trust in their organization, advocate for its products and services, and act as true ambassadors of the employer brand are vital to organizational success [36, 59, 60].

Schuhbert *et al.* [61] emphasize that AI-driven training can strengthen a team's learning culture by fostering adaptability and continuous growth. Workers who actively participate in ongoing learning and upskilling efforts tend to display higher levels of motivation and commitment to achieving team objectives [62]. High-performing teams play a major role in increasing employee engagement, creating a stronger sense of achievement and job satisfaction. Furthermore, when teams successfully meet their goals, employees tend to develop deeper engagement and attachment to their work [63]. Therefore, the following hypotheses are proposed:

H5: AI-supported employee training positively affects team performance.

H6: Effective team performance positively influences employee engagement.

The rapidly evolving external business environment—including factors such as global crises, globalization, digitalization, technological advancements, and the rise of creative economies—alongside internal factors like organizational structure and culture, compels companies to continuously adapt and anticipate change. For an organization to thrive amid constant transformation, leadership must not only recognize the necessity of change but also possess the capability to implement it effectively. **Figure 1** presents the conceptual model and multidimensional constructs crucial for achieving success in today's volatile landscape, where artificial intelligence and employee engagement play significant roles.

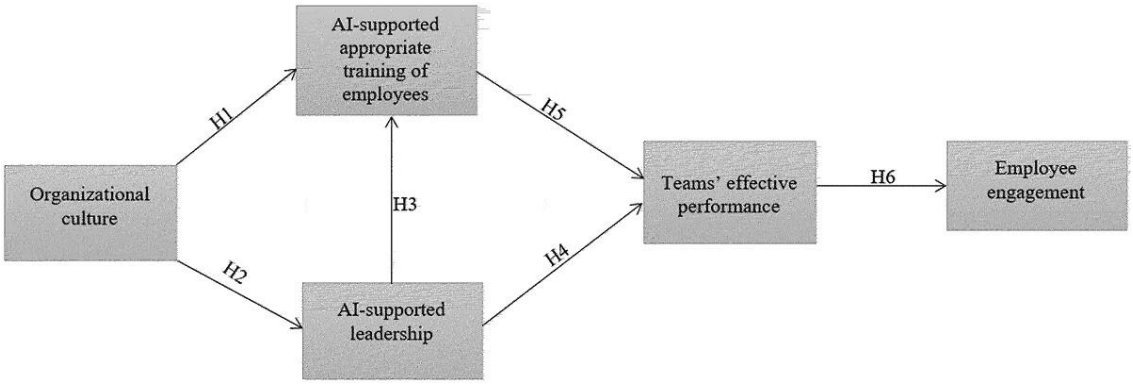

Figure 1. The conceptual model and hypotheses.

Methodology

Data and sample

The primary data collection was conducted through a random selection of 437 medium and large Slovenian companies from the AJPES (Slovenian Business Register), categorized according to standard industry classifications. This represents approximately the proportion of all 2,000 medium and small enterprises in Slovenia, yielding a 22% response rate. The survey was completed online by CEOs or company owners, chosen due to their central role in leadership and strategic decision-making. Their insights provided relevant data on how AI-supported employee training impacts team performance and employee engagement.

The industry distribution of participants was as follows: 26.1% manufacturing, 16.7% trade and vehicle maintenance, 11.7% information and communication, 11.7% professional, scientific, and technical services, and 11.2% finance and insurance. Other sectors included health and social care (4.3%), other business services (4.2%), real estate (3.2%), transport and storage (3.0%), hospitality (2.7%), education (1.8%), construction (1.6%), agriculture, forestry, and fishing (1.4%), and mining (0.4%). Within the sample, 55.4% were large firms, while 44.6% were medium-sized enterprises.

Regarding work experience, 71.6% of respondents had 31–40 years of experience, 24.5% had 21–30 years, 2.3% had over 41 years, and 1.6% had 11–20 years. In terms of gender, 71.4% of participants were male, and 28.6% were female.

Measurement instrument

The measurement instrument was developed through a two-phase process. Initially, relevant measurement scales were identified from previous literature and later adapted for the study. To ensure content validity, four subject-matter experts—from the fields of quantitative analysis, management, AI, and marketing—evaluated whether each item accurately reflected its intended construct. Subsequently, all items were translated into Slovenian following a back-translation protocol to maintain semantic consistency. The data were gathered through an online questionnaire.

Respondents rated their agreement with each statement on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Measurement items for organizational culture were adapted from Dabbous *et al.* [10]; for AI-supported employee training, from Pillai and Sivathanu [64]; for team performance, from Mikalef and Gupta [65]; and for AI-supported leadership and employee engagement, from Wijayati *et al.* [16].

Reliability and validity of the measurement scales

The convergent and discriminant validity, along with the reliability of the constructs, were assessed within the proposed measurement model using AMOS 28. The model fit evaluation revealed a significant chi-square result (χ^2 (137) = 556.190; $p < .05$), suggesting that the model does not exhibit a perfect fit. However, as noted by Bollen [66], chi-square statistics in both measurement and structural models often indicate poor fit, making them an unreliable benchmark when working with complex frameworks and large datasets. Alternative indices demonstrated acceptable or strong fit levels: NFI = .916, IFI = .936, TLI = .920, CFI = .936, and RMSEA = .084, all of which align with the recommended cut-off points in the literature (RMSEA < .1; CFI > .90; NNFI > .90; NFI > .90) as proposed by Byrne [67], Hu and Bentler [68], and MacCallum *et al.* [69].

In the finalized model, AI-supported leadership was conceptualized as a two-dimensional construct, as empirical testing confirmed that the two-factor solution provided a superior fit compared to the single-factor version. The first factor captured the extent of leadership commitment to AI initiatives, including open communication and on-the-spot problem resolution for employees, and was labeled AI-supported leadership for employees. The second factor reflected the leader's capacity to interpret business challenges, forecast future organizational needs of managers, suppliers, and clients, and proactively design AI-based business solutions. This was therefore named AI-supported leadership for business solutions.

The means, standard deviations, average variances extracted (AVE), and composite reliability (CR) values for all items are reported in **Table 1**. Every CR coefficient exceeded the minimum acceptable level of .7. For convergent validity, all factor loadings were statistically significant and greater than .6, and AVE values also surpassed the .6 threshold, confirming satisfactory convergence among the indicators.

Table 1. Items, Means, Standard Deviations, Average Variances Extracted (AVE), and Composite Reliability (CR)

Construct	Item	Mean	Std. Dev.	Loading	CR	AVE
Organizational Culture					**.843**	**.643**
	2. AI technology is utilized in various aspects of our operations.	3.76	1.128	.912		
	3. There is strong consensus on operational practices within the company.	3.76	1.164	.808		
	4. A common vision exists regarding the company's future direction.	4.05	.936	.724		
	5. Company policies are well-defined and explicit.	3.81	1.140	.868		
AI-Supported Appropriate Training of Employees					**.898**	**.750**
	5. Employees' professional skills are continuously updated via AI-enabled in-house training programs.	4.22	.683	.655		

	6. AI-based training eliminates geographical constraints on training delivery.	3.90	.819	.950		
	7. Employees receive targeted training to effectively handle AI tools and systems.	3.94	.771	.959		
Employee Engagement					**.935**	**.744**
	1. AI adoption improves overall employee performance.	3.46	1.162	.928		
	2. Employees demonstrate commitment to the quality of their output.	3.20	1.266	.894		
	3. Employees perform their duties with enthusiasm and dedication.	3.41	1.107	.928		
	4. Employees are motivated to contribute to successful business outcomes.	3.80	1.136	.694		
	7. Employees actively participate in generating business ideas and solutions.	3.39	1.141	.846		
Teams' Effective Performance					**.867**	**.685**
	2. Team members operate autonomously without direct supervision.	4.28	.615	.735		
	3. Team members self-organize and coordinate their tasks.	3.92	.735	.879		
	4. Team members independently address and resolve challenges.	3.76	.776	.862		
AI-Supported Leadership for Employees					**.873**	**.776**
	5. Employees benefit from robust leadership that champions AI initiatives and ensures project commitment.	3.81	1.084	.856		
	6. Open communication prevails, enabling immediate resolution of employee concerns.	3.72	1.035	.838		
AI-Supported Leadership for Business Solutions					**.835**	**.717**
	2. We effectively identify business challenges and align AI efforts to address them.	3.78	1.234	.825		
	3. We proactively anticipate the future needs of managers, suppliers, and customers and develop AI solutions accordingly.	3.70	1.142	.933		
Fit indices: $\chi 2$ (137) = 556.190; $p < .05$; NFI = .916; IFI = .936; TLI = .920; CFI = .936; RMSEA = .084						

The discriminant validity was examined using both the Fornell and Larcker [70] criterion and the heterotrait–monotrait ratio (HTMT) approach suggested by Henseler *et al.* [71]. Correlations between latent constructs and the square roots of their AVE values are provided in **Table 2**. Across all constructs, the square roots of AVE exceeded the corresponding inter-construct correlations, indicating acceptable discriminant validity. Furthermore, **Table 3** presents the HTMT ratios, all of which were below .85, reinforcing that discriminant validity was achieved.

Table 2. Correlations between Latent Variables

Construct	1	2	3	4	5	6
1. Organizational Culture	.802*					
2. AI-Supported Appropriate Training of Employees	.039	.866*				
3. Teams' Effective Performance	.113	.767	.828*			
4. Employee Engagement	.039	.193	.203	.862*		
5. AI-Supported Leadership for Employees	.339	.337	.313	.005	.881*	
6. AI-Supported Leadership for Business Solutions	.193	.760	.717	.193	.479	.847*

*Square roots of AVE

Table 3. HTMT Ratios of Correlation

Path	1	2	3	4	5
1. Organizational Culture →					
2. AI-Supported Appropriate Training of Employees ←	.138				
3. AI-Supported Leadership for Employees ←	.192	.784			
4. AI-Supported Leadership for Business Solutions ←	.355	.402	.471		
5. Teams' Effective Performance ←	.128	.841	.736	.317	
6. Employee Engagement ←	.050	.206	.197	.036	.221

Results of Linear and Non-Linear Relationship Testing

Data analyses were conducted using WarpPLS 7.0 and AMOS. Linear associations were assessed with AMOS, while non-linear relationships were analyzed using WarpPLS. The emergence of modern analytical tools such as WarpPLS enables researchers to model non-linear paths between variables [72]. WarpPLS applies curve-fitting algorithms to estimate both linear and curvilinear associations, identifying S-shaped or U-shaped relationships when appropriate. Since behavioral and natural phenomena rarely follow linear patterns, capturing these curves provides more accurate estimations of variable interconnections [73].

AMOS, on the other hand, utilizes structural equation modeling (SEM)—also known as covariance structure analysis or causal modeling—which integrates several statistical approaches including general linear modeling and common factor analysis [74]. To evaluate hypotheses, standard SEM fit indices were applied: χ^2 test, NFI, IFI, TLI, CFI, and RMSEA, following conventional thresholds [67-69]. The R^2 coefficients were used to determine structural model quality, while the γ and β path coefficients assessed the strength and significance of relationships among latent constructs.

In WarpPLS, multicollinearity was checked using variance inflation factors (VIF), adopting the criterion VIF < 5.0 as suggested by Hair *et al.* [75]. Model quality was then evaluated using R^2 and adjusted R^2, representing the percentage of explained variance, along with the Stone–Geisser Q^2 coefficient for model predictability. A $Q^2 > 0$ value signifies acceptable predictive validity [72].

Additional quality indicators—APC, ARS, AARS, AVIF, GoF, SPR, RSCR, and NLBCD—were used for overall model fit verification [72, 76]. The hypotheses were tested through path coefficients (γ) and Cohen's effect size (f^2), where .02, .15, and .35 represent small, medium, and large effects, respectively [72].

The hypotheses were then analyzed within both CB-SEM and PLS-SEM frameworks using AMOS and WarpPLS. In CB-SEM, estimation was performed through the maximum likelihood method. The model fit produced a significant chi-square result (χ^2 (142) = 541.20; $p < .05$) indicating an imperfect fit; however, given the model's complexity and sample size, this outcome is not uncommon [66]. The remaining indices demonstrated satisfactory fit: NFI = .916; IFI = .936; TLI = .922; CFI = .936; RMSEA = .082.

The identical model was then tested using WarpPLS, which yielded good fit indicators: APC, ARS, and AARS were all significant at $p < .001$, while other indices met recommended thresholds (AVIF = 1.467; GoF = .461; SPR = .889; RSCR = .997; NLBCDR = 1.000).

Table 4 outlines the outcomes derived from testing all hypotheses using both statistical procedures. The column labeled "Type of relationship Warp PLS" shows that every connection examined through the PLS-SEM technique was identified as non-linear, with complete results available in Appendix 1. Meanwhile, CB-SEM was employed to examine linear associations among the latent constructs.

For instance, the analysis presented in **Table 4** demonstrates that organizational culture does not exert a direct linear influence on AI-supported employee training, as this path was statistically insignificant. However, the non-linear analysis identified a U-shaped trend, implying that there exists an optimal level of organizational culture at which AI-oriented training becomes most effective, after which the influence begins to diminish.

In contrast, organizational culture significantly and positively affects AI-supported leadership for employees ($p < 0.001$). The pattern of this relationship follows an S-shaped curve, meaning that the positive effect increases with higher levels of culture until it reaches a plateau. Similarly, the relationship between organizational culture and AI-supported leadership for business solutions is also significant ($p < 0.001$) and takes a U-shaped form, suggesting an ideal point of cultural development that enhances AI-driven leadership effectiveness.

The association between AI-supported leadership for employees and AI-supported employee training was also found to be statistically significant ($p < 0.001$) and non-linear (S-shaped)—indicating that as leadership support grows, its positive impact on training rises to a threshold before stabilizing. Conversely, the link between AI-supported leadership for business solutions and AI-supported employee training was non-significant in the linear model, but demonstrated a U-shaped non-linear pattern, showing that training outcomes are optimal at moderate levels of leadership orientation.

Moreover, the relationship between AI-supported leadership for employees and team performance was positive and significant ($p < 0.001$), while the path from AI-supported leadership for business solutions to team performance was not significant in either linear or non-linear estimation. The non-linear (U-shaped) curve suggests that beyond certain levels, additional leadership efforts do not further enhance team outcomes.

Likewise, AI-supported employee training exhibited a strong, positive, and non-linear S-shaped impact on team performance ($p < 0.001$). Initially, performance improves as training increases, but the effect eventually plateaus. Finally, the connection between team performance and employee engagement displayed a significant non-linear U-shaped relationship ($p < 0.001$), indicating that engagement peaks at an optimal level of team effectiveness before declining.

Table 4. Hypotheses, Path Coefficients for AMOS and Warp PLS, and Nature of Relationships

Hypothesis	Path	AMOS Coefficient	AMOS Sig.	WarpPLS Coefficient	WarpPLS Sig.	WarpPLS Relationship Shape
H1	Organizational Culture → AI-Supported Appropriate Training of Employees	-.051	n.s.	-.021	n.s.	Non-linear U-shaped
H2a	Organizational Culture → AI-Supported Leadership for Employees	.194	$p < .001$	.179	$p < .001$	Non-linear S-shaped
H2b	Organizational Culture → AI-Supported Leadership for Business Solutions	.341	$p < .001$	.323	$p < .001$	Non-linear U-shaped
H3a	AI-Supported Leadership for Employees → AI-Supported Appropriate Training of Employees	.778	$p < .001$	.569	$p < .001$	Non-linear S-shaped
H3b	AI-Supported Leadership for Business Solutions → AI-Supported Appropriate Training of Employees	-.019	n.s.	.242	$p < .001$	Non-linear U-shaped
H4a	AI-Supported Leadership for Employees → Teams' Effective Performance	.334	$p < .001$	.247	$p < .001$	Non-linear S-shaped
H4b	AI-Supported Leadership for Business Solutions → Teams' Effective Performance	-.026	n.s.	.021	n.s.	Non-linear U-shaped
H5	AI-Supported Appropriate Training of Employees → Teams' Effective Performance	.524	$p < .001$	.589	$p < .001$	Non-linear S-shaped
H6	Teams' Effective Performance → Employee Engagement	.212	$p < .001$	.240	$p < .001$	Non-linear U-shaped
Fit indices CB-SEM: χ^2 (142) = 561.204; p < .05; NFI = .916; IFI = .936; TLI = .922; CFI = .936; RMSEA = .082						
Fit indices PLS-SEM: APC, ARS, AARS (p < .001) AVIF=1.467; GoF = .461; SPR = .889; RSCR = .997; NLBCDR = 1.000						

In addition, **Table 5** provides the R^2 coefficients for endogenous latent constructs computed using both analytical approaches.

Table 5. R^2 Coefficients for Endogenous Latent Constructs

Latent Variable	AMOS	WarpPLS
AI-Supported Leadership for Employees	**.038**	**.032**
AI-Supported Leadership for Business Solutions	**.116**	**.104**
AI-Supported Appropriate Training of Employees	**.579**	**.504**
Teams' Effective Performance	**.634**	**.604**
Employee Engagement	**.045**	**.058**

With respect to H1, findings indicated that organizational culture had no meaningful effect on AI-supported employee training (p > .05) across both estimation methods, leading to rejection of H1.

In contrast, H2 received empirical support, as both CB-SEM and PLS-SEM produced significant positive results (p < .001) for the effects of organizational culture on AI-supported leadership for employees and AI-supported leadership for business solutions **(Table 4)**.

For H3, support was found only in the PLS-SEM analysis, where both leadership types—employee-focused and business-solution-oriented—showed strong, significant impacts (p < .001) on AI-supported employee training, with a greater effect for employee-focused leadership. In contrast, in CB-SEM, only the influence of AI-supported leadership for employees remained significant (p < .001), while the path from AI-supported leadership for business solutions was non-significant (p > .05). Hence, H3 was partially confirmed for the covariance-based approach. Warp PLS further revealed a U-shaped curve, validating the non-linear association.

Regarding H4, the influence of AI-supported leadership for employees on team performance was positive and significant (p < .001), while the corresponding relationship for business-solution leadership was non-significant, consistent across both techniques. Thus, H4 was partly accepted **(Table 4)**.

In both analytical methods, the relationship between AI-supported employee training and team performance was strong, positive, and statistically significant (p < .001), leading to confirmation of H5. Similarly, H6 was supported, as employee engagement exerted a positive and significant effect (p < .001) on team performance, consistent across both AMOS and Warp PLS analyses **(Table 4)**.

Findings obtained from both statistical techniques are largely aligned, demonstrating comparable levels of significance and similar relational patterns. In terms of relationship forms, the majority appear nonlinear, characterized by U-shaped or S-shaped curves. A linear relationship in a graph is illustrated by a straight line, indicating a proportional change between the independent and dependent variables. In contrast, a nonlinear relationship is represented by a curve, implying that variations

in one variable do not produce constant proportional changes in another. Only H3b was statistically significant (showing a positive correlation) under the CB-SEM (WarpPLS) approach.

Collectively, these outcomes emphasize that organizational culture and AI-driven leadership are key determinants influencing AI-based training, AI-oriented leadership for business outcomes, and team effectiveness, all of which enhance employee engagement. The nonlinear dynamics observed indicate that these effects vary depending on the degree or intensity of each factor's existence or absence.

Discussion

These findings hold significant implications for corporate managers aiming to apply AI solutions to enhance employee productivity. The robustness of the study is underscored by the use of two SEM methods, providing both linear and nonlinear estimations for cross-validation.

Modern businesses are experiencing rapid shifts in customer behavior and expectations, reflected in how products and services are designed and delivered. Navigating ongoing market changes, trends, and digital challenges has become increasingly complex. However, digitalization enables firms to dedicate greater focus to their core competencies by automating repetitive, low-value tasks. Implementing AI technologies requires company-wide engagement, including proactive leadership that promotes AI adoption.

Moreover, an organizational culture that nurtures AI integration forms the softest yet most essential foundation for successful digital transformation. It determines how deeply digital initiatives are embedded and how effectively transformation goals are achieved. Based on **Table 4**, the analysis confirms that organizational culture positively influences both dimensions of AI-enabled leadership (H2).

Data from **Table 1** further suggest that Slovenian firms generally demonstrate a culture supportive of AI. Business owners agree that AI-enhanced internal training helps maintain up-to-date professional knowledge among employees. They also emphasize a shared vision of the organization's future, training for AI proficiency, managerial endorsement of AI initiatives, and efficient communication channels that quickly resolve employee issues.

In the current, fast-changing marketplace, digital transformation is vital for maintaining competitiveness. A progressive culture that fosters AI leadership is critical for success. However, **Table 4** also shows that organizational culture did not significantly influence AI-based employee training. Despite AI's potential to boost organizational effectiveness, many companies still struggle due to inadequate organizational and AI capabilities [77]. Continuous and personalized AI-supported training programs can bridge these capability gaps [78].

To strengthen adaptability, organizations should cultivate values and business practices that emphasize agility, innovation, and resilience against environmental disruptions. This involves developing strong customer responsiveness, encouraging digital leadership, and promoting a positive employee attitude toward adopting emerging technologies—all contributing to exceptional workplace experiences.

Leadership and ai-supported training

According to the PLS-SEM model, both AI-oriented leadership for employees and AI-driven leadership for business outcomes significantly improved AI-based training effectiveness (H3). In contrast, CB-SEM results revealed no significant relationship between AI-oriented leadership for business outcomes and AI-related training **(Table 4)**. The U-shaped relationship found in PLS-SEM clarifies this discrepancy, offering valuable insight into the nonlinearity of the association.

Overall, AI-based employee training enables organizations to optimize workforce capabilities by aligning skills with strategic goals. For such programs to succeed, companies must first clarify their business objectives and understand the training needs of their employees, customers, and partners. Only then can they design AI-integrated learning systems that effectively build essential competencies.

Broader implications

As Fleming [79] notes, AI has introduced new leadership challenges—executives must maintain financial stability while investing heavily in workforce development and technology adoption [10]. AI systems can process vast data volumes, identifying knowledge gaps and creating personalized learner profiles [46, 80]. Through AI-enhanced learning platforms, employees can customize their training goals, choose learning paths, and access content tailored to their preferences [80].

Research shows that digital training tools can raise productivity by 30%, enhance learning engagement by 18%, shorten training time by 65%, and improve knowledge retention by up to 60% compared to traditional methods [81]. Furthermore, 91% of employees express a preference for personalized, relevant learning experiences [78]. Clearly, artificial intelligence represents the future foundation of corporate learning and employee development.

Although progress in this area is still at an early stage, it has already drawn substantial attention from the corporate sector, as it offers significant potential for learning enhancement and knowledge optimization [58]. Artificial intelligence examines all

available data about learner behaviors to understand what learning paths should be created [16]. Through this process, AI delivers learning modules that are specifically tailored to each individual taking the course. This customized learning experience significantly boosts engagement levels and greatly improves success rates. AI represents the technology that organizations will increasingly rely on to provide stimulating and interactive learning experiences for their employees [5, 46, 78]. Therefore, it is suggested that companies carefully plan which skill sets and training programs are required for employees to achieve optimal performance. In addition, organizations should apply AI to design customized employee development initiatives suited to each person's unique needs. Because the rapid growth of AI requires expertise in science, technology, engineering, and mathematics, firms must create specialized training programs tailored to each department's unique functions. Moreover, companies are encouraged to introduce flexible AI-based learning options that enable employees to train remotely, increasing their engagement and helping them balance their professional and personal lives more effectively.

Our findings confirm that AI-assisted leadership aimed at employees exerts a positive influence on teams, while AI-oriented leadership focused on business solutions does not have a statistically significant impact on team outcomes (H4). This might be explained by the absence of certain variables that could influence team efficiency in addressing business demands and creating AI-driven strategies, such as AI literacy levels, prior experience, collaboration, and communication capabilities, as well as resource availability. Consequently, additional studies are required to explore the underlying factors behind the lack of significant influence on team effectiveness.

The results also validate that AI-supported, well-designed employee training programs have a positive effect on team performance (H5). Leaders are central to team success, as they guide, coordinate, and instruct members toward achieving collective objectives [49]. To complete projects effectively, leaders must articulate clear goals, create the necessary conditions for their realization, and inspire their teams accordingly [32]. Leadership encompasses numerous responsibilities, including maintaining structured workflows and managing processes within the group [22]. Moreover, strategic planning for group development involves utilizing all accessible resources to reach project milestones [58]. The potential of AI to strengthen cooperation and performance within teams has also been recognized [15]. For instance, AI systems can generate anonymous summary reports reflecting team performance, enabling members to give open feedback and identify areas for improvement [82]. As stated in an Infosys [83] survey, 90% of senior executives observed measurable benefits from AI adoption, and 73% agreed or strongly agreed that AI had already reshaped their business operations. Using AI technologies in teamwork is highly advantageous. When teams delegate repetitive, detail-heavy tasks to AI, members can focus on higher-level, creative, or strategic responsibilities, which enhances engagement and motivation.

Our study further confirms that effective teamwork positively influences employee engagement (H6). By leveraging AI, teams can access a larger pool of accurate and timely information essential for decision-making and daily operations [23]. Cotgreave [84] noted that modern data analytics systems are robust, requiring team members to possess diverse technical skills. Thus, teams should reflect the evolving nature of required skill sets and prioritize diversity [65]. Accordingly, it is crucial for organizations to ensure that employees receive adequate training, as it directly contributes to achieving team goals successfully. Research into artificial intelligence and its growing application across multiple business functions continues to expand. With intensifying competition and environmental shifts, companies increasingly employ AI across marketing, management, and team-building functions. AI empowers employees, enhances performance, and fosters stronger collaboration. In a rapidly changing and competitive business landscape, organizations must often form teams to tackle complex challenges under tight deadlines. Therefore, we suggest that firms concentrate on strengthening their internal capacity to integrate AI technologies, as many still lack sufficient expertise and resources to develop new models and algorithms. Human resource development remains a cornerstone of organizational capability. Only through the combined efforts of skilled personnel and structured development initiatives can companies effectively implement and utilize AI-driven solutions. Since AI learning models rely heavily on large volumes of high-quality data, firms must employ data engineers responsible for collecting, cleaning, organizing, and managing this data. Developing AI models falls under the expertise of data scientists or machine learning engineers, making their inclusion within the company essential. Beyond this, the organization must integrate AI across all departments, ensure leadership and culture alignment with AI adoption, and foster strong employee engagement to support sustainable performance.

Theoretical, managerial, and practical implications

Theoretical Implications

1. Reliable Findings:
2. This study applied two structural equation modeling (SEM) techniques, covering both linear and nonlinear estimations, ensuring the consistency and robustness of its outcomes. Such methodological diversity strengthens the validity of the conclusions and deepens insight into the interplay among organizational culture, AI-driven leadership, AI-supported training, team performance, and employee engagement.
3. Extension of Current Knowledge:

4. The outcomes expand existing literature concerning AI utilization in corporate settings, specifically highlighting the importance of organizational culture and AI-based leadership in enhancing productivity and managing organizational transformation.
5. Positive Leadership Effects:
6. Evidence from the research demonstrates that AI-oriented leadership has a constructive impact on employee development programs and team efficiency, aligning with fundamental ideas in leadership and learning theories.
7. Differentiated Use of AI:
8. By examining the distinct effects of AI-enabled leadership directed toward employees versus business operations, the study contributes to a better comprehension of how AI technologies influence diverse organizational domains.
9. Cultural Influence Limitations:
10. Although organizational culture was shown to positively affect AI-based leadership, it did not influence AI-related employee training, indicating a need for further inquiry into the mechanisms connecting these constructs.
11. Nonlinear Dynamics:
12. The identification of U-shaped and S-shaped patterns underscores the necessity of considering nonlinear associations among variables. These findings imply that relationships may reach optimal thresholds where their effects stabilize or intensify.

Managerial Implications

1. Integrating AI Successfully:
2. Managers aiming to boost employee performance through AI deployment must foster an organizational culture that encourages AI-supportive leadership and enhances team collaboration. A constructive internal culture is vital for the effective assimilation of AI initiatives.
3. Tailored Learning Solutions:
4. AI-based training programs should be personalized to align with each employee's unique development needs. Customized learning enhances both engagement and competency growth, contributing to superior overall outcomes.
5. Building AI Competence:
6. Firms planning to implement AI must invest in human capital, especially in developing data science and engineering expertise, to ensure efficient data management and AI model development that underpins successful adoption.
7. Enhancing Team Productivity:
8. To achieve maximum team effectiveness, managers should employ AI tools for repetitive or time-intensive tasks, allowing employees to concentrate on activities requiring creativity and judgment beyond AI's scope.

Practical Implications

1. AI-Driven Employee Training:
2. Organizations should incorporate AI technologies into their learning and development strategies to enrich the employee learning journey. Implementing AI in training increases productivity, engagement, and knowledge retention compared to conventional learning systems.
3. Optimizing Team Outcomes:
4. Leadership should focus on building high-functioning teams, as team effectiveness directly enhances employee engagement. Promoting collaboration, open communication, and adequate support systems can yield better results.
5. Agility Amid Digital Change:
6. The rapid pace of digitalization and AI adoption demands that firms remain agile and adaptable. Cultivating a flexible organizational culture and digitally competent leadership is critical to sustaining competitiveness.
7. Data-Informed Management:
8. Leveraging AI analytics to process large datasets enables organizations to pinpoint information gaps and improve decision quality. Data-driven insights empower managers to enhance growth and productivity.

Conclusion

The advancement of artificial intelligence technologies is reshaping human–machine interaction, business logic, and everyday life. This transformation raises key questions about the broader implications of AI for businesses, users, and economies. Rapid economic evolution, paired with automation and AI integration, is prompting organizations to redefine work models and embed AI systems throughout operational processes.

This study highlights a notable gap in the literature concerning the significance of AI-supportive culture and leadership for achieving team success and enhanced employee engagement. Moreover, by applying two distinct SEM approaches, the research validates both linear and nonlinear relationships among the key constructs.

The COVID-19 pandemic further accelerated global AI adoption, emphasizing the necessity for companies to develop AI competencies to maintain competitiveness. Policymakers should consider allocating development funds to strengthen AI capabilities within firms, as this would enable Slovenian enterprises to remain globally competitive, simultaneously boosting national economic performance through increased fiscal contributions.

This investigation centered on medium and large Slovenian firms. Future research should expand to smaller enterprises and different sectors or regions, to provide a broader perspective on AI's impact across various organizational contexts. One key finding—that organizational culture did not significantly influence AI-oriented employee training—warrants deeper

exploration. Subsequent studies could explore the underlying causes of this result and identify other variables shaping AI-based learning.

Additionally, while the PLS-SEM model supported the positive link between AI leadership and AI-based training, the CB-SEM model did not. Further research could verify these results using alternative analytical techniques and exploring mediating or moderating influences. Since AI-supported leadership for business solutions did not significantly affect team outcomes, additional studies should examine this connection under different business conditions. The confirmed positive relationship between employee engagement and team performance should also be investigated further by analyzing engagement components such as job satisfaction or organizational commitment in AI-integrated settings.

The application of nonlinear SEM models provides an advantage over linear approaches, as they better capture complex, interactive relationships among constructs. These models allow for nonlinear measurement, offering improved precision in understanding behavioral processes and generating stronger predictive insights for managerial decisions.

While this study relied on a single nonlinear modeling technique, future work could extend it with neural network methods [85], which are effective in simulating human perception and have proven useful in similar research contexts.

The current research was limited to five constructs: organizational culture, AI-supported leadership, AI-based employee training, teams, and employee engagement. We propose expanding the conceptual model to include additional AI-related factors and comparing cross-industry differences within Slovenian organizations.

Finally, the use of a single survey instrument to assess both dependent and independent variables may lead to common method variance [86]. Such bias can occur when respondents exhibit consistency tendencies or rely on implicit theories and cognitive schemas, potentially influencing how they perceive and recall behaviors [87]. Since data were gathered from the same context and time frame, some degree of systematic covariance cannot be entirely ruled out [86].

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