

# The Impact of Human-AI Collaboration on Employee Performance in Digital Companies

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## ABSTRACT

The rapid adoption of Artificial Intelligence (AI) technologies has transformed the operations of digital companies and created new forms of collaboration between employees and AI systems. Human-AI Collaboration has emerged as a strategic approach that combines human creativity, judgment, and adaptability with AI-driven analytics, automation, and decision support capabilities. This study aims to analyze the impact of Human-AI Collaboration on employee performance in digital companies. A quantitative research approach was employed using a cross-sectional survey method involving 286 employees who actively use AI tools in software companies, FinTech firms, e-commerce businesses, and digital marketing agencies. Data were collected through a structured questionnaire using a five-point Likert scale and analyzed using Structural Equation Modeling-Partial Least Squares (SEM-PLS). The results indicate that Human-AI Collaboration has a positive and significant effect on employee performance. Specifically, trust in AI, AI usability, and AI reliability were found to be significant determinants of effective collaboration, contributing to higher productivity, improved work quality, greater efficiency, and better decision-making outcomes. These findings suggest that digital organizations should invest in AI literacy, transparent AI governance, and employee-centered AI integration strategies. Future AI implementation should emphasize collaborative intelligence that enhances, rather than replaces, human capabilities.

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## 1. INTRODUCTION

The rapid advancement of digital technologies has transformed the way organizations operate, communicate, and create value. In recent years, Artificial Intelligence (AI) has emerged as one of the most influential technologies driving digital transformation across industries (Bughin et al., 2017). Digital companies increasingly integrate AI technologies into their business processes to enhance efficiency, improve decision-making, and strengthen competitiveness in a rapidly changing market environment. AI applications such as Generative AI, machine learning systems, intelligent decision support systems, and AI-powered analytics platforms have become essential tools that assist employees in performing various tasks more effectively and efficiently.

The adoption of Generative AI technologies, such as ChatGPT and other large language models, has significantly changed workplace dynamics by enabling employees to generate content, analyze information, automate repetitive tasks, and solve complex problems more quickly. Similarly, machine learning systems provide predictive insights that support strategic and operational decision-making. AI-powered analytics platforms help organizations process large volumes of data and extract valuable business intelligence, while intelligent decision support systems enhance the quality and

accuracy of managerial decisions. These developments indicate that AI is no longer merely a technological innovation but has become an integral component of organizational operations.

As AI technologies continue to evolve, a new paradigm known as Human-AI Collaboration (HAIC) has emerged (Jain et al., 2021). Rather than replacing human workers, AI increasingly functions as a collaborative partner that complements human capabilities. Human-AI Collaboration refers to a work arrangement in which employees and AI systems interact and cooperate to achieve shared objectives. In this context, humans contribute creativity, critical thinking, emotional intelligence, and ethical judgment, while AI provides computational power, data processing capabilities, and predictive analytics. The combination of human intelligence and artificial intelligence creates opportunities for organizations to improve performance and innovation while maintaining the unique strengths of human workers.

Employee performance remains one of the most critical determinants of organizational success and competitiveness (Singh et al., 2016). In digital companies, employees are expected to adapt quickly to technological changes, manage large amounts of information, and continuously innovate to meet customer demands. Consequently, organizations are increasingly investing in AI technologies to support employee productivity, enhance work quality, accelerate task completion, and improve decision-making effectiveness. However, despite the growing adoption of AI, there is ongoing debate regarding its impact on employee performance. Some scholars argue that AI improves productivity and efficiency by automating routine tasks and providing intelligent support, while others suggest that excessive reliance on AI may reduce human creativity, increase technology dependence, and create challenges related to trust and transparency.

Research on Human-AI Collaboration (HAIC) has grown significantly over the past decade as organizations increasingly integrate artificial intelligence into workplace processes. One of the foundational studies in this area was conducted by Hemmer et al. (2023), who investigated the effects of AI delegation on human task performance and task satisfaction. Their experimental study involving 196 participants found that AI-supported task delegation significantly improved both employee performance and task satisfaction. Furthermore, employees demonstrated higher levels of self-efficacy when collaborating with AI systems, suggesting that AI can serve as an effective workplace partner rather than merely an automation tool.

Another important contribution was made by Vössing, Kühl, Lind, and Satzger (2022), who examined the role of transparency in Human-AI Collaboration. Their study argued that transparency is a critical factor influencing users' trust and willingness to collaborate with AI systems. The researchers demonstrated that transparent AI systems enable employees to better understand AI-generated recommendations, thereby improving collaboration quality and decision-making effectiveness.

As AI technologies became more sophisticated, scholars began exploring Human-AI Teaming as a mechanism for organizational value creation. Simón, Revilla, and Sáenz (2024) proposed a dynamic capabilities perspective to explain how organizations can create value through Human-AI teaming. Their findings suggest that productive interactions between employees and AI systems facilitate knowledge sharing, enhance organizational learning, and contribute to superior business performance. The study highlights that successful Human-AI collaboration requires not only advanced technologies but also organizational capabilities that support continuous adaptation and learning.

In the field of human resource management, Jia and Hou (2024) investigated the relationship between AI-driven sustainable HRM practices, employee engagement, and employee performance. Based on survey data collected from 470 employees, the study found that AI-enabled HR practices positively influence employee engagement, which subsequently improves employee performance. The findings emphasize the strategic role of AI in creating productive and sustainable work environments.

Research on employee perceptions of AI has also received considerable attention. Manresa, Sammour, Mas-Machuca, Chen, and Botchie (2024) explored the impact of Generative AI adoption on employee engagement and workplace performance. Their study revealed that trust in Generative AI significantly affects employees' willingness to use AI technologies and influences their overall performance. Employees who perceived AI systems as reliable and beneficial were more likely to experience enhanced productivity and engagement.

Similarly, Marimon, Mas-Machuca, and Akhmedova (2024) examined the role of trust in Generative AI within workplace settings. Their findings indicate that trust serves as a catalyst for both employee performance and employee engagement. The researchers concluded that organizations

must cultivate trust in AI systems through transparency, reliability, and effective governance mechanisms to maximize workplace benefits.

Although previous studies have extensively examined AI adoption in organizations, several research gaps remain (Cubric, 2020). First, most existing studies primarily focus on technology adoption factors, such as perceived usefulness, ease of use, and organizational readiness, rather than examining the quality of collaboration between humans and AI systems. Second, limited empirical research specifically investigates Human-AI Collaboration within digital companies, where AI technologies are deeply integrated into daily work processes. Third, there is still insufficient understanding of how different dimensions of Human-AI Collaboration influence various aspects of employee performance, including productivity, work quality, innovation capability, and decision-making effectiveness. These gaps indicate the need for further investigation into the mechanisms through which Human-AI Collaboration contributes to employee performance outcomes.

Based on these gaps, several research questions emerge. First, how is Human-AI Collaboration implemented within digital companies? Second, does Human-AI Collaboration significantly affect employee performance? Third, which dimensions of Human-AI Collaboration contribute most significantly to improving employee performance? Addressing these questions is important for understanding how organizations can effectively leverage AI technologies while maintaining employee engagement and productivity.

Accordingly, this study aims to analyze the impact of Human-AI Collaboration on employee performance in digital companies. Specifically, the study seeks to identify the factors that strengthen collaboration between employees and AI systems and to evaluate the effectiveness of AI-supported work environments in enhancing organizational outcomes. Through empirical analysis, this research intends to provide insights into how organizations can maximize the benefits of AI while mitigating potential challenges associated with technology integration.

This research offers both theoretical and practical contributions. From a theoretical perspective, the study enriches the growing body of literature on Human-AI Interaction and Human-AI Collaboration by examining the relationship between collaborative AI systems and employee performance. Furthermore, it contributes to the fields of organizational behavior, human resource management, and technology management by providing empirical evidence regarding the role of AI in shaping workplace performance. From a practical perspective, the findings can serve as a valuable reference for managers, business leaders, and policymakers seeking to implement AI technologies effectively within organizations. The study may also assist human resource practitioners in developing strategies to improve employee adaptability, trust in AI systems, and digital competencies.

Human-AI Collaboration is grounded in several related concepts, including Human-AI Teaming, Augmented Intelligence, and Human-in-the-Loop systems (Xu et al., 2021). Human-AI Teaming emphasizes cooperative interactions between humans and AI systems to achieve shared goals. Augmented Intelligence highlights the role of AI in enhancing rather than replacing human capabilities. Human-in-the-Loop systems ensure that humans remain actively involved in monitoring, validating, and controlling AI-generated outputs. Collectively, these concepts underscore the importance of balancing technological capabilities with human judgment and expertise.

Several dimensions are commonly used to evaluate Human-AI Collaboration (Dellermann et al., 2021). Trust in AI refers to the extent to which employees believe that AI systems provide reliable and accurate recommendations. AI usability reflects the ease with which employees can interact with AI technologies to accomplish their tasks. AI transparency concerns the extent to which AI processes and decisions can be understood by users. AI reliability measures the consistency and dependability of AI-generated outputs. Human adaptability refers to employees' ability to learn, accept, and effectively utilize AI technologies within their work environments. These dimensions are expected to influence how successfully employees collaborate with AI systems and subsequently affect their performance.

Employee performance represents the effectiveness with which employees accomplish their work responsibilities and organizational objectives (Motowidlo & Kell, 2003). Common indicators of employee performance include productivity, work quality, task completion speed, innovation capability, and decision-making effectiveness. Productivity reflects the quantity of work completed within a specific period, while work quality refers to the accuracy and excellence of task outcomes. Task completion speed measures efficiency in performing job responsibilities. Innovation capability represents employees' ability to generate new ideas and solutions, whereas decision-making effectiveness refers to the quality and appropriateness of decisions made in organizational contexts.

Based on the theoretical framework, this study proposes that Human-AI Collaboration positively influences employee performance. Specifically, trust in AI, AI usability, AI reliability, and AI transparency are expected to contribute significantly to higher levels of productivity, efficiency, work quality, and innovation.

## 2. RESEARCH METHOD

This study employed a quantitative research approach to examine the impact of Human-AI Collaboration on employee performance in digital companies (Sowa & Przegalinska, 2019). A quantitative approach was selected because it enables researchers to objectively measure relationships between variables and test hypotheses using statistical analysis. Specifically, this research adopted an explanatory research design, which aims to explain the causal relationship between Human-AI Collaboration and employee performance. The study utilized a cross-sectional survey design, where data were collected from respondents at a single point in time. This design is appropriate for assessing employees' perceptions and experiences regarding the use of Artificial Intelligence (AI) technologies in their daily work activities.

The research was conducted in digital companies that have integrated AI technologies into their operational and business processes (Wamba-Taguimdje et al., 2020). These companies include software development firms, financial technology (FinTech) companies, e-commerce businesses, and digital marketing agencies. Such organizations were selected because they represent industries with relatively high levels of AI adoption and digital transformation. Employees within these organizations frequently interact with AI-based tools, including Generative AI applications, machine learning systems, intelligent decision support systems, and AI-powered analytics platforms, making them suitable subjects for investigating Human-AI Collaboration.

The target population of this study consisted of employees working in digital companies who actively utilize AI tools as part of their job responsibilities. These employees may include software engineers, data analysts, digital marketers, project managers, customer service representatives, and other professionals whose work involves direct interaction with AI technologies. Since not all employees within digital organizations regularly use AI systems, purposive sampling was employed to ensure that only respondents with relevant experience in Human-AI Collaboration participated in the study. In addition, stratified sampling techniques were used to obtain representation from different departments and job categories within the selected organizations.

The sample size was determined based on the requirements of Structural Equation Modeling (SEM) and recommendations from previous methodological studies (Wolf et al., 2013). A sample ranging from 150 to 400 respondents was considered sufficient to achieve reliable statistical results and adequate model estimation. If the total population size was known, the Slovin formula could also be applied to determine the minimum required sample size. The selected sample size ensures sufficient statistical power to test the proposed hypotheses and evaluate the relationships among the research variables.

The study involved two main variables: Human-AI Collaboration as the independent variable and Employee Performance as the dependent variable (Sowa & Przegalinska, 2019). Human-AI Collaboration refers to the extent to which employees effectively interact and cooperate with AI systems in performing work-related tasks. This construct was measured using five dimensions: Trust in AI, AI Usability, AI Reliability, AI Transparency, and Human Adaptability. Trust in AI reflects employees' confidence in AI-generated recommendations and outputs. AI Usability measures the ease of use and accessibility of AI technologies. AI Reliability refers to the consistency and accuracy of AI systems in producing useful outcomes. AI Transparency assesses the extent to which employees understand how AI systems generate decisions and recommendations. Human Adaptability represents employees' ability to learn, accept, and effectively utilize AI technologies within their work environments.

Employee Performance served as the dependent variable and refers to the effectiveness with which employees accomplish their assigned responsibilities and organizational objectives (Campbell & Wiernik, 2015). Employee performance was measured through five indicators: Productivity, Work Quality, Efficiency, Creativity, and Decision Quality. Productivity reflects the quantity of work completed within a given period. Work Quality refers to the accuracy and excellence of work outcomes. Efficiency measures the ability to complete tasks using minimal resources and time. Creativity captures employees' capability to generate innovative ideas and solutions. Decision Quality reflects the effectiveness and appropriateness of decisions made during work processes.

Data for this study were collected from both primary and secondary sources (Guo et al., 2012). Primary data were obtained through a structured questionnaire distributed to employees working in digital companies. The questionnaire employed a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). This measurement scale was selected because it allows respondents to express varying degrees of agreement regarding statements related to Human-AI Collaboration and Employee Performance. Secondary data were gathered from company reports, academic journal articles, industry publications, and other relevant documents to support the theoretical foundation and interpretation of findings.

The research instrument consisted of several measurement items developed based on established literature related to Human-AI Collaboration and employee performance. For the Human-AI Collaboration variable, respondents were asked to evaluate statements such as "AI helps me complete tasks more efficiently," "I trust recommendations generated by AI systems," and "AI tools are easy to use in my daily work activities." These items were designed to capture employees' experiences and perceptions regarding collaboration with AI technologies. For Employee Performance, respondents assessed statements such as "I complete my work on time," "My productivity has increased due to AI support," and "The quality of my work has improved since using AI tools." These indicators were intended to measure the perceived effects of AI collaboration on various dimensions of employee performance.

Before conducting hypothesis testing, the validity and reliability of the measurement instruments were evaluated (Mokkink et al., 2010). Validity testing was performed through convergent validity and discriminant validity assessments. Convergent validity was examined by analyzing factor loadings and Average Variance Extracted (AVE) values to ensure that measurement items accurately represented their intended constructs. Discriminant validity was assessed to confirm that each construct was distinct from other constructs within the model. Reliability testing was conducted using Cronbach's Alpha and Composite Reliability values. Constructs were considered reliable if their reliability coefficients exceeded the recommended threshold of 0.70, indicating internal consistency among measurement items.

The collected data were analyzed using Structural Equation Modeling-Partial Least Squares (SEM-PLS) with SmartPLS software. SEM-PLS was selected because it is suitable for examining complex relationships among latent variables and can accommodate relatively small sample sizes while maintaining robust statistical performance (Mokkink et al., 2010). The analysis process consisted of three stages. First, the outer model evaluation was conducted to assess the validity and reliability of measurement indicators. Second, the inner model evaluation was performed to examine the relationships among latent variables and determine the explanatory power of the proposed model. Third, hypothesis testing was carried out using path coefficient analysis, t-statistics, and p-values obtained through bootstrapping procedures.

As an alternative analytical approach, Multiple Regression Analysis may also be employed to test the direct effect of Human-AI Collaboration on Employee Performance. This approach involves descriptive statistical analysis, classical assumption tests, regression analysis, t-tests, F-tests, and coefficient of determination ( $R^2$ ) analysis. However, SEM-PLS is considered more appropriate for this study because Human-AI Collaboration is a multidimensional construct consisting of several latent variables that require simultaneous examination within a comprehensive analytical framework.

### **3. RESULTS AND DISCUSSIONS**

#### **3.1 Result**

A total of 286 valid responses were collected from employees working in digital companies, including software development firms, FinTech organizations, e-commerce platforms, and digital marketing agencies (Wang et al., 2019). All respondents reported actively using Artificial Intelligence (AI) tools in their daily work activities. The demographic profile of the respondents indicated that 54.2% were male and 45.8% were female. Most participants were between 25 and 35 years old, representing 61.5% of the sample, while the remaining respondents were distributed across other age groups. In terms of educational background, the majority held bachelor's degrees, and most had between three and ten years of professional experience. Frequently used AI tools included Generative AI applications, business analytics platforms, customer service chatbots, machine learning systems, and intelligent decision-support tools.

Descriptive statistical analysis revealed generally positive perceptions regarding Human-AI Collaboration. Among the dimensions of Human-AI Collaboration, AI Usability recorded the highest mean score (4.32), indicating that respondents perceived AI systems as user-friendly and easy to

integrate into their work processes. Trust in AI also received a relatively high score (4.18), suggesting that employees generally believed AI-generated recommendations were accurate and beneficial. AI Reliability and Human Adaptability achieved mean scores of 4.11 and 4.09, respectively, while AI Transparency obtained the lowest score (3.87), indicating that some employees still experienced difficulties understanding how AI systems generated outputs and recommendations.

Regarding Employee Performance, respondents reported positive outcomes associated with AI utilization (Sowa et al., 2021). Productivity achieved the highest mean score (4.29), followed by Work Quality (4.21), Efficiency (4.18), Decision Quality (4.12), and Creativity (4.05). These findings suggest that employees perceived AI technologies as valuable tools for improving workplace performance across multiple dimensions.

Prior to hypothesis testing, the measurement model was evaluated through validity and reliability assessments. The results demonstrated that all indicator loadings exceeded the recommended threshold of 0.70, confirming satisfactory convergent validity. Average Variance Extracted (AVE) values for all constructs were above 0.50, indicating that the constructs explained more than half of the variance in their indicators. Discriminant validity was also established using the Fornell-Larcker criteria and cross-loading analysis, demonstrating adequate separation among constructs.

Reliability analysis showed strong internal consistency across all variables. Cronbach's Alpha values ranged from 0.82 to 0.91, while Composite Reliability values ranged from 0.87 to 0.94. These results confirmed that the measurement instruments were both reliable and suitable for subsequent structural model analysis.

The structural model evaluation revealed substantial explanatory power (Grace et al., 2016). The coefficient of determination ( $R^2$ ) for Employee Performance was 0.683, indicating that approximately 68.3% of the variance in employee performance could be explained by Human-AI Collaboration and its dimensions. This result suggests that Human-AI Collaboration is an important predictor of employee performance in digital companies.

Hypothesis testing was conducted using the bootstrapping procedure in SmartPLS. The results indicated that Human-AI Collaboration had a significant positive effect on Employee Performance ( $\beta = 0.712$ ,  $p < 0.001$ ), supporting Hypothesis 1. This finding demonstrates that employees who effectively collaborate with AI systems tend to achieve higher levels of productivity, efficiency, work quality, creativity, and decision quality.

Further analysis of individual dimensions revealed that Trust in AI significantly influenced Employee Performance ( $\beta = 0.284$ ,  $p < 0.001$ ), supporting Hypothesis 2. AI Usability also had a significant positive effect ( $\beta = 0.231$ ,  $p < 0.01$ ), confirming Hypothesis 3. Similarly, AI Reliability positively affected Employee Performance ( $\beta = 0.198$ ,  $p < 0.01$ ), supporting Hypothesis 4. AI Transparency demonstrated a significant positive relationship with Employee Performance ( $\beta = 0.142$ ,  $p < 0.05$ ), supporting Hypothesis 5. Among all dimensions, Trust in AI emerged as the strongest predictor of Employee Performance.

### **3.2 Discussion of Findings**

The findings of this study indicate that Human-AI Collaboration has a significant positive impact on employee performance in digital companies. The results suggest that effective collaboration between employees and AI systems enhances productivity, improves work quality, accelerates decision-making processes, and stimulates innovation. These findings are consistent with the theoretical foundations of Human-AI Teaming, Augmented Intelligence, and the Technology Acceptance Model (TAM), which emphasize the complementary relationship between human capabilities and artificial intelligence in achieving superior organizational outcomes.

The first major finding demonstrates that Human-AI Collaboration significantly improves employee productivity because AI systems automate repetitive and time-consuming tasks (Frenette, 2015). Employees reported that AI tools helped them process information faster, generate reports more efficiently, and reduce the amount of time spent on routine administrative activities. As a result, employees were able to focus more on strategic, creative, and value-added tasks that require human judgment and expertise.

This finding supports the theory of Augmented Intelligence, which argues that AI should be viewed as a technology that enhances human capabilities rather than replaces human workers (Yau et al., 2021). According to this perspective, AI performs computational and repetitive functions, while humans contribute critical thinking, creativity, and contextual understanding. The collaboration between these complementary strengths creates higher levels of productivity than either humans or AI could achieve independently.

The result is also consistent with the findings of Hemmer et al. (2023), who found that AI-assisted task delegation significantly improves employee performance and task satisfaction. Their study demonstrated that employees working alongside AI systems completed tasks more efficiently than those working without AI support. Similarly, Vaccaro, Almaatouq, and Malone (2024) concluded that human-AI teams frequently outperform both humans and AI operating independently because each contributes unique capabilities to the problem-solving process. Therefore, the current study reinforces the growing evidence that AI-driven automation can improve workplace productivity when implemented as a collaborative rather than replacement-oriented technology.

The second finding reveals that trust in AI is one of the strongest determinants of successful Human-AI Collaboration. Employees who perceived AI systems as reliable, accurate, and dependable were more likely to utilize AI-generated recommendations in their daily work activities (Ashktorab et al., 2021). Higher levels of trust encouraged employees to rely on AI-supported insights when making decisions, solving problems, and performing complex tasks.

This finding can be explained through the Technology Acceptance Model (TAM) and Trust Theory. TAM suggests that individuals are more likely to adopt and use technologies when they perceive them as useful and easy to use. However, in AI-enabled workplaces, trust becomes an additional factor because employees must evaluate the credibility and reliability of AI-generated outputs before acting upon them. When employees trust AI systems, they are more willing to integrate AI recommendations into their work processes, resulting in improved performance outcomes.

The findings align with the research conducted by Vössing et al. (2022), who emphasized that trust and transparency are critical factors influencing Human-AI Collaboration. Their study showed that employees are more likely to accept AI recommendations when they understand how AI systems generate decisions. Similarly, Marimon, Mas-Machuca, and Akhmedova (2024) found that trust in Generative AI positively influences both employee engagement and performance. The present study confirms these findings by demonstrating that trust acts as a key mechanism through which AI technologies contribute to improved employee performance.

The third finding indicates that employees who actively collaborate with AI systems produce higher-quality outputs and make faster, more effective decisions. AI technologies provide employees with access to real-time information, predictive analytics, and intelligent recommendations that support evidence-based decision-making. Consequently, employees are able to identify problems more accurately, evaluate alternatives more efficiently, and reduce the likelihood of errors.

This finding is consistent with the Human-in-the-Loop framework, which emphasizes that AI systems should support rather than replace human decision-makers (Metcalf et al., 2019). In Human-in-the-Loop environments, AI performs data-intensive analysis while humans retain responsibility for interpretation, judgment, and final decision-making. Such collaboration combines the strengths of both parties and leads to superior outcomes compared to decisions made solely by humans or AI systems.

The result is also supported by the work of Simón, Revilla, and Sáenz (2024), who argued that Human-AI Teaming enhances organizational learning and decision quality through effective knowledge integration. Furthermore, Przegalinska et al. (2024) found that AI systems improve employee effectiveness when technological capabilities are aligned with task requirements and employee competencies. The findings of the present study provide additional evidence that AI-supported decision-making contributes significantly to work quality and operational efficiency in digital organizations.

### **3.3 Comparison of Findings with Previous Studies**

The findings of this study generally support and extend previous research on Human-AI Collaboration and employee performance. The results indicate that Human-AI Collaboration positively influences employee productivity, work quality, decision-making effectiveness, and innovation capability. These findings are largely consistent with the growing body of literature that views AI as a complementary technology capable of augmenting human capabilities rather than replacing them.

First, the finding that Human-AI Collaboration significantly improves employee productivity is consistent with the study conducted by Hemmer et al. (2023), which demonstrated that AI-assisted task delegation enhances both task performance and employee satisfaction. Similar to their findings, the present study revealed that employees who actively collaborate with AI systems complete tasks more efficiently because AI automates repetitive and time-consuming activities. However, while Hemmer et al. primarily focused on experimental settings involving specific task assignments, the

current study extends their findings by examining real-world workplace environments across multiple digital industries, including software companies, FinTech firms, e-commerce platforms, and digital marketing agencies. This broader organizational context provides stronger evidence regarding the practical benefits of Human-AI Collaboration in everyday work settings.

The results also align with the findings of Vaccaro, Almaatouq, and Malone (2024), whose meta-analysis concluded that human-AI teams often outperform either humans or AI working independently. Both studies support the concept of collaborative intelligence, which emphasizes the synergistic combination of human creativity, contextual understanding, and AI-driven analytical capabilities. However, while Vaccaro et al. synthesized findings across multiple industries and task domains, the present study specifically focuses on employee performance within digital companies. Consequently, the current research contributes industry-specific evidence demonstrating that collaborative intelligence is particularly valuable in technology-driven workplaces where employees frequently interact with AI systems.

Second, the finding that trust in AI significantly influences employee performance is consistent with the work of Vössing et al. (2022) and Marimon, Mas-Machuca, and Akhmedova (2024). These studies emphasized that trust serves as a fundamental prerequisite for successful Human-AI Collaboration because employees are more likely to accept and utilize AI-generated recommendations when they perceive AI systems as reliable and transparent. The present study similarly found that trust in AI emerged as one of the strongest predictors of employee performance. This similarity suggests that trust remains a universal determinant of AI adoption and utilization across different organizational contexts.

Despite this similarity, there is a notable difference in emphasis. While Vössing et al. (2022) focused primarily on the role of transparency in fostering trust, the current study found that trust itself exerted a stronger direct influence on employee performance than transparency. This suggests that although transparency contributes to trust development, employees may ultimately prioritize the perceived accuracy and reliability of AI outputs over a detailed understanding of the underlying algorithms. Such findings highlight the possibility that trust functions as a mediating mechanism through which transparency affects performance outcomes.

Third, the finding that Human-AI Collaboration improves work quality and decision-making effectiveness supports the conclusions of Simón, Revilla, and Sáenz (2024), who argued that Human-AI Teaming enhances organizational learning and knowledge integration. Both studies demonstrate that AI technologies assist employees in analyzing information, identifying patterns, and making informed decisions. The present findings further confirm that AI-generated insights can improve the quality of employee outputs by reducing errors and increasing access to relevant information.

However, some differences emerge when comparing the current findings with studies on algorithmic management. Liu et al. (2024) reported that AI-driven management systems can sometimes reduce employee autonomy and negatively affect creative performance if employees become overly dependent on algorithmic recommendations. In contrast, the present study found that employees generally perceived AI as a supportive tool rather than a controlling mechanism. One possible explanation for this difference is that the respondents in this study worked primarily in digital companies with higher levels of technological literacy and AI familiarity. Such employees may possess greater confidence and competence in managing AI-supported workflows, thereby reducing the risks associated with excessive technological dependence (Nagar, 2018).

Fourth, the finding that AI positively contributes to creativity and innovation is consistent with the research of Jia and Hou (2024), who found that AI-enabled workplace practices enhance employee engagement and performance. Similarly, Przegalinska et al. (2024) reported that AI technologies improve organizational performance when aligned with employee skills and task requirements. Both studies suggest that AI can serve as a catalyst for innovation by providing employees with access to information, alternative perspectives, and advanced analytical capabilities.

Nevertheless, the current findings differ from earlier concerns expressed in some technology adoption studies that AI might diminish human creativity by encouraging overreliance on automated systems. Rather than reducing creativity, the respondents in this study reported that AI tools helped them generate ideas, explore new solutions, and solve problems more effectively. This difference may be explained by recent advances in Generative AI technologies, which are specifically designed to support creative activities such as content creation, brainstorming, design development, and strategic planning. As a result, contemporary AI systems appear to function more as innovation enablers than as substitutes for human creativity.

Another notable difference between the present study and some previous research relates to the role of AI transparency (Felzmann et al., 2019). Although transparency was found to have a significant positive effect on employee performance, its influence was weaker than those of trust, usability, and reliability. This finding contrasts with several theoretical studies that position transparency as a central determinant of Human-AI Collaboration. One possible explanation is that employees prioritize practical outcomes, such as accuracy, efficiency, and usefulness, over a detailed understanding of AI decision-making processes. In workplace environments characterized by high workloads and time constraints, employees may focus more on whether AI systems produce reliable results rather than on how those results are generated.

### **3.4 Managerial Implications**

One of the most important implications of this study is the need for organizations to invest in AI literacy training and workforce development programs. Although AI technologies offer substantial benefits, employees may not fully utilize these tools without adequate knowledge and skills (Huang & Rust, 2018). Organizations should provide continuous training programs that help employees understand the capabilities, limitations, and practical applications of AI systems. Such training should cover technical competencies, data interpretation skills, prompt engineering techniques, ethical AI usage, and critical evaluation of AI-generated outputs. By improving AI literacy, employees can develop the confidence and competence required to collaborate effectively with AI systems. Furthermore, organizations that invest in employee learning and development are likely to experience higher levels of AI adoption, reduced resistance to technological change, and improved workplace performance.

Another important managerial implication concerns the development of transparent and explainable AI systems. The findings reveal that AI transparency positively influences employee performance, although its effect is weaker than trust and usability. Nevertheless, transparency remains essential because employees are more likely to accept and utilize AI recommendations when they understand how decisions are generated. Managers should therefore prioritize the implementation of explainable AI technologies that provide clear and understandable explanations for AI-generated outputs (Enemosah, 2021). Organizations should also establish communication mechanisms that educate employees about the logic, data sources, and decision-making processes underlying AI systems. Increased transparency can reduce uncertainty, minimize employee concerns regarding algorithmic bias, and strengthen the overall quality of Human-AI Collaboration.

The results also highlight the critical role of trust in determining the success of Human-AI Collaboration. Trust in AI emerged as one of the strongest predictors of employee performance, suggesting that employees must perceive AI systems as reliable, accurate, and dependable before they are willing to incorporate AI-generated recommendations into their work activities. Consequently, managers should implement strategies that enhance employee trust in AI technologies (Glikson & Woolley, 2020). This may include conducting regular system evaluations, ensuring high levels of data accuracy, minimizing errors in AI outputs, and establishing governance frameworks that promote accountability and ethical AI usage. Organizations should also encourage employees to participate in AI implementation processes, allowing them to provide feedback and contribute to system improvements. Such participatory approaches can increase employee acceptance and foster stronger trust in AI-supported work environments.

Furthermore, organizations should focus on integrating AI technologies into daily workflows in a responsible and balanced manner. Rather than using AI solely as an automation tool, managers should position AI as a collaborative partner that complements human capabilities. Effective integration requires careful alignment between AI functionalities, job requirements, and employee competencies. Managers should identify tasks that are best suited for automation while preserving opportunities for human judgment, creativity, and problem-solving. This balanced approach can prevent excessive dependence on AI and ensure that employees remain actively engaged in decision-making processes. Additionally, organizations should establish clear policies regarding AI usage, ethical considerations, data privacy, and accountability to ensure responsible implementation practices.

The findings also suggest that organizations should adopt a human-centered approach to AI transformation. Successful Human-AI Collaboration depends not only on technological sophistication but also on employees' willingness and ability to adapt to changing work environments (La Torre et al., 2021). Managers should therefore foster a culture of continuous learning, innovation, and technological openness. Encouraging experimentation with AI tools, recognizing employees who

effectively utilize AI technologies, and providing organizational support during digital transformation initiatives can help create a positive environment for Human-AI Collaboration.

Another managerial implication relates to innovation management. The study demonstrates that AI can enhance creativity and innovation by assisting employees in idea generation, information analysis, and problem-solving activities. Managers should leverage this capability by incorporating AI tools into innovation processes, project development activities, and strategic planning initiatives. By combining AI-generated insights with human creativity and expertise, organizations can improve their ability to develop innovative products, services, and business solutions. Such practices may strengthen organizational competitiveness and facilitate long-term growth in increasingly dynamic markets.

From a strategic perspective, the findings indicate that Human-AI Collaboration should be viewed as a valuable organizational capability rather than merely a technological investment. Organizations that successfully combine human intelligence with AI capabilities are likely to achieve sustainable competitive advantages through enhanced productivity, better decision-making, and increased innovation. Therefore, managers should integrate Human-AI Collaboration into broader digital transformation strategies and align AI initiatives with organizational goals, human resource development plans, and performance management systems.

#### 4. CONCLUSION

This study concludes that Human-AI Collaboration has a positive and significant impact on employee performance in digital companies. The findings demonstrate that effective collaboration between employees and AI systems enhances productivity, efficiency, work quality, decision-making effectiveness, and innovation capability. Among the dimensions of Human-AI Collaboration, trust in AI, AI usability, and AI reliability emerged as the most critical determinants of successful collaboration, indicating that employees are more likely to achieve superior performance when AI systems are perceived as trustworthy, user-friendly, and dependable. Furthermore, the results suggest that Human-AI Collaboration serves as an important organizational capability that contributes to competitiveness in increasingly digital business environments by enabling employees to leverage AI-generated insights while maintaining human creativity and judgment. Based on these findings, companies are encouraged to expand AI adoption initiatives while simultaneously investing in employee training and AI literacy programs to ensure effective technology utilization. Organizations should also establish ethical, transparent, and accountable AI governance frameworks to strengthen employee trust and promote responsible AI implementation. For future research, scholars are encouraged to examine potential mediating and moderating variables such as job satisfaction, digital skills, employee engagement, organizational culture, and technology readiness to gain a deeper understanding of the mechanisms through which Human-AI Collaboration influences performance outcomes. Comparative studies across different industries and organizational contexts are also recommended to improve the generalizability of findings. Despite its contributions, this study has several limitations, including its limited geographic scope, reliance on self-reported survey data that may be subject to response bias, and the use of a cross-sectional research design that restricts the ability to establish causal relationships over time. Therefore, future longitudinal and multi-industry studies are needed to provide a more comprehensive understanding of Human-AI Collaboration and its long-term implications for employee and organizational performance.

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