

The Impact of Artificial Intelligence on Employee Engagement and Performance in Tunisian ICT Companies

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Abstract— This article examines the impact of artificial intelligence (AI) on employee engagement and, indirectly, on their job performance within the information and communication technology (ICT) sector in Tunisia. The study is based on a quantitative survey conducted among 85 employees that works in companies specializing in the ICT sector, including IT service firms, communication agencies, and telecommunications operators. The targeted respondents included full-time employees. The data collected were analyzed using Smart PLS 4 software. The findings reveal that artificial intelligence has a significant positive effect on employee engagement. Moreover, employee engagement significantly enhances employee performance and appears to mediate the relationship between AI and performance. This study contributes to the ongoing discussion on the future of work and the digital transformation of the ICT sector by examining how AI use in Tunisian ICT companies influences engagement and performance. Addressing this topic sheds light on opportunities related to the evolving nature of work, guides companies toward effective and ethical AI integration, and provides recommendations for fostering a change-oriented work environment. Overall, our research enriches the current literature on artificial intelligence and human resource management by highlighting its impact on employee engagement and performance.

Keywords— Artificial intelligence, employee engagement, employee performance, ICT companies, Tunisia.

I. INTRODUCTION

In recent years, advanced information and communication technologies (ICT), particularly artificial intelligence (AI)-based tools, have been increasingly adopted by service firms, especially within the ICT sector. AI is progressively being integrated into organizational processes to automate certain tasks, improve decision-making, and enhance operational efficiency. Beyond its technological implications, AI has attracted growing interest regarding its impact on the human dimensions of work, particularly employee engagement and performance. Several studies highlight that artificial intelligence can enhance employee engagement by providing better task-related support, more personalized monitoring, and tailored reward systems. In this regard, [2] demonstrate that AI-based management systems contribute significantly to increased employee engagement. More generally, the adoption of AI within organizations generates various organizational dynamics that are likely to influence employees' motivation and engagement [6]. Thus, AI is commonly presented as a tool that helps employees enhance their efficiency and professional performance [5]; [2].

Although prior research has examined the impact of artificial intelligence on employee engagement and performance from multiple perspectives, the majority of these studies have been conducted in developed countries. In contrast, empirical evidence from emerging economies remains limited. Yet, in such contexts, AI adoption is still at an early stage and is shaped by specific organizational, economic, and cultural characteristics. Accordingly, this study aims to analyze the impact of artificial intelligence on employee engagement and performance in the Tunisian context, there by contributing to the growing literature on the human implications of AI in emerging economies. More specifically, this research examines this relationship within Tunisian ICT companies by adopting a quantitative methodological approach. This focus is motivated by the desire to support organizations in effectively navigating their transition toward artificial intelligence while fostering employee well-being, motivation, and performance. Consequently, we seek to answer the following question: to what extent does the introduction or use of artificial intelligence in the workplace influence the engagement and performance of employees in the ICT sector in Tunisia?

To address this question, we first conduct a theoretical analysis of the concepts of artificial intelligence, employee engagement, and employee performance, highlighting their interconnections. Building on previous studies related to these concepts, we then formulate research hypotheses. Next, we describe the research methodology employed in our empirical study. Finally, we present the results, discuss their implications, and offer recommendations as well as directions for future research.

II. LITERATURE REVIEW AND HYPOTHESES

A. Artificial intelligence and employee engagement

Artificial intelligence (AI) represents a strategic tool that helps employees perform their tasks more effectively and enhances their work engagement. [2] emphasize that AI-based management systems can encourage employees to invest more fully in their work by providing guidance, personalized monitoring, and tailored rewards. In line with the Resource-Based View (RBV), organizations can mobilize both tangible and intangible resources to enhance the meaningfulness of employees' work. For instance, organizations can provide AI-based tools that enable the development of personalized learning programs tailored to individuals' preferences and specific needs. These mechanisms facilitate the rapid acquisition of new skills, enhance employee engagement, and accelerate the learning process [12]; [7]. Consequently, the use of AI contributes to increasing employees' motivation, involvement, and satisfaction in their work.

H1: Artificial intelligence positively and significantly influences employee engagement.

B. Employee engagement and employee performance

Employee engagement is characterized by enthusiasm for work, a sense of pride and meaningfulness, as well as difficulty disengaging from work tasks [8]. According to [10] and [11], engagement is reflected in the investment of physical, cognitive, and emotional energy into one's professional roles.

More specifically, theoretical research has established a link between the investment of the three dimensions of engagement-related energy and job performance. First, physical energy enables employees to exert sustained effort and adopt behaviors valued by the organization, thereby enhancing performance [9]. Second, cognitive energy increases attention and vigilance, promoting the accurate and efficient completion of tasks [4]. Finally, emotional energy strengthens cohesion with colleagues and enhances the ability to meet emotional demands, thereby contributing to authentic and comprehensive performance [1]; [10]. Thus, employee engagement serves as a direct driver of job performance.

H2: Employee engagement positively and significantly influences employee performance.

This study examines the impact of artificial intelligence (AI) on employee engagement and, indirectly, on their job performance, as illustrated in figure 1 :

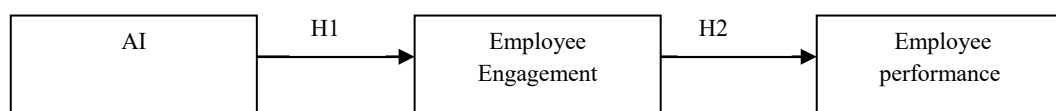


Figure 1. Conceptual model

III. METHODOLOGY

A. Sample and data collection

To test our hypotheses, we collected data from employees working in companies specializing in the ICT sector, including IT service firms, communication agencies, and telecommunications operators. The targeted respondents were full-time employees. Questionnaires were distributed to employees and collected during working hours. Participants were informed that the purpose of the questionnaire was to assess their perceptions of the usefulness and performance of AI systems in their work, as well as to evaluate their job-related attitudes. They were also assured that their responses would remain confidential. Although potential respondents were randomly selected, screening questions were developed to ensure their eligibility. These questions focused on their understanding of AI and the tools used to assist them in their professional tasks. Only individuals who indicated possessing this knowledge were allowed to participate in the survey. After approximately two months of data collection, 85 eligible responses were obtained. The respondents had diverse profiles (see Table I for a summary of the sample characteristics). The data collected were analyzed using Smart PLS 4 software.

TABLE II. Sample characteristics

Variable	Percentage
Gender	
• Female	43.5
• Male	56.5
Work experience in the organization	
• Less than 1 year	28.2
• 1-3 years	20.0
• 3-5 years	25.9
• More than 5 years	25.9

B. Measures

Artificial intelligence was measured using 7 items adapted from the scale developed by Wijayati et al. (2022), assessing employees' perceptions of the usefulness and performance of AI systems in their job. Employee engagement was measured with the scale by Rich and al. (2010), comprising 18 items that cover the cognitive, emotional, and behavioral dimensions of engagement. Employee performance was measured with 5 items from the task performance scale proposed by Williams and Anderson's (1991), and 16 items from the organizational citizenship behavior (OCB) scale, proposed by Lee and Allen's (2002). All items were measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Each scale demonstrated adequate reliability, with a Cronbach's alpha greater than 0.7 (see Table II).

IV. ANALYSIS AND RESULTS

A. Validity testing

A confirmatory factor analysis (CFA) was conducted to test the reliability and validity of the study variables. The results indicated that each item had a factor loading greater than 0.70, with the average variance extracted (AVE) for each scale exceeding 0.50, suggesting convergent validity. The square root of the AVEs presented in Table II also exceeded the respective pairwise correlations, there by demonstrating discriminant validity. The correlation analysis shows that that the relationships among the study constructs were significantly correlated with one another (see Table II). Multicollinearity was also assessed. The results indicated that all variance inflation factors (VIFs) were below 3.0. Therefore, collinearity was not an issue in this study.

Table II. The mean, standard deviation, and correlations for the study variables

	Mean	S.D	α	1	2	3
1. AI	3.57	0.54	0.87	0.81		
2. Employee engagement	3.97	0.60	0.90	0.31	0.85	
3. Employee performance	4.00	0.57	0.83	0.28	0.95	0.82

Notes : S.D. = standard deviation ; α = Cronbach's Alpha ; The square root of AVEs were presented on the diagonals ; AVE= Average Variance Extracted.

B. Hypothesis testing

Hypothesis 1 suggests a positive relationship between AI and employee engagement. The results support this relationship, showing a positive effect ($\beta = 0.34$, S.E. = 0.12) that is statistically significant ($p = 0.004$), indicating that the adoption of AI enhances employee engagement in ICT companies. Hypothesis H2 proposes that employee engagement positively and significantly influences employee performance. The results confirm this relationship, showing a very strong effect ($\beta = 0.90$, S.E. = 0.03) that is highly significant ($p = 0.000$), indicating that engaged employees achieve substantially higher performance in their work.

We analyzed the indirect effect of AI on job performance, mediated by employee engagement. The analysis utilised 5000 bootstrap samples to derive 95% confidence intervals (CI). Results from table 4 suggest a significant total indirect effect of AI on employee performance ($\beta = 0.31$, 95% CI = [0.10, 0.51]).

Table III. Results of the hypothesis testing

Hypotheses	β	S.E	Results	P-values
H1 : AI \rightarrow Employee engagement	0.34	0.12	Significant	0.004
H2 : Employee engagement \rightarrow Employee performance	0.90	0.03	Significant	0.000

Notes : S.E. = standard error ; β = Estimates ; Estimates were standardized.

Table IV. Results of the mediating effect test

Mediation paths	β	S.E	95% Lower CI	95% Upper CI
AI \rightarrow Employee engagement \rightarrow Employee performance	0.31	0.10	0.10	0.51

V. Discussion

Our study, based on a sample of 85 employees working in Tunisian ICT companies (IT service firms, communication agencies, and telecommunications operators), confirms the theoretical foundations of this research and provides valuable empirical insights in a context that remains underexplored.

The results indicate that artificial intelligence has a positive and significant effect on employee engagement. This finding is fully consistent with the work of [2], who argue that AI-based management systems can strengthen employee motivation by providing clear guidance, personalized monitoring, and tailored reward mechanisms. Similarly, [7] suggest that artificial intelligence enhances employee engagement and accelerates their learning pace.

The results also show that employee engagement has a positive and significant effect on performance, highlighting the central role of engagement as a key determinant of individual performance. This finding supports the existing literature on the relationship between employee engagement and job performance, which suggests that the investment of physical, cognitive, and emotional energy promotes the accurate and efficient completion of tasks, thereby enhancing overall performance [9]; [4]; [1]; [10].

The analysis of the mediating effect reveals that employee engagement significantly mediates the relationship between artificial intelligence and employee performance. This finding aligns directly with [3] goal-setting theory, which posits that organizational tools and systems (including AI) influence performance by guiding and motivating employees through clear and personalized goals. AI thus emerges as a catalyst that enhances engagement, which in turn serves as a key mechanism explaining improvements in performance.

VI. CONCLUSION

This article examines the impact of artificial intelligence (AI) on employee engagement and, indirectly, on their job performance within the information and communication technology (ICT) sector in Tunisia. More specifically, it seeks to investigate whether AI influences employee engagement, as well as to assess the extent to which this dimension contributes to overall job performance. Through this approach, the study aims to provide empirical insights into the integration of AI within a strategic and highly competitive sector.

The results indicate that artificial intelligence has a positive and significant effect on employee engagement in Tunisian ICT companies. At the same time, employee engagement directly influences their performance, highlighting its central role as a key determinant of individual performance. Consequently, artificial intelligence indirectly contributes to enhancing employee performance by increasing engagement an effect reinforced by the innovation-driven culture of the ICT sector, where employees have a positive perception of technologies and digital advancements. Their familiarity with and interest in technological tools foster a positive perception of AI, which they view as an effective support for their tasks. This positive perception translates into increased engagement, as they see AI not only as a means to facilitate their work but also as an opportunity to actively contribute to innovation and change within their organization.

This study offers several important implications. Theoretically, it contributes to the literature on work engagement by confirming that employee engagement mediates the relationship between artificial intelligence and performance. It also extends existing models of AI adoption by emphasizing the central role of perceived AI performance, particularly within an innovative sectoral context such as Tunisian ICT. From a practical perspective, the findings suggest that companies should train and support employees, clearly communicate the tangible benefits of AI in daily tasks, and regularly monitor user perceptions to adjust adoption strategies and maximize engagement. From a managerial perspective, it is essential to encourage innovation and initiative, integrate AI into HR strategy, and foster an organizational culture that is open to technological change, in order to create an environment conducive to active AI adoption and to enhancing both individual and collective performance.

This study has certain limitations, notably that it focuses exclusively on the ICT sector in Tunisia, which restricts the generalizability of the findings. Future research could expand the scope to other sectors and incorporate additional variables to deepen the understanding of AI's effects.

REFERENCES

- [1] B. E. Ashforth and R. H. Humphrey, "Emotion in the workplace: A reappraisal," *Human Relations*, vol. 48, n°2, pp. 97–125, Feb. 1995.
- [2] C. Hughes, L. Robert, K. Frady, and A. Arroyos, "Artificial intelligence, employee engagement, fairness, and job outcomes," in *Managing Technology and Middle- and Low-Skilled Employees*. Bingley, U.K.: Emerald Publishing Limited, 2019, pp. 61–68, Jul. 2019.
- [3] G. P. Latham and E. A. Locke, "Goal setting – a motivational technique that works," in *Classics of Organizational Behavior*, 3rd ed., W. E. Nagemeyer and J. T. McMahon, Eds. Waveland, pp. 129–140, 2001.
- [4] K. E. Weick and K. H. Roberts, "Collective mind in organizations: Heedful interrelating on flight decks," *Administrative Science Quarterly*, vol. 38, n°3, pp. 357–381, Sep. 1993.
- [5] M.-H. Huang and R. T. Rust, "Artificial intelligence in service," *Journal of Service Research*, vol. 21, n° 2, pp. 155–172, Feb. 2018.
- [6] M. Wörsdörfer, "Biden's Executive Order on AI and the E.U.'s AI Act: A Comparative Computer-Ethical Analysis," *Maine Business School & School of Computing and Information Science*, June 2024. [Online]. Available: <https://ssrn.com/abstract=4874592>.
- [7] N. Kashive, L. Powale, and K. Kashive, "Understanding user perception toward artificial intelligence (AI) enabled e-learning," *The International Journal of Information and Learning Technology*, vol. 38, n° 1, pp. 1–19, Dec. 2021.
- [8] P. Kaur, K. Malhotra, and S. K. Sharma, "Moderation-mediation framework connecting internal branding, affective commitment, employee engagement and job satisfaction: An empirical study of BPO employees in Indian context," *Asia-Pacific Journal of Business Administration*, vol. 12, n° 3/4, pp. 327–348, Nov. 2020.
- [9] S. P. Brown and T. W. Leigh, "A new look at psychological climate and its relationship to job involvement, effort, and performance," *Journal of Applied Psychology*, vol. 81, n° 4, pp. 358–368, Aug. 1996..
- [10] W. A. Kahn, "Psychological conditions of personal engagement and disengagement at work," *Academy of Management Journal*, vol. 33, n° 4, pp. 692–724, Dec. 1990.
- [11] W. A. Kahn, "To be fully there: Psychological presence at work," *Human Relations*, vol. 45, n° 4, pp. 321–349, Apr. 1992.
- [12] Z. Soltani, B. Zareie, L. Rajabiun, and A. Agha Mohseni Fashami, "The effect of knowledge management, e-learning systems and organizational learning on organizational intelligence," *Kybernetes*, vol. 49, n°10, pp. 2455–2474, Sep. 2020.