
The Impact of Artificial Intelligence on Job Performance in Tunisian Telecommunications Companies

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Abstract:

Purpose: This article examines the impact of artificial intelligence (AI) on employee engagement, service quality, and job performance in Tunisian telecommunications companies. An additional objective was to test the moderating role of job security in these relationships.

Design/methodology/approach: The study is based on a quantitative survey conducted among 85 employees that works in the main telecommunications operators in Tunisia (Tunisie Télécom, Ooredoo, Orange, and Topnet). The targeted respondents included full-time employees and their supervisors. The data collected were analyzed using Smart PLS 4 software.

Findings: The findings reveal that the perceived performance of artificial intelligence has no significant effect on job engagement or service quality. Moreover, the study confirms that service quality and job engagement have a significant and positive effect on job performance. Finally, job insecurity does not appear to play a meaningful moderating role in the relationships examined.

Practical implications: This study adds value to practical debate on the future of work and the digital transformation of the telecommunications sector by examining the impact of using AI in telecommunications companies in Tunisia affects employee performance. Addressing this key topic can shed light on the challenges related to the evolving nature of job, guide companies toward effective and ethical AI integration, and provide recommendations tailored to the specific challenges of the Tunisian market.

Originality/value: Our study enriches the current literature on artificial intelligence and human resource management by examining the impact of artificial intelligence on employee performance.

Keywords: Artificial intelligence, Job performance, Job engagement, service quality, job security, telecommunications, Tunisia.

JEL codes: O33, J24, M15, L96, D83.

Paper Type: Research study.

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1. Introduction

Advanced information and communication technologies (ICT), such as tools based on artificial intelligence (AI), have been widely used in service companies, particularly in the telecommunications sector, to improve operational efficiency and service delivery quality (Belanche *et al.*, 2020; Huang and Rust, 2018).

Extensive literature reports that AI applications are linked to customer satisfaction, experience, engagement, and loyalty (Li *et al.*, 2021; Prentice *et al.*, 2020). Other approaches adopt the technology acceptance perspective to examine how the adoption of AI technologies is related to consumers' emotions and their expectations toward retailers (Chuah and Yu, 2021; Tran *et al.*, 2021; Yuan *et al.*, 2022).

Although AI is commonly presented as a tool that helps employees enhance their efficiency and professional performance (Huang and Rust, 2018; Hughes *et al.*, 2019), it can expose them to various risks and challenges associated with automation, such as job loss, changes in required skills, and the need for employees to adapt to complex new technologies.

In Tunisia, the telecommunications sector represents a significant share of the national economy and serves as a key driver of its development. With the growing emergence of initiatives aimed at integrating AI into this sector, it is essential to understand its distinct impact on the performance of employees working within it.

Addressing this key issue would help shed light on the challenges associated with the evolving nature of job, guide companies toward effective and ethical AI integration, and provide recommendations tailored to the specific challenges of the Tunisian market. In-depth research in this area would also contribute to the academic and practical debate on the future of job and the digital transformation of telecommunications services.

Among the studies that have examined the relationship between AI and job performance are those by Huang and Rust (2018), Jarrahi (2018), and Prentice *et al.* (2023). Despite their contributions, these studies have a limited scope, as they focused exclusively on developed countries and did not explore the effects of AI on employees in emerging economies. The present research aims to fill this gap by addressing the specific context of the service sector in Tunisia, where AI adoption is on the rise.

More specifically, it seeks to contribute to the existing literature on AI by examining their impact on job engagement, service quality, and job performance in Tunisian telecommunications companies. This study seeks to determine whether the use of AI positively or negatively influences employee engagement and performance, and to identify potential relationships between these variables.

This interest stems from our aim to help companies navigate the technological transition to AI while enhancing employee well-being, motivation, and performance. Accordingly, we seek to answer the following question: To what extent does the introduction or use of artificial intelligence in the workplace influence employee engagement and performance in the telecommunications sector in Tunisia?

To address this question, we first conduct a theoretical analysis of the concepts of artificial intelligence and employee performance, highlighting the links between them. Next, based on previous studies related to these concepts, we formulate research hypotheses. We then outline the research methodology adopted for our empirical investigation. Finally, we present the results obtained, discuss them, and provide recommendations as well as directions for future research.

2. Literature Review

AI represents a key tool for helping employees carry out their tasks in the most optimal way possible. According to Locke and Latham's Goal-Setting Theory (2001), an action plan is intentionally designed to foster job engagement by motivating and guiding an employee or a group toward specific individual objectives, with the aim of sustaining overall performance. This mediating logic highlights the fundamental role of personal goal-setting as a key motivational lever for achieving high professional performance (Latham and Locke, 1991).

In the service sector, employee engagement and service quality supported or enhanced by AI-based tools represent the goals that employees set for themselves in order to optimize their professional performance. It is therefore important to examine the relationships between AI performance, Job engagement, service quality delivered by employees, and job performance.

2.1 AI, Job Engagement, Service, and Job Performance

Goal-Setting Theory argues that setting goals is a particularly effective approach to boosting motivation and improving employee performance within organizations (Latham and Locke, 2001). This theory emphasizes the importance of setting goals that are both challenging and attainable, in order to help employees thrive professionally and enhance their performance. In a context where AI is transforming work practices, acquiring new skills becomes essential.

Locke and Latham (2006) emphasize that to achieve a high-level goal, such as service excellence, employees must acquire skills that align with the required level of performance. On-the-job formal learning plays a central role in this process, enabling employees to become familiar with new technologies and enhancing their performance (Lan *et al.*, 2021). Nevertheless, professional training programs are often costly and time-consuming.

Alternative approaches may therefore be preferred to support employees in their learning, enabling them to engage fully and quickly in complex tasks. Among these alternatives, AI emerges as a timely choice, as it directly drives the continuous learning necessary to update work methods (Li *et al.*, 2021; Zaczekiewicz, 2018).

The performance gains resulting from AI-driven learning strengthen job engagement by enhancing their interactions with customers. Thanks to its automation and advanced analytical capabilities, AI enables employees to deliver more accurate, reliable, and faster service, and in some cases, to improve empathy in customer relationships (Fu *et al.*, 2022; Huang and Rust, 2018; Kirkpatrick, 2017).

Research on goal-setting in organizational settings highlights that the achievement of personal goals by employees can have a positive impact on overall organizational performance. When employees achieve their own goals, their job engagement and motivation are strengthened, contributing to organizational effectiveness (Medlin and Green, 2009; Shoaib and Kohli, 2017).

Although the achievement of employees' personal goals largely depends on their engagement and individual characteristics, such as their skills and knowledge (Latham and Locke, 2001). Organizations are increasingly adopting alternative solutions to optimize performance without relying on substantial investments in training.

Among these solutions, leveraging AI-powered services proves to be an effective approach to enhance employee capabilities and improve their ability to meet customer expectations. Thus, we argue that effective AI services can not only increase job engagement and facilitate the achievement of their goals but also enhance the quality of service provided through technical and technological support that complements or assists human interventions.

H1: *AI performance is positively correlated with job engagement.*

H2: *AI performance is positively correlated with employees' service quality.*

Job engagement is a fundamental psychological process, defined as a positive and fulfilling affective-motivational state (Schaufeli and Bakker, 2004). Engaged employees demonstrate a strong inclination and ease in managing professional demands, regardless of circumstances, which contributes to their resilience and operational effectiveness (Costa *et al.*, 2014). In the context of service interactions, this engagement plays a crucial role, as employees directly influence customer attitudes and behaviors, thereby shaping their satisfaction and loyalty (Prentice, 2016; 2019).

That said, every face-to-face service encounter involves emotional elements, which are often triggered by the customers themselves (Prentice, 2019). To ensure a successful service transaction, employees must not only be engaged in their job but

also be aware of the emotional impact it entails. This emotional labor involves specific behavioral strategies that allow employees to meet customers' intuitive expectations (Prentice *et al.*, 2013). These behaviors, which encompass emotion and interaction management, are closely linked to employees' service performance (Goodwin *et al.*, 2011), which ultimately influences the overall assessment of their job performance (Prentice and King, 2013).

In line with this discussion, the following hypotheses are proposed:

H3: *Job engagement is positively correlated with employees' service quality.*

H4: *Job engagement is positively correlated with employees' job performance.*

H5: *Employees' service quality is positively correlated with job performance.*

Despite the benefits of AI for professional performance mentioned above, it is often perceived as a threat to employment, as it could potentially replace human personnel at any time (Huang and Rust, 2018). Li *et al.* (2019) show that employees' awareness of AI and advanced technologies impacts their perception of job security in the AI era. Consequently, it introduces an additional framing condition to Goal-Setting Theory: job security as a regulatory factor for job engagement and performance.

This integrative approach is based on self-regulation theory, which refers to an individual's ability to consciously manage their thoughts, behaviors, and emotions in order to achieve their goals (Baumeister *et al.*, 2007; Mithaug, 1993). It helps explain how employees' perception of job security in the service sector serves as an internal force, enabling them to regulate their performance goals.

2.2 The Moderating Role of Job Security

Job security refers to employees' perception of their stability and future position within the organization (Kuhnert and Palmer, 1991). A sense of job security tends to foster stronger organizational commitment and better job performance, as it creates an environment where employees feel more invested and motivated in their tasks (Altinay *et al.*, 2019; Kraimer *et al.*, 2005).

Job security takes on particular importance in the face of AI's rise, which is perceived as a potential substitute for human jobs (Bhargava *et al.*, 2021) and a threat to the workforce. When this development generates feelings of insecurity about future employment, the use of AI-based services may produce negative effects. Indeed, this could lead to technological misuse, internal tensions, or even counterproductive behaviors.

Such reactions can have a significant impact, not only by reducing employee job engagement and the quality of service provided to customers (Abedin, 2022; Fu *et*

al., 2022), but also by compromising organizational performance and the company's reputation (Crolc *et al.*, 2022).

Job insecurity represents a major concern for employees (De Witte, 2005). It is often associated with conditions that undermine professional skills and stability within an organization (Baabdullah, 2024). In this context, employees frequently job under the anxiety of losing their jobs due to external factors, including AI-driven automation.

They often perceive this automation as potentially devaluing or even threatening their careers, as it could lead to their positions being replaced by machines or technologies (Tschang and Almirall, 2021). Existing literature supports this argument by highlighting the fear of automation and job insecurity across various sectors, particularly in healthcare, where this concern is especially pronounced among nurses.

Numerous studies emphasize that their jobs are perceived as being threatened by machines and automated technologies (Dabbous *et al.*, 2022). Other research shows that the introduction of AI in the workplace can lead to negative changes in employee behavior, contributing to feelings of anxiety and resistance to change (Dospinescu and Dospinescu, 2020; Schlogl *et al.*, 2019). These findings explain why employees often hesitate to adopt AI tools despite recognizing their beneficial effects.

Consequently, the adoption of AI and the optimal use of its potential depend on reducing the sense of insecurity it may generate among employees. It is therefore essential to prevent the emergence of perceived insecurity, which could lead to social issues and negatively impact job performance.

Conversely, a sense of job security strengthens employees' internal motivation and self-regulation, thereby fostering their professional engagement. This mindset enhances their performance by providing them with the necessary energy to carry out their tasks effectively and fully meet organizational expectations (Baumeister *et al.*, 2018 ; Kraimer *et al.*, 2005 ; Wong *et al.*, 2019).

Job security can also amplify the effect of AI service on service quality by fostering employees' confidence that technology complements rather than replaces their actions and interventions (Bhargava *et al.*, 2021; Fu *et al.*, 2022). This reasoning leads to the following hypothesis:

H6: *The relationship between AI performance and job engagement is moderated by job security, such that the relationship is stronger when employees perceive high levels of job security and weaker when their job security is low.*

To gain a more comprehensive understanding of the moderating effect of job security in the relationship between AI and employees' service quality, we draw on

Mithaug's (1993) self-regulation theory. This theory posits that the pursuit of a goal such as delivering superior service quality requires individuals to sustain a high level of willpower and inner strength. This regulatory process is essential for replenishing the behavioral, cognitive, and emotional resources depleted throughout job.

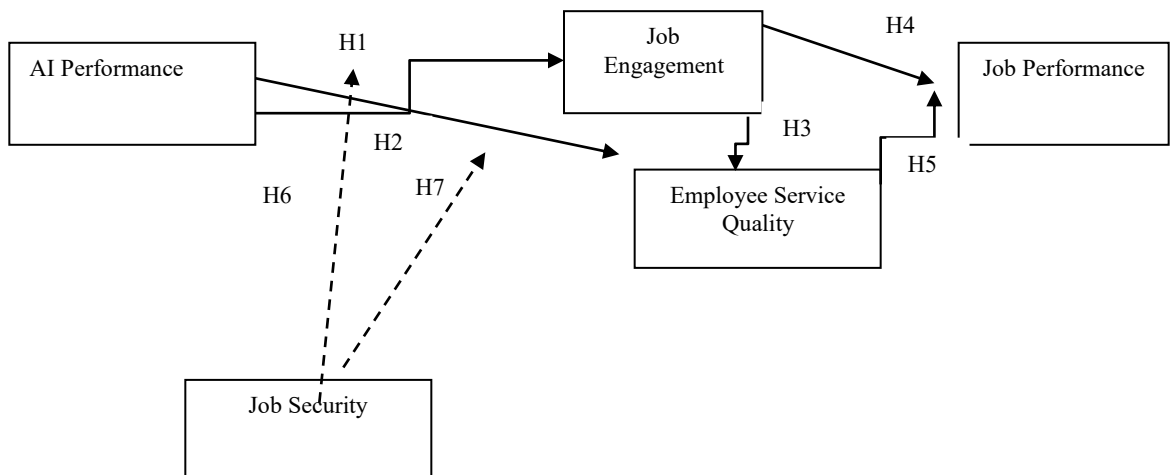
According to Baumeister and Vohs (2007), when these resources are preserved despite energy-intensive efforts, employees are better able to consistently deliver high-quality service, even when facing the challenges associated with the integration and routine use of AI. Job security can play a key role in preserving employees' significant levels of resources and energy despite the demanding nature of their tasks (Baumeister *et al.*, 2018).

When perceived positively, the expansion of AI-based services can prove valuable. It provides employees with additional tools that enable them to better serve their clients by delivering faster and more accurate solutions, thereby enhancing service quality and, in turn, customer satisfaction (Fu *et al.*, 2022; Huang and Rust, 2018; Kirkpatrick, 2017). This effect is particularly pronounced among employees who perceive their jobs as secure, as a stable professional position provides them with additional energy to effectively leverage the technological tools available to them in their interactions with clients (Mukaihata, 2018).

H7: *The relationship between AI performance and service quality is moderated by job security, such that the relationship is stronger when employees perceive high levels of job security and weaker when their job security is low.*

Figure 1 below summarizes the relationships between AI performance, job engagement, employee-provided service quality, job security, and job performance.

Figure 1. Conceptual model



Source: Prentice *et al.*, 2023

3. Research Methodology

3.1 Sample and Data Collection

To test our hypotheses, we collected data from employees of the main telecommunications operators in Tunisia (Tunisie Télécom, Ooredoo, Orange, and Topnet). The targeted respondents were full-time employees and their supervisors. Questionnaires were distributed to and collected from employees during working hours. Participants were informed that the questionnaire aimed to assess the impact of AI implementation on their work performance and 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.

For the validation of data regarding employees' annual performance evaluation, we consulted their supervisors. After approximately one month of data collection, 85 eligible responses were obtained. The respondents had diverse profiles (see Table 1 for a summary of the sample characteristics). The data collected were analyzed using Smart PLS 4 software.

Table 1. Sample characteristics

Variable	Percentage
Gender	
• Female	49,4
• Male	50,6
Work experience in the organization	23,5
• Less than 1 year	23,5
• 1-3 years	28,2
• 3-5 years	24,7
• Above 5 years	
Employee types	
• Operational staff	37,6
• Supervisor	29,4
• Managerial staff	32,9

Source: Authors' descriptions.

3.2 Measures

Artificial intelligence performance was assessed using 9 items from Prentice and Nguyen (2020). Job engagement was measured with an adapted version of the scale developed by Rich *et al.* (2010), including the 12 items. We measured employee

service performance using adapted scale from the original SERVQUAL measure (Parasuraman *et al.*, 1991; Prentice and Nguyen, 2020), with 24 items. The adapted scale has four dimensions, employee reliability, employee empathy, employee responsiveness, and employee assurance. Job security was measured using an adapted scale from Probst (2003), that included 6 items and focused on employees' perceptions of their professional stability in light of the introduction of AI technologies in their job environment.

Job performance was measured with 3 items from the task performance scale proposed by Williams and Anderson's (1991), and 7 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 (Table 2).

4. Results and Discussion

4.1 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 0.50, with the average variance extracted (AVE) for each scale exceeding 0.50, suggesting convergent validity.

The square root of the AVEs presented in Table 2 also exceeded the respective pairwise correlations, there by demonstrating discriminant validity. The correlation analysis shows that the relationships among the study constructs were not always significantly correlated with each other (Table 2). Multicollinearity was also assessed. The results indicated that all variance inflation factors (VIFs) were below 2.0. Therefore, collinearity was not an issue in this study.

Table 2. The mean, standard deviation, and correlations for the study variables

	Mean	S.D	α	1	2	3	4	5
1. Job engagement	3,487	0,860	0,837	0,813				
2. AI performance	3,333	0,859	0,789	0,156	0,907			
3. Job performance	3,890	0,660	0,770	-0,290	0,083	0,900		
4. Employee service quality	3,536	0,793	0,798	-0,101	-0,111	0,253	0,785	
5. Job security	3,299	0,728	0,708	-0,212	-0,043	0,072	0,246	0,731

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

Source: Authors' calculations.

4.2 Hypothesis Testing

Hypothesis 1 posited a positive relationship between perceived AI performance and employee work engagement. However, the results in Table 3 indicate that perceived

AI performance does not have a significant direct effect on employee engagement, with $\beta = 0.137$ ($p > 0.05$), contradicting this hypothesis. This suggests that, in the studied context, AI integration does not significantly influence employee motivation or engagement.

Hypothesis 2 posited a positive relationship between AI service performance and employee service quality. This hypothesis was not supported ($\beta = -0.099$, $p > 0.05$), indicating that AI does not appear to have a direct effect on the perceived quality of service provided by employees.

Hypothesis 3 proposed a positive correlation between job engagement and service quality. This correlation was not supported ($\beta = 0.041$, $p > 0.05$). Contrary to what the literature suggests, job engagement does not have a significant impact on perceived service quality in this context. This lack of effect may be related to the limited sample size, the variability of responses, or the influence of other factors, such as work organization or available resources.

Hypothesis 4 posited that job engagement is positively related to job performance. In line with this hypothesis, the results ($\beta = 0.275$, $p < 0.05$) indicate that job engagement has a positive and significant effect on job performance.

Hypothesis 5 proposed a positive relationship between employee service quality and job performance. The results support this hypothesis, with $\beta = 0.218$ ($p < 0.05$). Service quality has a positive and significant effect on job performance, confirming the idea that, in service activities, delivering high-quality service directly contributes to better overall performance.

Hypothesis 6 proposed a moderating effect of job security on the relationship between AI performance and employee work engagement. The results contradict this hypothesis, with $\beta = 0.100$ ($p > 0.05$). This indicates that job insecurity does not significantly moderate the relationship between AI performance and employee engagement.

Similarly, Hypothesis 7 posited that the relationship between AI performance and service quality is moderated by job security, such that the relationship is stronger when employees perceive high levels of job security and weaker when job security is low. The results do not support this hypothesis ($\beta = 0.034$, $p > 0.05$), indicating that job insecurity also does not moderate the relationship between AI performance and service quality.

Table 3. *Results of the hypothesis testing*

Hypotheses	β	S.E	Results	P-values
H1: AI performance \rightarrow Job engagement	0,137	0,106	Not Significant	0,195
H2: AI performance \rightarrow Employee service quality	-0,099	0,136	Not Significant	0,466

H3: Job engagement → Employee service quality	0,041	0,171	Not Significant	0,810
H4: Job engagement → Job performance	0,275	0,112	Significant	0,014
H5: Employee service quality → Job performance	0,218	0,107	Significant	0,041
H6: AI performance * Job security → Job engagement	0,100	0,094	Not Significant	0,288
H7: AI performance * Job security → Employee service quality	0,034	0,113	Not Significant	0,762

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

Source: Authors' calculations.

5. Discussion

Although artificial intelligence is often portrayed as a tool that enables employees to enhance their efficiency and professional performance (Huang and Rust, 2018; Hughes *et al.*, 2019), its adoption may also pose certain risks and challenges related to automation, such as potential job loss.

Our study, conducted with four telecommunications operators based in Tunisia, reveals that AI has no significant impact on job engagement. This lack of effect may be explained by the low visibility of AI tools or by employees' limited adoption of them. The findings also indicate that AI does not directly influence the quality of service delivered by employees. This suggests that service quality remains primarily driven by relational and human skills rather than technological tools.

The results of our study further indicate that job engagement has no impact on employees' service quality. These findings contrast with Prentice (2019), who argues that every personal service encounter involves emotional elements that are often triggered by customers themselves.

However, the results show that job engagement has a positive and significant impact on performance. Thus, the quality of service provided by employees positively and significantly affects job performance. This observation is consistent with Prentice and King (2013), who argue that employees' service performance shapes the overall assessment of their job performance.

Moreover, the results of our study reveal no moderating effect of job security in the relationship between AI and job engagement. This suggests that, in this context, feelings of job insecurity do not alter the way AI influences engagement. These findings differ from those of Bhargava *et al.* (2021) and Fu *et al.* (2022), who argue that job security can strengthen the positive impact of AI-based tasks on service quality by fostering employees' confidence that technology complements rather than replaces their actions and interventions.

Similarly, the results indicate that job insecurity does not moderate the relationship between AI performance and service quality. Employees do not appear to associate their perception of service quality with potential risks linked to automation. These findings diverge from Mukaihata (2018), who suggests that a stable professional position provides employees with additional energy to effectively leverage technological tools in their interactions with customers.

6. Conclusion

This article examines the impact of artificial intelligence on job performance in the telecommunications sector in Tunisia. More specifically, it seeks to investigate whether the perceived performance of AI influences employee engagement and service quality, as well as to assess the extent to which these two dimensions contribute to overall job performance.

An additional objective was to test the moderating role of job insecurity in these relationships. Through this approach, the study aims to provide empirical insights into the integration of AI within a strategic and highly competitive sector, while identifying both the opportunities and the limitations associated with its adoption in the Tunisian context.

This study highlights several important findings. On the one hand, the perceived performance of artificial intelligence shows no significant effect on either job engagement or service quality, suggesting that its integration into the operational practices of Tunisian telecommunications remains limited.

On the other hand, the study confirms that service quality and work commitment are two key determinants of job performance. Finally, job insecurity does not appear to be an influential moderator in the relationships examined, indicating that AI is not yet perceived as a direct threat to job stability in this sector.

The results of this study offer several implications for stakeholders in the Tunisian telecommunications sector. First, they highlight the need for companies not only to introduce artificial intelligence tools but also to support their implementation with training and awareness strategies to promote employee adoption.

At the same time, the confirmed importance of service quality in enhancing performance encourages managers to strengthen monitoring, evaluation, and employee support systems, particularly by recognizing their relational skills and fostering closer connections with customers.

Finally, the absence of a significant effect of job insecurity underscores the importance of maintaining a climate of trust and professional security, which is essential for AI to be perceived as an opportunity rather than a threat. This study highlights the still limited role of artificial intelligence in the Tunisian

telecommunications sector. This research contributes to the literature by highlighting that, although AI is often heralded as a major driver of transformation, it does not yet have a direct effect on engagement or service quality, while job performance remains strongly dependent on service quality. It thus underscores the need to further integrate AI into organizational practices while considering contextual specificities, paving the way for future investigations into the conditions for successful adoption.

This study has certain limitations, notably that it focuses exclusively on the telecommunications 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.

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