

## RESEARCH ARTICLE

# Artificial Intelligence Implementation, Job Security and Mental Health: Impacts of AI on IT Professionals in Nigeria's Oil and Gas Sector

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## Abstract

The rapid advancement of digital technologies and the integration of Artificial Intelligence (AI) are affecting the Information Technology (IT) sector in Nigeria. This study highlighted the impacts of AI adoption on the mental health, job security and professional identity of IT professionals. Unlike the western world, there is a growing incursion into the digital space in developing countries such as: Nigeria, hence, the need to x-ray the psychological impact of AI on IT professionals in a high-tech industry (oil and gas) where the use of AI is fast gaining ground. The paper employed a mixed-methods approach with surveys, questionnaires, structured interviews and focus groups, synthesizing observations with existing literature on AI's impact within Nigeria's IT sector. It examined the evolving roles of AI, evaluated professional sentiments regarding job security and adaptability and assessed the psychological implications of AI-induced changes in the workplace. The findings from questionnaires distributed to 300 randomly selected IT professionals in the oil and gas sector, indicate that while AI enhances efficiency and innovation in the Nigerian IT industry, it also contributes to significant psychological and professional challenges among IT professionals. These include job displacement (temporary or permanent), frustration, despair, deskilling, poor decision-making and low self-esteem. The resulting mental health challenges such as, depression, burnout and stress-related illnesses, underscore the human cost of rapid AI adoption without adequate support mechanisms. The study advocated for comprehensive training and mental health support systems to help IT professionals adapt to AI-driven changes. It was therefore recommended that policymakers and organizational leaders should adopt strategic, inclusive approaches to AI implementation that incorporate input from IT professionals and ensures that innovation does not compromise workers well-being and job stability.

**Key Words:** *Artificial intelligence; Job security; Healthcare; Information technology; Workforce*

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## 1. Introduction

Information Technology has recently witnessed an unprecedented rise, attracting significant attention globally [1]. This surge, which is primarily fueled by rapid advancements in digital technologies and the growing dependence of industries on digital infrastructure, is poised to continue to increase at an exponential rate [2]. Thus, as businesses and organizations increasingly integrate technology into their core operations and the demand for IT solutions and services continues to skyrocket, it has led to the proliferation of careerists known as IT professionals.

IT professionals encompass diverse roles from software developers and system analysts to network architects and data scientists. They are also not limited to companies whose business focus is IT-related but span various industries, including finance, healthcare, education and retail. The importance of these professionals cannot be under-emphasized in any organization. Thus, it is necessary to consider all factors that impact their performance and productivity.

In the case of Nigeria, these global shifts manifest in distinctive ways, particularly for IT professionals working within the country rapidly evolving digital economy. Nigeria has witnessed notable growth in AI-powered solutions from fintech fraud-detection systems and automated customer-support chatbots to data-driven platforms in agriculture, education and e-commerce. This transformation is occurring alongside national challenges such as persistent youth unemployment, limited access to formal AI training, infrastructural gaps and a growing wave of tech-talent migration [3].

The expectations placed on Nigerian IT professionals are intensifying, as local companies adopt machine-learning tools and cloud-based automation. These conditions heighten the pressure on IT workers, who must quickly upskill to remain competitive in a job market where AI both creates opportunities and threatens certain roles [4].

Artificial intelligence is a factor that is changing the dynamics at a global scale and is poised to affect IT professionals and other sectors across talent acquisition, employability and mental well-being [5-7]. Through its components, AI can analyze a large array of data, detect patterns and make conclusions with minimal or no human involvement [8]. This ability to automate complex tasks which were traditionally performed by humans or in this context, IT professionals, marks a significant shift in operational methodologies.

Consequently, the psychological and professional impact of AI adoption is especially pronounced for Nigerian IT professionals, they must integrate emerging AI tools, maintain increasingly complex systems and navigate concerns about job security in a country where stable employment is already scarce. Understanding these dynamics, it is therefore crucial for educators, employers and policymakers to aim at building a future-ready Nigerian Tech workforce.

### 1.1. Rationale for topic choice

- The choice of this topic was influenced by the increased global usage of AI automation tools by both professionals and non-professionals.
- There are few studies focusing on AI's psychological impact among IT professionals, especially in the Nigerian oil & gas sector.

- On a constant basis, there is a new AI automation system being launched that is poised to be able to perform actions that would normally take human personnel so long to achieve [9].
- There is reported dearth of information on the varying effects of AI on temporary and permanent joblessness of professionals [7].

## 1.2. Research question

- What mental health symptoms do IT professionals experience as a result of AI-driven job insecurity?
- To what extent do IT professionals feel threatened that AI could replace or significantly alter their jobs?

## 1.3. Contribution of research

The impact of this topic cannot be underestimated as it sheds light on an important workforce sector. It provides value to both academic setting and practical applications of automation in everyday life. In particular, it helps to enhance the current understanding of the impact of increased AI automation usage on IT professionals across job security, stability, mental health and career longevity. It also can help to inform policy makers and organizations on the need for support for IT professionals across these areas in this era of rapid AI usage. It also helps in addressing societal concerns of fear which already exist regarding AI automation and its proposed place in displacing professionals from their jobs in future.

## 1.4. Aim of the research

The primary objective of this research is to examine the impact that AI-driven automation is having on the job security and mental well-being of IT professionals. The study explores how the increasing role of AI in the workplace is affecting the perceptions and attitudes of IT professionals, as well as the potential implications for their mental health. The study will assess the current state of AI adoption in the IT industry and identify the key challenges and opportunities that arise from this trend. Ultimately, the findings of this research will contribute to the development of practical and workable recommendations for IT professionals and organizations seeking to navigate the evolving landscape of AI-powered automation.

## 1.5. Objectives of the research

- To identify the mental health symptoms IT professionals experience in relation to perceived job insecurity caused by AI adoption.
- To investigate the degree of perceived threat IT professionals, feel regarding AI-related job replacement or transformation.

## 2. Impact of AI on Recruitment and Job Security

The impact of AI and automation on businesses is a keenly debated topic among researchers. In a study conducted on the effects of AI on talent recruitment in the IT industry, it was found that the implementation of AI led to a difference in the recruitment process [6]. According to the study, the implementation of AI automation has resulted in a more streamlined and faster recruitment process. This has significantly reduced the time previously taken for monotonous

and time-consuming recruitment processes. The use of AI automation for recruitment can help build strong talent pipelines and workflows, which can aid in hiring the right candidates for suitable roles.

The empirical findings of this study can be theoretically anchored using the Technology Acceptance Model (TAM). According to the model, the key determinants of technology adoption are perceived ease of use and perceived usefulness [10]. It offers a lens through which to interpret the shift towards AI-driven recruitment processes. The model's utility lies in its ability to elucidate the factors influencing IT professional acceptance and adoption of AI tools in recruitment. It provides a framework to understand the positive reception and integration of AI in streamlining recruitment workflows, aligning with the study's findings on improved recruitment efficiency and the construction of robust talent pipelines.

Individuals with higher levels of education are less worried about the impact of Artificial Intelligence (AI) on their job security [7]. The study emphasized that IT professionals need to adopt continuous learning, financial preparedness and maintain an open mindset as crucial strategies to navigate the AI-driven job market. AI has a significant impact on the mental well-being of IT professionals, depending on their employment status.

## **2.1. Psychological effects of AI-induced job changes**

AI is reported to have different effects on temporary and permanent joblessness among professionals [7]. The study showed that temporary joblessness caused by AI automation usually leads to frustration and a strong desire to find new employment among individuals. Conversely, permanent joblessness tends to lead to feelings of despair and helplessness, with some individuals opting to pursue new hobbies as a coping mechanism.

The implementation of AI in the workplace has been associated with significant psychological effects, particularly as it reshapes job roles and responsibilities. IT professionals often experience heightened uncertainty and perceived job insecurity when routine tasks become automated, leading to increased levels of stress, anxiety and burnout [11].

These psychological responses are influenced not only by the potential risk of job displacement but also by concerns over skill obsolescence and the need to rapidly adapt to evolving technological demands. In the context of Nigeria's oil and gas sector, where IT professionals play a critical role in maintaining and optimizing digital infrastructure, AI-induced job changes can exacerbate mental strain, especially among early-career workers who report the highest levels of perceived threat. Understanding these psychological effects is essential for organizations seeking to implement AI while maintaining workforce well-being. This study complements the earlier studies by adding a dimension of how personal viewpoints and demographic characteristics significantly shape fears and reactions to automation. These studies provide a comprehensive picture of the psychological landscape in the face of AI and automation. It is crucial to address both collective and individual concerns within this rapidly evolving digital economy.

## **2.2. Limitations and ethical concerns in AI application**

According to some scholars, not all activities should be automated using AI. It was believed that certain tasks that require human flexibility, judgment and improvisation should remain in the hands of humans [12]. Automating such activities could potentially harm performance and outcomes.

The increasing use of AI in decision-making has raised concerns about the potential decrease of human interaction. This interaction is crucial for ensuring respectful and courteous treatment. The algorithmic and mathematical nature of AI may cause people to feel dehumanized since they could be reduced to mere numbers or percentages [13,14]. Moreover, it has been contended that individuals are likely to have diminished levels of confidence when an AI makes a judgment instead of a person [15]. Furthermore, being subjected to unreliable decisions is likely to be associated with feelings of unfair treatment in interactions. Individuals' view of dignified treatment may be influenced by their happiness with the result of a choice [16].

Every individual has the right to assess their treatment based on its impact and specific details of the decision. This helps them make informed decisions and take an active role in their health. To have a comprehensive understanding of how they feel about choices made by others, it is important to consider factors such as interactional fairness, appropriateness of the decision maker's role, dehumanization, trust and satisfaction with the outcome. Collectively, these factors can help determine the level of dignity and respect that individuals perceive when they are subjected to decisions made by others.

Studies are increasingly comparing human and AI decision-making, focusing on the impact of the decision-maker. Individuals tend to see certain activities as either requiring human-centered abilities or mechanically-focused talents [14]. In general, individuals are less inclined to trust and react positively to algorithmic systems doing the former duties mentioned but are more at ease with these systems performing the later activities. There is evidence suggesting that individuals believe humans possess distinct abilities in judgment, emotional understanding and contextualizing decision-making. These qualities are considered essential, particularly in sensitive situations and are perceived to be lacking in AI systems [13].

In addition, there is a prevailing tendency among individuals to have reduced confidence in AI-powered systems as opposed to human decision makers. This is perhaps due to the lack of emotional intelligence and empathy in machines, which can result in a disconnect between the system's decisions and the human experience. It is important to note that the effectiveness of the system is subject to the judgments it makes. According to Lee's research in 2018, automated systems may receive less positive evaluation when they make decisions that are considered morally significant [17]. On the other hand, tasks that are more routine and mechanical in nature may be perceived as more acceptable if they are performed by such systems [18].

### **2.3. Identification of gaps and contribution of research**

Existing literature shows that AI adoption affects job security, role expectations and skill requirements, with some studies also highlighting emerging psychological implications for workers. However, there is limited quantitative evidence on how AI integration specifically influences mental health outcomes, job satisfaction and work-life balance among IT professionals particularly outside healthcare-focused ethical debates and beyond generalized global assessments.

This study addresses these gaps by empirically examining the psychological impacts, perceived job insecurity and ethical concerns associated with AI adoption among IT professionals in Lagos, Nigeria. Focusing on this group is crucial, given their strategic role in a rapidly digitizing economy and their exposure to both automation pressures and systemic workforce challenges. This research contributes new quantitative insights into AI-related



mental health challenges, job insecurity and ethical perceptions among Nigerian IT professionals, offering context-specific evidence that strengthens global discussions on AI's workforce implications and informs policy and organizational strategies in emerging economies.

### 3. Methodology Methods and Ethical Considerations

The study utilized a mixed-methods approach, integrating both qualitative and quantitative research approaches to provide a more thorough knowledge of the impacts of AI on IT workers. The qualitative component involved an in-depth interview and focus groups to gather detailed insights into personal experiences and perspectives. The quantitative component included conducting surveys to gather quantifiable data on job security apprehensions, psychological well-being impacts and attitudes towards AI automation within IT professionals in oil and gas sector. This combination enables the collection of comprehensive and thorough data, as well as the generation of conclusions that can be applied to a wide range of situations.

This approach is suitable for the study because the researcher aims to gather detailed data using descriptive methods, which are useful in identifying variables and hypothetical constructs. This methodology provides thorough explanations of the variables to address the research questions in the study. Besides, it improves the ability to compare comments from participants thus providing a complete perspective on the topic under investigation.

#### 3.1. Population and sampling technique

- **Population:** The population consists of IT professionals in selected organizations within oil & gas sector in Lagos (a densely populated tech city), Nigeria.
- **Sample size:** 300 survey/questionnaire respondents were selected using stratified random sampling. 50 key informants were interviewed purposively.
- This method involves dividing the population into various strata based on variables such as job role, industry sector and experience level with AI technologies. From each stratum, a random sample was selected.
- This technique ensures that different subgroups within the IT profession are well-represented, which leads to more accurate and generalizable conclusions.
- The stratified random sampling method was chosen to ensure that the sample accurately represents the diverse population of IT professionals and reduces sampling bias.

#### 3.2. Data collection

- **Data collection:** Data was collected using a combination of structured interviews, focus groups and online surveys measuring exposure to AI, job insecurity, mental health issues and years of experience.
- **Instruments:** Interviews, focus groups, questionnaires and online surveys allowed for in-depth exploration of participants' experiences and perceptions regarding AI in their professional lives.
- Online surveys were used to gather quantitative data on specific aspects such as job satisfaction, mental health status and perceptions of job security.
- The surveys were designed to include both closed-ended and open-ended questions to capture a range of responses.

- Online surveys further offered quantitatively measure aspects such as job satisfaction, mental health status and perceptions of job security.
- **Data analysis:** For this study, data analysis involved both qualitative and quantitative techniques.
- The qualitative data gathered from interviews and focus groups were analyzed using thematic analysis to identify any recurring themes or patterns in the responses.
- On the other hand, the quantitative data collected from surveys was analyzed using statistical methods, such as descriptive statistics and inferential statistics.

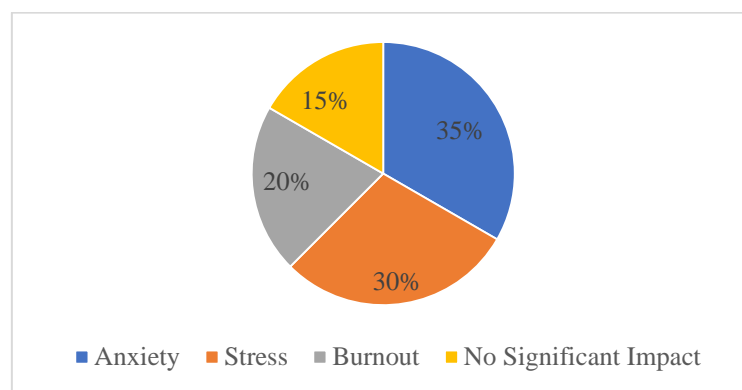
### 3.3. Research ethics

Ethical concerns play a vital role in research, particularly in qualitative contexts where researchers wield significant influence over the interpretation of participants' claims [19]. It encompasses issues like as consent, confidentiality and the accuracy of reporting findings. The study strictly followed ethical guidelines. In order to participate in the study, all participants had to give their informed consent, which means they were made aware of the purpose of the study as well as their rights. Confidentiality and anonymity were prioritized throughout the study, with the data being securely stored and only accessible to the research team. Ethical considerations, particularly in qualitative research, includes being sensitive to the potential emotional impact of discussions about job security and mental health

## 4. Results and Findings

### 4.1. Overview of the results

**4.1.1. Research question:** What mental health symptoms do IT professionals experience as a result of AI-driven job insecurity? The result of the impact of AI implementation on mental health of its professionals is as shown in Figure 1 (Table 1):



**Figure 1:** *Impact of AI implementation on mental health of IT professionals.*

**Table 1:** Table for AI implementation on mental health of its professionals.

Mental health challenge	Frequency (n)	Percentage (%)
Anxiety	105	35%
Stress	90	30%
Burnout	60	20%
No significant impact	45	15%

Total sample size(n) is 300. Survey question for Figure 1, “Which of the following mental health challenges, if any, have you experienced as a result of perceived job insecurity associated with the adoption of AI in your workplace?”

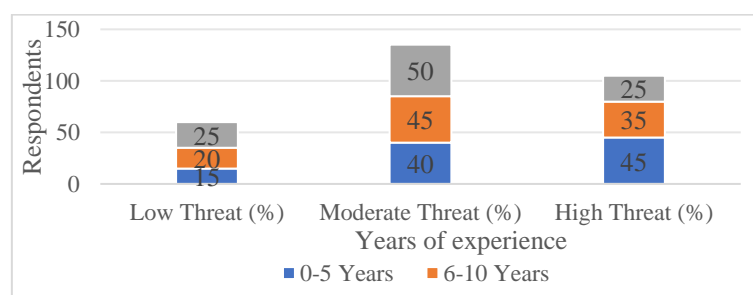
Response format, participants were allowed to select one primary mental health effect associated with AI-related job insecurity. Response options are stress, anxiety, burnout and no significant impact.

As shown in Figure 1, anxiety emerged as the most frequently reported mental health challenge associated with AI-related job insecurity, with 105 respondents selecting this option. Stress was the second most common outcome (90 respondents), followed by burnout (60 respondents). A smaller group of 45 respondents indicated that AI adoption had no significant impact on their mental well-being. These distribution patterns highlight differing levels of psychological strain among IT professionals as they adjust to AI-driven workplace changes. The pattern shown in the graph suggests a notable association between AI-related job insecurity and heightened psychological strain. In particular, the elevated levels of anxiety and stress imply that employees may be experiencing uncertainty regarding role stability, future skill requirements, or potential displacement due to automation. The prevalence of burnout further indicates prolonged emotional or occupational fatigue within this context.

## 4.2. Chi square goodness-of-fit test

A chi-square goodness-of-fit test indicated that the distribution of reported mental health challenges differed significantly from a uniform distribution across categories,  $X^2(3, N = 300) = 30.00, p < 0.001$ . This suggests that certain mental health challenges (especially anxiety and stress) were reported more frequently than others.

**4.2.1. Research question:** To what extent do IT professionals feel threatened that AI could replace or significantly alter their jobs? The result is shown in Figure 2 (Table 2):

**Figure 2:** Mental health impact by years of experience and job threat level.



**Table 2:** Table for mental health impact by years of experience and job threat level.

Threat level	0-5 years (n)	6-10 years (n)	11+ years (n)	Total
Low threat	15	20	25	60
Moderate threat	40	45	50	135
High threat	45	35	25	105

Total sample size(n) is 300. Survey question for Figure 2: “How threatened do you feel that your job could be replaced or significantly changed due to the adoption of AI technologies?”. Response format, participants were allowed to select one primary mental health effect associated with AI-related job insecurity.

Response options are low threat, moderate threat and high threat. Participants were asked to select one response. Years of experience were categorized into: 0-5 years, 6-10 years and 11+ years.

As shown in Figure 2, early-career professionals (0-5 years) report the highest levels of perceived job threat overall, particularly in the high-threat category. Mid-career professionals (6-10 years) show a more balanced distribution across threat levels, while individuals with 11+ years of experience report comparatively lower high-threat perceptions and higher low-threat perceptions. This pattern suggests that perceived vulnerability to AI-related job loss decreases with professional experience, while early-career workers feel the greatest uncertainty about long-term career stability in the context of AI integration.

For the low threat group, 15 respondents with 0-5 years of experience, 20 with 6-10 years and 25 with 11+years reported minimal concern about AI’s impact on job stability. In contrast, the moderate threat category shows substantially higher levels of concern, with 40 respondents (0-5 years), 45 respondents (6-10 years) and 50 respondents (11+years) indicating a moderate level of perceived threat. The high threat group reflects heightened job insecurity, with 45 respondents in the 0-5year group, 35 respondents in the 6-10 year group and 25 respondents in the 11+year group reporting significant concerns regarding AI and job displacement.

### 4.3. Chi square test of independence

A chi-square test of independence indicated a statistically significant association between years of experience and perceived job threat from AI,  $\chi^2(4, N = 300) = 32.72, p < 0.001$ . This suggests that perceived job threat varies meaningfully across experience groups.

### 4.4. Findings

The findings showed that growing AI adoption in the workplace is closely linked to heightened mental-health concerns among IT professionals, with many respondents reporting increased stress and uncertainty as automation expands. Organizations are responding by prioritizing upskilling and reskilling initiatives to help employees adapt to these shifts. There was a divide shown across experience levels in the results: individuals in the early stages of

their careers (0-5 years) experience the strongest sense of job threat from AI, accompanied by higher levels of anxiety and burnout. In comparison, more seasoned professionals, particularly those with over 11 years of experience, demonstrate greater resilience and report significantly lower psychological strain, suggesting that accumulated expertise may help mitigate the emotional impact of technological change.

#### **4.5. Validity and reliability**

To ensure the validity of the study, its tools (survey questions, interview guides) were rigorously tested and reviewed by experts in the field. Pilot testing was conducted to refine these tools, ensuring that they accurately measured what they were intended to measure. Reliability was ensured through consistent application of data collection procedures and thorough training of researchers conducting interviews and focus groups. The combination of different data collection methods enhanced the validity and reliability of the study by corroborating findings across different data sources.

### **5. Conclusion**

Our research indicates that while AI automation can enhance efficiency and innovation within the IT industry, it simultaneously introduces concerns related to job security and evolving skill requirements. AI technologies enable IT professionals to automate routine tasks, optimize workflows and improve system performance, ultimately resulting in productivity gains and cost efficiencies for organizations.

However, the findings also show that perceived AI-related job threat contributes to increased psychological strain among IT professionals. The study found that higher levels of perceived job threat were associated with higher reports of anxiety, stress and burnout, particularly among early-career professionals. These responses reflect uncertainty about future role stability and the pace of technological change. Additionally, the results reveal a preparedness gap, as many IT professionals feel insufficiently equipped, both in terms of skills and mental health support, to adapt to AI-driven transformations.

Therefore, the study highlights the need for organizations to provide more structured support systems, including opportunities for continuous upskilling and reskilling, as well as access to mental health resources such as counseling services and stress-management programs. Strengthening these forms of support can help IT professionals navigate the challenges and opportunities created by increasing AI adoption in the workplace.

#### **5.1. Limitations and future research**

This study has several limitations that should be considered when interpreting the findings. First, the sample size was limited to IT professionals within the oil and gas sector in Lagos, Nigeria, which may restrict the generalizability of the results to other industries or regions. Second, the study employed a cross-sectional design, capturing participants' perceptions at a single point in time, longitudinal changes in job insecurity, mental health, or adaptation to AI could not be assessed.

Third, mental health outcomes were self-reported and not based on diagnostic assessments, which may affect the precision of reported anxiety, stress and burnout levels. Future research could address these limitations by expanding the sample to include multiple industries and geographic regions, employing longitudinal designs to track the evolving impacts of AI

adoption and using validated diagnostic tools to assess mental health outcomes more rigorously. Additionally, qualitative approaches such as interviews or focus groups could provide deeper insights into how IT professionals perceive AI integration, coping mechanisms and organizational support needs.

## 5.2. Recommendations

The study found that while AI automation introduces efficiency and innovation in the IT industry, it also heightens job insecurity and psychological strain, particularly among early-career IT professionals and those reporting high perceived AI-related job threat. Based on these findings, the following evidence-based recommendations are proposed:

**5.2.1. Comprehensive training and upskilling programs:** Given that early career professionals (0–5 years) reported the highest levels of perceived job threat, organizations should implement targeted training programs that build both AI-related technical skills and complementary soft skills. Strengthening competency among less experienced workers can help reduce uncertainty about future role stability and improve preparedness for AI-driven changes.

**5.2.2. Enhanced mental health support systems:** Because the study found that anxiety and stress were the most commonly reported mental health challenges, companies should prioritize mental health support. This includes access to counseling services, employee assistance programs and stress-management workshops. Creating a workplace culture that openly acknowledges mental health can mitigate the psychological impact of AI-related job insecurity.

**5.2.3. Strategic and transparent implementation of AI:** Since many participants expressed concerns about how AI adoption may alter job roles, organizations should conduct clear impact assessments and communicate the purpose of AI initiatives. Aligning AI deployment with role enhancement, rather than role replacement can reduce uncertainty and foster greater trust among employees.

**5.2.4. Employee involvement in AI planning and deployment:** Findings showed that perceived job threat reduced when employees felt informed and prepared for AI-related changes. Therefore, involving IT professionals in the planning, piloting and evaluation of AI systems can increase their sense of control, reduce anxiety and ensure that human expertise guides decision-making about technological adoption. Together, these recommendations directly address the study's evidence that AI integration affects both job security perceptions and mental well-being. Supporting IT professionals through targeted upskilling, transparent communication, mental health resources and participatory implementation practices can help organizations achieve a balanced and human-centered approach to AI adoption.

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