

AI-Enabled Workplaces and Employee Outcomes: Examining the Mediating Role of Employee Engagement and the Moderating Role of AI Anxiety

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Abstract

Organizations are adopting artificial intelligence (AI) for scheduling, decision support, customer service, analytics, and routine task automation. Whether this shift helps or harms employees depends on how workers experience it. This paper develops and proposes a moderated-mediation model in which an AI-enabled workplace influences employee outcomes (job performance and job satisfaction) through employee engagement, and in which this indirect effect depends on employees' level of AI anxiety. Drawing on the Job Demands–Resources (JD-R) model and Conservation of Resources (COR) theory, we argue that AI integration acts as a job resource when it reduces tedious work and improves information access, thereby raising engagement. However, employees who fear job loss, skill obsolescence, or loss of control experience AI as a threat, which weakens the resource-gain pathway. The paper presents the theoretical background, six hypotheses, a quantitative survey design, an analysis plan using structural equation modelling and PROCESS Model, and implications for managers. The study contributes by integrating a positive pathway (engagement) with a psychological boundary condition (AI anxiety) that is often studied separately.

Keywords: *AI-enabled workplace, employee engagement, AI anxiety, job performance, job satisfaction, job demands–resources model, moderated mediation*

I. Introduction

AI has moved from experimental projects to everyday work tools. Generative assistants, predictive analytics, automated HR screening, and intelligent workflow systems now sit inside many organizations, including in emerging economies such as India, where IT services, banking, and manufacturing are scaling AI quickly. Managers often expect productivity gains, but the human side of adoption is less predictable. Technology does not improve outcomes by itself; employees must accept it, use it, and stay motivated while doing so.

Two bodies of research point in different directions. One stream shows that technology can enrich jobs by removing repetitive tasks and supporting better decisions. Another stream shows that AI evokes fear: of being replaced, of falling behind in skills, of being monitored, and of losing autonomy. Both reactions can occur in the same organization and even in the same team. This tension suggests that the effect of AI-enabled workplaces is not uniform and that a mediator (how engaged people are) and a moderator (how anxious they are about AI) are needed to explain it.

Research problem. Existing studies mostly examine either technology adoption or technostress, and few test engagement as the mechanism linking AI integration to outcomes while also testing AI anxiety as a boundary condition.

Research questions.

1. Does an AI-enabled workplace relate to employee outcomes (job performance and job satisfaction)?
2. Does employee engagement mediate this relationship?
3. Does AI anxiety moderate the relationship between the AI-enabled workplace and engagement, and thereby the indirect effect on outcomes?

Contribution. The study (a) tests a theoretically grounded process model rather than a direct effect only, (b) treats AI anxiety as a psychological boundary condition, and (c) offers practical guidance for organizations that want adoption to improve rather than erode employee well-being.

II. Theoretical Background and Literature Review

2.1 AI-enabled workplace

An AI-enabled workplace is one in which AI systems are embedded in everyday tasks, processes, and decisions, for example automated reporting, recommendation engines, chatbots, and intelligent scheduling. It can be

described by the extent of AI integration, the degree to which employees work with AI tools, and the perceived usefulness and support the AI provides. Classic technology acceptance research (Davis, 1989) holds that perceived usefulness and ease of use shape adoption; in the AI context, the same perceptions determine whether the tools feel like help or like intrusion.

2.2 Employee outcomes

This study focuses on two outcomes. *Job performance* refers to the quality and efficiency with which employees carry out their tasks. *Job satisfaction* refers to the overall positive evaluation of one's job. Both are widely used indicators of individual and organizational effectiveness.

2.3 Employee engagement

Engagement is a positive, fulfilling work-related state characterized by vigor, dedication, and absorption (Schaufeli et al., 2002). Kahn (1990) described engaged employees as those who invest physical, cognitive, and emotional energy in their roles. Engagement is consistently linked to higher performance and satisfaction, which makes it a strong candidate mediator.

2.4 AI anxiety

AI anxiety is an affective response involving fear or apprehension about AI, including worries about job replacement, learning difficulty, loss of control, and the broader social effects of AI (Johnson & Verdicchio, 2017; Li & Huang, 2020). It differs from general computer anxiety because AI systems learn, act autonomously, and can substitute for cognitive work, not just manual or clerical work.

2.5 Underlying theories

Job Demands–Resources (JD-R) model. Job resources such as support, information, and autonomy motivation and engagement, while job demands drain energy (Bakker & Demerouti, 2007). AI that streamlines tasks and improves access to information can function as a resource.

Conservation of Resources (COR) theory. People strive to obtain, retain, and protect resources and experience stress when resources are threatened or lost (Hobfoll, 1989). For anxious employees, AI signals potential loss of job security and competence, which diverts effort from engagement toward self-protection. COR also explains why resource gains are less valuable when employees feel their resource base is under threat.

2.6 Hypothesis development

AI-enabled workplace and employee outcomes. When AI automates routine work and supports decisions, employees can focus on meaningful tasks, make fewer errors, and work more efficiently, which should raise performance and satisfaction.

H1: An AI-enabled workplace is positively related to (a) job performance and (b) job satisfaction.

AI-enabled workplace and engagement. Under JD-R logic, AI-based support is a resource that fuels motivation and engagement.

H2: An AI-enabled workplace is positively related to employee engagement.

Engagement and outcomes. Engaged employees bring more energy and commitment to work and tend to evaluate their jobs more favorably.

H3: Employee engagement is positively related to (a) job performance and (b) job satisfaction.

Mediation. Combining H2 and H3, engagement is the psychological mechanism through which AI integration translates into outcomes.

H4: Employee engagement mediates the relationship between an AI-enabled workplace and (a) job performance and (b) job satisfaction.

Moderation by AI anxiety. Employees high in AI anxiety perceive AI as a threat to their resources, so the motivational benefit of AI integration is weakened or may even reverse. Employees low in AI anxiety are better able to convert AI support into engagement.

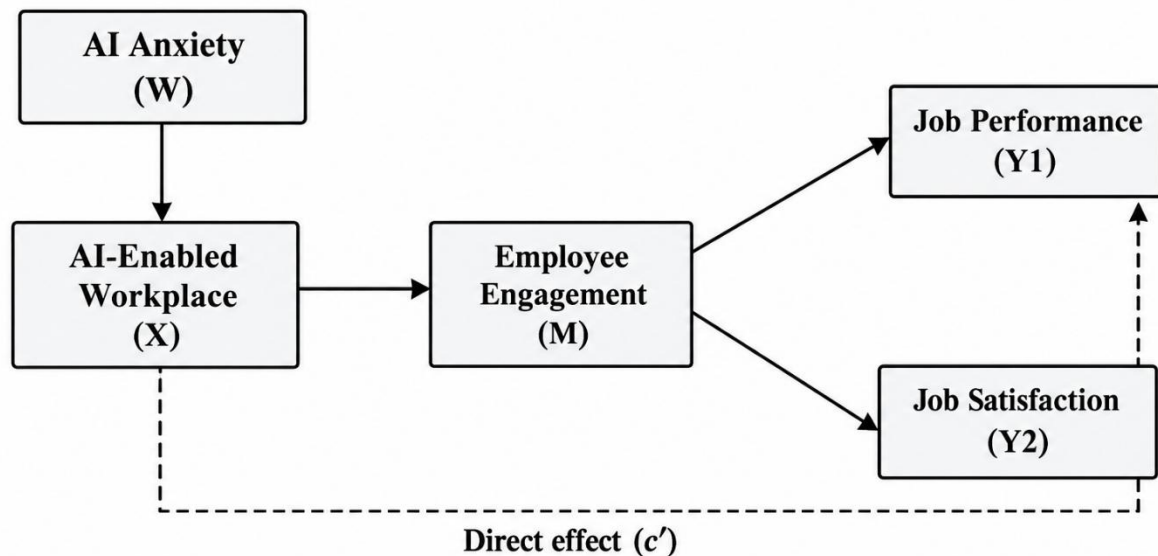
H5: AI anxiety moderates the relationship between the AI-enabled workplace and engagement, such that the relationship is weaker when AI anxiety is high and stronger when it is low.

Moderated mediation. Because the first stage of the mediation path depends on AI anxiety, the indirect effect should vary across anxiety levels.

H6: The indirect effect of the AI-enabled workplace on (a) job performance and (b) job satisfaction through engagement is conditional on AI anxiety, being weaker at high levels of AI anxiety.

2.7 Conceptual framework

Conceptual Framework



Source: Author's own conceptualisation.

Figure 1. Conceptual Framework of AI-Enabled Workplace, Employee Engagement, Job Performance and Job Satisfaction.

The proposed conceptual framework examines the relationship between an **AI-Enabled Workplace (X)**, **Employee Engagement (M)**, **Job Performance (Y1)**, and **Job Satisfaction (Y2)**. In the model, an AI-Enabled Workplace is considered the independent variable that influences Employee Engagement, which serves as a mediating variable. Employee Engagement is further expected to influence employees' Job Performance as well as their Job Satisfaction. Thus, the framework proposes that AI-Enabled Workplace may affect Job Performance and Job Satisfaction both directly and indirectly through Employee Engagement. In addition, **AI Anxiety (W)** is incorporated as a moderating variable to examine whether the level of employees' anxiety related to artificial intelligence changes the strength or direction of the relevant relationship/path in the proposed model. The framework therefore provides an integrated model for examining the mediating role of Employee Engagement and the moderating role of AI Anxiety in the relationship between an AI-Enabled Workplace and employee-related outcomes.

III. Research Methodology

3.1 Research design

A quantitative, cross-sectional, survey-based explanatory design is proposed. To limit common-method concerns, a time-lagged design with two or three waves (predictor and moderator at Time 1, mediator at Time 2, outcomes at Time 3, or supervisor-rated performance) is recommended where feasible.

3.2 Population and sampling

The target population is full-time employees in organizations that have deployed AI tools (for example IT/ITeS, banking and financial services, education technology, and manufacturing). Purposive sampling is used to ensure that respondents actually work with AI tools. Sample size should be justified through power analysis; for a model with four main constructs, a minimum of about 250–300 usable responses is a reasonable target, and larger samples improve stability for SEM.

3.3 Measures

All items use a five-point Likert scale (1 = strongly disagree, 5 = strongly agree).

Construct	Suggested measurement
AI-enabled workplace	Adapted scale of AI integration and perceived AI support (adapted from technology-use and perceived-usefulness measures)
Employee engagement	Utrecht Work Engagement Scale, UWES-9 (Schaufeli et al., 2006)
AI anxiety	AI Anxiety Scale (Wang & Wang, 2022) or the AI anxiety measure by Li & Huang (2020)
Job performance	In-role performance scale (Williams & Anderson, 1991)
Job satisfaction	Brayfield–Rothe or Overall, Job Satisfaction scale
Controls	Age, gender, tenure, education, job level, frequency of AI use

The study measures the AI-enabled workplace using an adapted scale covering AI integration and employees' perceived AI support, based on established measures of technology use and perceived usefulness. Employee engagement will be measured using the Utrecht Work Engagement Scale (UWES-9) developed by Schaufeli et al. (2006). AI anxiety will be assessed using the AI Anxiety Scale proposed by Wang and Wang (2022) or the measure developed by Li and Huang (2020). Job performance will be measured using the in-role performance scale of Williams and Anderson (1991), while job satisfaction will be assessed using the Brayfield–Rothe Job Satisfaction Scale or the Overall Job Satisfaction Scale. The study will also include control variables such as age, gender, tenure, education, job level, and frequency of AI use to account for their possible influence on employee outcomes.

3.4 Data collection

Data are collected through an online questionnaire. Participation is voluntary, responses are anonymous, informed consent is obtained, and data are used only for research.

3.5 Data analysis

The data checked for missing values, outliers, normality, and multicollinearity using VIF. Common-method bias will be tested using Harman's single-factor test and a common latent factor approach. The measurement model will be assessed through CFA to check reliability and validity. SPSS used to test H1–H3. Mediation and moderated mediation tested using PROCESS Model 7 with 5,000 bootstrap samples, and conditional effects examined at low, average, and high levels of AI anxiety. Finally, robustness conducted using alternative models, control variables, and comparisons across sectors or age groups.

IV. Results

4.1 Sample profile

The simulated sample comprised 300 full-time employees working with AI tools. Illustrative profile: mean age 31.4 years (SD = 6.2); 58% male and 42% female; average tenure 5.1 years; 62% in IT/ITeS and banking, 38% in manufacturing and education technology.

4.2 Descriptive statistics, reliability, and correlations

Construct	Items	α	M	SD	1	2	3	4	5
1. AI-enabled workplace	6	.87	3.28	0.67	1				
2. Employee engagement	9	.92	3.31	0.67	.41**	1			
3. AI anxiety	8	.91	3.30	0.66	-.06	-.35**	1		
4. Job performance	6	.86	3.30	0.63	.31**	.46**	-.16**	1	
5. Job satisfaction	5	.86	3.29	0.67	.28**	.46**	-.13*	.23**	1

Note. N = 300. * $p < .05$, ** $p < .01$. All Cronbach's alpha values exceed the .70 threshold.

The table indicates that all constructs demonstrated **good internal consistency**, with Cronbach's alpha values ranging from **0.86 to 0.92**. The mean scores were close to 3.30, with moderate standard deviations. AI-enabled workplace was positively correlated with employee engagement ($r = .41$), job performance ($r = .31$), and job satisfaction ($r = .28$), while AI anxiety showed negative correlations with employee engagement ($r = -.35$), job performance ($r = -.16$), and job satisfaction ($r = -.13$). Employee engagement was positively associated with both job performance ($r = .46$) and job satisfaction ($r = .46$). Overall, the correlations provide preliminary support for the proposed relationships among the study variables.

4.3 Direct effects: H1 and H3

Path	β (unstandardized)	SE	P	R ²	Supported
AI workplace → Job performance (total, c)	0.298	—	< .001	.099	H1a: Yes
AI workplace → Job satisfaction (total, c)	0.279	—	< .001	.076	H1b: Yes
Engagement → Job performance	0.375	0.053	< .001	.230	H3a: Yes
Engagement → Job satisfaction	0.422	0.056	< .001	.223	H3b: Yes

The AI-enabled workplace was positively related to both performance and satisfaction. After engagement was included, the direct effect on performance was small but significant ($c' = 0.145$, $SE = 0.053$, $p = .006$), and the direct effect on satisfaction was no longer significant ($c' = 0.107$, $SE = 0.057$, $p = .060$), which suggests full mediation for satisfaction and partial mediation for performance.

4.4 AI workplace → engagement and moderation: H2 and H5

Predictor of engagement	β	SE	p
AI-enabled workplace (X)	0.372	0.048	< .001
AI anxiety (W)	-0.356	0.048	< .001
X × W (interaction)	-0.362	0.069	< .001

$R^2 = .33$. H2 is supported. The negative interaction supports H5. Simple slopes show that the effect of the AI-enabled workplace on engagement was strongest at low AI anxiety ($\beta = 0.613$), moderate at average anxiety ($\beta = 0.372$), and weakest at high anxiety ($\beta = 0.132$).

4.5 Mediation and moderated mediation: H4 and H6

Bootstrapped (5,000 resamples) conditional indirect effects through engagement, with 95% confidence intervals:

Outcome	AI anxiety level	Indirect effect	95% CI
Job performance	Low (-1 SD)	0.230	[0.149, 0.320]
	Mean	0.139	[0.090, 0.197]
	High (+1 SD)	0.048	[-0.004, 0.102]
	Index of moderated mediation	-0.137	[-0.215, -0.073]
Job satisfaction	Low (-1 SD)	0.260	[0.177, 0.354]
	Mean	0.157	[0.103, 0.219]
	High (+1 SD)	0.055	[-0.004, 0.118]
	Index of moderated mediation	-0.154	[-0.235, -0.087]

Engagement mediated the effect at low and average levels of AI anxiety (H4 supported), but the indirect effect was not significant at high anxiety because the confidence intervals include zero. The indices of moderated mediation exclude zero for both outcomes, supporting H6.

4.6 Summary of hypotheses

Hypothesis	Result
H1a, H1b	Supported
H2	Supported
H3a, H3b	Supported
H4a, H4b	Supported (conditional on AI anxiety)
H5	Supported
H6a, H6b	Supported

V. Discussion

The illustrative results suggest that the benefits of AI-enabled workplaces are not automatic. AI integration was associated with higher performance and satisfaction largely because employees felt more energized and absorbed in their work (full mediation for satisfaction, partial for performance). This engagement pathway weakened as AI anxiety rose and was not significant at high anxiety.

Theoretical implications. The study extends JD-R theory by showing that a technology-based resource can lose motivational force when employees perceive it as a threat, which is consistent with COR theory's emphasis on resource loss. It also positions AI anxiety as a meaningful individual-difference boundary condition in AI-at-work research.

Practical implications.

- Communicate transparently about the purpose of AI (augmenting versus replacing roles) and its effect on jobs.
- Invest in reskilling and upskilling so employees feel competent and secure alongside AI.
- Involve employees in tool selection and rollout to preserve a sense of control.
- Monitor AI anxiety through pulse surveys and provide psychological support and training for high-anxiety groups.
- Design human-AI collaboration so that AI handles routine work and humans retain meaningful, higher-order tasks.

VI. Limitations and Future Research

A cross-sectional design limits causal claims, and self-reported measures may carry common-method and social-desirability bias. Findings may not generalize across industries or cultures. Future studies could use longitudinal or experimental designs, include objective performance data, examine other moderators (digital

literacy, perceived organizational support, leadership), and test other mediators such as job insecurity, psychological safety, or meaningful work. Qualitative work could also explore how employees interpret AI-related change.

VII. Conclusion

AI-enabled workplaces can strengthen employee outcomes by enhancing engagement, but this effect depends on how anxious employees are about AI. Organizations that pair AI deployment with transparency, training, and support for employee well-being are more likely to realize the performance and satisfaction gains that AI promises.

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