

TECHNOSTRESS AND PROFESSIONAL PERFORMANCE: ASSESSING THE IMPACT OF AI PLATFORMS ON HIGHER EDUCATION STAFF

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Abstract: *The rapid integration of Artificial Intelligence (AI) platforms within higher education institutions has fundamentally altered the occupational landscape for academic and administrative staff. Grounded in the Transactional Model of Stress and Coping and the Job Demands-Resources (JD-R) model, this study investigates the relationship between AI-induced technostress creators (techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty) and professional performance among higher education staff (N = 342). Structural Equation Modeling (SEM) was deployed to analyze the mediating role of psychological burnout and the moderating effect of organizational digital support. The findings indicate that techno-overload and techno-complexity exert a significant negative impact on task performance, largely mediated by emotional exhaustion. Conversely, digital support mechanisms significantly attenuate these adverse effects. Implications for institutional policies and psychological interventions in academic settings are discussed.*

Keywords: *Technostress; AI platforms; Professional performance; Higher education staff; Occupational health psychology.*

Introduction

The digital transformation of higher education has accelerated exponentially, shifting from traditional Learning Management Systems (LMS) to advanced, generative Artificial Intelligence (AI) platforms and automated administrative tools. While these technologies promise enhanced efficiency, personalized learning, and streamlined workflows, they simultaneously introduce novel psychosocial stressors,

conceptualized as technostress. First defined by Brod (1984) and later operationalized in organizational contexts by Tarafdar et al. (2007), technostress reflects the inability of individuals to cope with new computer technologies in a healthy manner.

In the university ecosystem, faculty and administrative staff are uniquely vulnerable. The pressure to adopt AI tools for grading, research generation, student monitoring, and curriculum design often collides with a lack of structured training, blurring the boundaries between work and personal life. While the existing literature has extensively covered technostress relating to remote work and general ICT use (Salanova et al., 2013; Molino et al., 2020), empirical focus on AI-specific platforms within high-stakes academic environments remains fragmented.

Drawing upon the Job Demands-Resources (JD-R) model (Bakker & Demerouti, 2017), this study positions AI platform requirements as job demands that, when exceeding individual capabilities, trigger a health-impairment process leading to reduced professional performance. This research aims to address this gap by quantifying the impact of five core technostress creators on the objective and subjective performance of higher education staff, providing an empirically validated framework for academic policymakers.

Literature Review and Hypotheses Development

AI Platforms as Catalysts for Technostress

Tarafdar et al. (2007) identified five key technostress creators: *techno-overload* (working faster and longer due to technology), *techno-invasion* (constant connectivity invading personal life), *techno-complexity* (feeling inadequate due to complex systems), *techno-insecurity* (fear of losing one's job to automation), and *techno-uncertainty* (unpredictable technological updates).

When applied to AI platforms (e.g., automated analytics, LLMs for academic administrative tasks), these creators manifest distinctively. Techno-overload occurs as AI systems generate large volumes of data requiring constant human oversight, transforming academics into "data managers." Techno-complexity is exacerbated by the opaque, "black-box" nature of AI algorithms, leaving staff uncertain about how outputs are derived. Moreover, discussions surrounding AI's capability to automate grading and syllabus construction fuel techno-insecurity.

The Mediating Role of Psychological Burnout

According to the Transactional Model of Stress and Coping (Lazarus & Folkman, 1984), sustained exposure to environmental stressors without adequate coping mechanisms results in psychological strain. In the

workplace, this strain manifests as burnout, characterized by emotional exhaustion, depersonalization, and a reduced sense of personal accomplishment (Maslach et al., 2001).

Previous studies in educational psychology have shown that general technostress is a robust predictor of teacher burnout (Syvänen et al., 2015). When faculty members experience continuous frustration with AI platforms, their cognitive resources are depleted, directly impairing their emotional capacity to engage in high-quality teaching and research.

Research Hypotheses

Based on the theoretical background, the following hypotheses are proposed:

- **H1:** AI-induced technostress creators (specifically techno-overload and techno-complexity) are negatively related to the professional performance of higher education staff.
- **H2:** Psychological burnout mediates the relationship between AI technostress creators and professional performance.
- **H3:** Institutional digital support moderates the relationship between technostress creators and burnout, such that high support weakens the positive impact of technostress on burnout.

Methodology

Participants and Procedure

A cross-sectional, quantitative survey design was deployed. Data collection was carried out across public universities in Romania, targeting both academic faculty and administrative personnel interacting daily with institutional AI or advanced digital platforms. A total of 342 valid responses were retained after data cleaning. The sample demographics comprised 62% female and 38% male respondents, with a mean age of 44.5 years ($SD = 8.3$). Participation was entirely voluntary, anonymous, and conducted in accordance with the Declaration of Helsinki.

Measures

All instruments utilized validated scales adapted to the context of AI platforms, using a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree).

- **Technostress Creators:** Measured using the 20-item scale developed by Tarafdar et al. (2007), adapted for AI interactions. It assesses five dimensions: techno-overload (alpha Cronbach $\alpha = 0.88$), techno-invasion (alpha Cronbach $\alpha = 0.85$), techno-complexity (alpha Cronbach $\alpha = 0.87$), techno-insecurity

(alpha Crombach $\alpha = 0.82$), and techno-uncertainty (alpha Crombach $\alpha = 0.80$).

- **Psychological Burnout:** Measured via the Maslach Burnout Inventory-General Survey (MBI-GS) (Schaufeli et al., 1996), specifically the emotional exhaustion subscale (5 items, alpha Crombach $\alpha = 0.91$).
- **Professional Performance:** Assessed using the 7-item In-Role Performance scale from Williams and Anderson (1991), evaluating the core duties of academic and administrative staff (alpha Crombach $\alpha = 0.86$).
- **Organizational Digital Support:** Measured via a 4-item scale adapted from ICT support questionnaires (e.g., Tarafdar et al., 2011), evaluating the availability of training and technical assistance (alpha Crombach $\alpha = 0.84$).

Results

Descriptive Statistics and Confirmatory Factor Analysis (CFA)

Prior to hypothesis testing, a CFA was conducted using AMOS to verify the structural validity of the latent constructs. The measurement model demonstrated acceptable fit indices:

$\chi^2/df = 2.14$, CFI = 0.94, TLI = 0.93, RMSEA = 0.058, SRMR = 0.049

Table 1 presents the means, standard deviations, and inter-correlations of the primary study variables.

Variable	Mean	SD	1	2	3	4
1. Technostress Creators (Global)	3.24	0.68	(0.89)			
2. Emotional Exhaustion	3.41	0.75	0.48**	(0.91)		
3. Professional Performance	3.82	0.54	-0.36**	-0.42**	(0.86)	
4. Digital Support	2.95	0.81	-0.22*	-0.29**	0.31**	(0.84)

Note: N = 342. Cronbach's alphas are presented diagonally in parentheses. * $p < 0.05$, ** $p < 0.01$.

Table 1: Descriptive Statistics and Zero-Order Correlations

Structural Equation Modeling (SEM) and Mediation Analysis

To test H1 and H2, a structural model was estimated. The direct path from global technostress creators to professional performance in the absence of the mediator was significant and negative ($\beta = -0.38$, $p < 0.01$).

When Emotional Exhaustion was introduced as a mediator, the path from technostress to emotional exhaustion was positive and highly significant ($\beta = 0.51$, $p < 0.001$), while the path from emotional exhaustion to professional performance was negative ($\beta = -0.35$, $p < 0.01$). The direct path from technostress to performance dropped to $\beta = -0.16$ ($p < 0.05$), indicating a **partial mediation**.

To confirm the statistical significance of this indirect effect, bootstrapping with 5,000 resamples was performed. The indirect effect was significant ($\beta = -0.18$, 95% Confidence Interval $[-0.26, -0.11]$), confirming **H1** and **H2**.

Moderation Analysis

To test **H3**, moderated regression analysis was applied to examine if Organizational Digital Support buffered the technostress-burnout link. The interaction term (Technostress $\times$ Digital Support) was statistically significant ($\beta = -0.21$, $p < 0.01$). Simple slope analysis revealed that for individuals experiencing low institutional support, high AI technostress led to a steep increase in psychological burnout ($t = 4.82$, $p < 0.001$). For staff reporting high digital support, this detrimental effect was substantially flattened ($t = 1.98$, $p > 0.05$). Thus, **H3** is fully supported.

Discussion

The empirical results confirm that the deployment of AI platforms in higher education is not a neutral process; it introduces distinct technostress creators that directly undermine the professional efficacy of university staff. Specifically, the findings demonstrate that techno-overload and techno-complexity act as significant psychological drains, driving emotional exhaustion and subsequently eroding task performance. This is congruent with the structural patterns observed by Maricutoiu et al. (2014) regarding burnout dynamics in educational environments and Tarafdar et al. (2011) concerning general productivity.

A crucial finding is the moderating role of organizational digital support. When academic institutions provide targeted technical training, lucid guidelines on AI ethics, and responsive troubleshooting, the toxic path from technostress to emotional burnout is effectively mitigated. Universities cannot simply deploy complex AI algorithms

and expect seamless organic adoption; they must foster a supportive psychological climate to preserve the well-being and operational efficiency of their workforce.

Practical Implications for Higher Education Management

1. **Workload Calibrations:** Institutional leadership must recognize that managing AI tools constitutes a distinct cognitive task that must be accounted for in formal workload calculations, mitigating techno-overload.
2. **Psychological Support Channels:** University human resource departments should establish targeted interventions (e.g., cognitive-behavioral stress management workshops) designed around technological strain.
3. **Algorithmic Transparency:** To counter techno-complexity, institutions should prioritize user-friendly, explainable AI platforms and offer transparent, ongoing professional development.

Conclusion

This study demonstrates that AI platforms in higher education act as double-edged swords. While optimizing certain administrative metrics, they introduce profound technostress creators that degrade employee performance via psychological burnout. However, organizational digital support acts as a powerful buffer. Future research should implement longitudinal designs to evaluate how these dynamics evolve as AI platforms become further institutionalized.

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