

Technostress in Higher Education: An Empirical Investigation of AI-Induced Stress among Academic Staff in South Odisha

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ABSTRACT

The rapid integration of Artificial Intelligence (AI) in higher education has transformed academic practices by enhancing teaching, research, assessment, and administrative processes. However, the increasing dependency on AI-enabled technologies has also created new challenges for academic professionals, particularly in the form of AI-induced technostress. The present study aims to examine the level of AI-induced technostress among academic staff in higher education institutions of South Odisha and investigate the influence of digital adaptability on AI-induced technostress. A quantitative research approach was adopted, and data were collected from 180 academic staff members working in higher education institutions. The reliability of the research instrument was confirmed through Cronbach's Alpha ($\alpha = 0.909$), indicating excellent internal consistency. Descriptive analysis revealed a moderate level of digital adaptability and AI-induced technostress among respondents. Correlation analysis demonstrated a significant negative association between digital adaptability and AI-induced technostress ($r = -0.776$, $p < 0.01$). Furthermore, regression analysis indicated that digital adaptability significantly predicted AI-induced technostress ($\beta = -0.776$, $p < 0.001$), explaining 60.2% of the variance in AI-induced technostress ($R^2 = 0.602$). The findings suggest that academic staff with higher digital adaptability experience lower levels of AI-induced technostress. The study contributes to the emerging literature on AI adoption and digital transformation in higher education by highlighting the importance of strengthening digital adaptability to minimise technology-related stress among educators...

Keywords:: Artificial Intelligence; AI-Induced Technostress; Digital Adaptability; Higher Education; Academic Staff; Technology Adoption; Digital Transformation; South Odisha...

INTRODUCTION:

The rapid advancement of Artificial Intelligence (AI) has significantly transformed the higher education sector by reshaping teaching methodologies, research practices, administrative functions, and academic decision-making processes. AI-enabled technologies such as intelligent learning systems, automated assessment platforms, learning analytics, and generative AI tools have enhanced institutional efficiency and created new opportunities for innovation in education (Zawacki-Richter et al., 2019; Chiu et al., 2023). However, along with these advantages, the increasing adoption of AI-based technologies has introduced several psychological and behavioural challenges among academic professionals, particularly in the form of AI-induced technostress.

Technostress refers to the stress experienced by individuals due to their inability to effectively cope with the demands created by rapidly changing technologies (Brod, 1984). Tarafdar et al. (2007) explained that excessive dependence on technology may create stress through factors such as techno-overload, techno-complexity, techno-insecurity, techno-invasion, and

techno-uncertainty. In the context of higher education, academic staff are increasingly expected to integrate AI tools into teaching, research activities, student evaluation, and administrative processes. The continuous requirement to update digital competencies and adapt to emerging technologies may increase anxiety, uncertainty, and technological pressure among educators (Jena, 2015; Wang et al., 2020).

Unlike traditional ICT-related challenges, AI-induced technostress represents a new form of digital stress because AI applications introduce concerns related to automation, changing professional roles, ethical issues, algorithmic decision-making, and continuous technological adaptation (Dwivedi et al., 2021). The rapid introduction of AI systems requires academic professionals not only to develop technical skills but also to continuously adjust their teaching and working approaches according to changing digital environments.

The successful adoption of AI technologies in higher education largely depends on the digital adaptability of academic staff. Digital adaptability refers to an individual's capability to adjust, learn, and effectively utilise emerging digital technologies in dynamic work

environments (Martin et al., 2012). Individuals with higher digital adaptability demonstrate greater technological confidence, openness toward innovation, and willingness to accept digital transformation (Venkatesh et al., 2003). Therefore, academic staff possessing higher levels of digital adaptability may experience lower levels of AI-induced technostress because they are better prepared to handle technological changes.

Although several studies have examined technostress in organisational contexts, existing research has primarily focused on business organisations, IT professionals, and general workplace technology adoption (Ayyagari et al., 2011; Tarafdar et al., 2015). Similarly, previous studies in education have mainly investigated ICT-related stress rather than AI-specific technostress among academic professionals (Jena, 2015). Moreover, limited empirical research has examined the association between digital adaptability and AI-induced technostress, especially among academic staff working in higher education institutions of South Odisha.

Therefore, the present study aims to investigate the level of AI-induced technostress among academic staff in higher education institutions of South Odisha and examine the influence of digital adaptability on AI-induced technostress. The findings of the study are expected to contribute to the growing literature on AI adoption, digital transformation, and technology-related employee well-being in higher education.

2. LITERATURE REVIEW

2.1 AI-Induced Technostress in Higher Education

The concept of technostress was first introduced by Brod (1984), who described it as a modern adaptation problem caused by individuals' inability to cope with new computer technologies. Later studies expanded this concept by identifying various creators of technostress, including technology overload, complexity, uncertainty, insecurity, and invasion (Tarafdar et al., 2007). These technological stressors influence employees' psychological well-being, job satisfaction, and work performance (Ayyagari et al., 2011).

With the emergence of Artificial Intelligence, technostress has evolved beyond traditional ICT-related difficulties. AI-based technologies require individuals to continuously update their knowledge and adapt to intelligent systems capable of automation and decision support (Dwivedi et al., 2021). In higher education institutions, AI tools are increasingly being used for personalised learning, academic analytics, automated assessment, and research support (Zawacki-Richter et al., 2019). However, the rapid integration of these tools may create stress among academic staff due to increased technological expectations and concerns regarding digital competence (Chiu et al., 2023).

2.2 Digital Adaptability

Digital adaptability represents an individual's ability to adjust effectively to technological changes and successfully operate in digitally transformed environments. Adaptability enables employees to modify

their behaviours, acquire new skills, and respond positively to changing technological demands (Pulakos et al., 2000). In educational institutions, digital adaptability has become an essential capability because teachers are required to continuously adopt new digital platforms and AI-based teaching methods.

According to technology acceptance theories, individuals who perceive themselves as capable of handling new technologies are more likely to accept and utilise digital innovations effectively (Davis, 1989; Venkatesh et al., 2003). Academic staff with higher adaptability tend to develop confidence in using AI technologies, which reduces uncertainty and resistance toward technological transformation.

2.3 Relationship between Digital Adaptability and AI-Induced Technostress

Previous studies suggest that individual technological capabilities can significantly influence the experience of technostress. Employees with greater technological competence and adaptability are more capable of managing technological challenges and reducing negative psychological outcomes (Tarafdar et al., 2015). Similarly, adaptive individuals perceive new technologies as opportunities for improvement rather than sources of pressure (Martin et al., 2012).

In the higher education context, digital adaptability may act as an important factor in reducing AI-induced technostress because educators who quickly adjust to AI technologies experience greater confidence and lower anxiety. However, existing studies have mainly focused on ICT-based stress and have provided limited empirical evidence regarding AI-related stress among academic staff. Furthermore, the relationship between digital adaptability and AI-induced technostress remains underexplored in regional higher education contexts such as South Odisha.

Therefore, addressing this research gap, the present study investigates whether digital adaptability significantly influences AI-induced technostress among academic staff. Based on existing theoretical and empirical evidence, it is expected that digital adaptability will have a significant negative association with AI-induced technostress.

Research Gaps

Existing studies on technostress have predominantly focused on business, IT, and government sectors, while limited empirical evidence is available from higher education institutions in South Odisha.

Prior research has extensively examined ICT-related technostress, but insufficient attention has been given to AI-induced technostress among academic staff.

Limited studies have investigated the association between digital adaptability and AI-induced technostress in higher education environments.

RQ1 What is the level of AI-induced technostress among academic staff in higher education institutions of South Odisha?

RQ2 Is there a significant association between Digital Adaptability and AI-Induced Technostress among

academic staff in higher education institutions of South Odisha?

RQ3 Does Digital Adaptability significantly influence AI-Induced Technostress among academic staff in higher education institutions of South Odisha?

Research Objectives

RO1 To examine the level of AI-induced technostress among academic staff in higher education institutions of South Odisha.

RO2 To investigate the association between Digital Adaptability and AI-Induced Technostress among academic staff in higher education institutions of South Odisha.

RO3 To examine the influence of Digital Adaptability on AI-Induced Technostress among academic staff in higher education institutions of South Odisha.

Hypotheses

H1 Digital Adaptability has a significant negative influence on AI-Induced Technostress among academic staff in higher education institutions of South Odisha.

H2 There is a significant negative association between Digital Adaptability and AI-Induced Technostress among academic staff in higher education institutions of South Odisha.

RESULTS AND DISCUSSION

Reliability analysis

Cronbach's Alpha	N of Items
0.909	18

Reliability analysis was conducted using Cronbach's Alpha to assess the internal consistency of the measurement items. The obtained Cronbach's Alpha value was 0.909 for 18 items, indicating excellent reliability and strong internal consistency among the variables used in the study.

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
DA_SCORE	180	1	5	3.15	1.1586
TS_SCORE	180	1.07	4.93	3.2485	1.14229
Valid N (listwise)	180				

Descriptive statistics were conducted to examine the mean and standard deviation of the constructs. The mean value of DA_SCORE was found to be 3.15 (SD = 1.158), indicating a moderate level of agreement among

respondents. Similarly, TS_SCORE reported a mean value of 3.24 (SD = 1.142), reflecting a moderate perception level among participants.

Correlations			
		DA_SCORE	TS_SCORE
Model Summary	Sig. (2-tailed)		0
	N	180	180
TS_SCORE	Pearson Correlation	-.776**	1
	Sig. (2-tailed)	0	
	N	180	180

** . Correlation is significant at the 0.01 level (2-tailed).

Regression

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.776 ^a	0.602	0.6	0.72271
a. Predictors: (Constant), DA_SCORE				

The regression model produced an R value of 0.776, indicating a strong relationship between Digital Adaptability and AI-Induced Technostress. The coefficient of determination (R^2) was found to be 0.602,

which indicates that 60.2% of the variation in AI-Induced Technostress is explained by Digital Adaptability. The adjusted R^2 value of 0.600 further confirms the good explanatory power of the model.

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	140.592	1	140.592	269.177	.000 ^b
	Residual	92.97	178	0.522		
	Total	233.563	179			
a. Dependent Variable: TS_SCORE						
b. Predictors: (Constant), DA_SCORE						
The ANOVA results revealed that the regression model was statistically significant ($F = 269.177$, $p < .001$). This indicates that the model is suitable for predicting AI-Induced Technostress based on Digital Adaptability.						

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	5.658	0.156		36.17	0	5.349	5.967
	DA_SCORE	-0.765	0.047	-0.776	-16.407	0	-0.857	-0.673
a. Dependent Variable: TS_SCORE								

The regression coefficient for Digital Adaptability was negative and statistically significant ($\beta = -0.776$, $t = -16.407$, $p < .001$). The unstandardized coefficient value ($B = -0.765$) indicates that a one-unit increase in Digital Adaptability leads to a 0.765 unit decrease in AI-Induced Technostress.

The confidence interval for the coefficient ranged from -0.857 to -0.673 , which does not include zero, further confirming the significance of the relationship.

Discussion of Findings

The present study investigated AI-induced technostress among academic staff in higher education institutions of South Odisha and examined the role of digital adaptability in managing technology-related stress. The findings

revealed that academic staff experience a moderate level of AI-induced technostress, indicating that although educators are increasingly adopting AI-enabled technologies, continuous technological advancements create challenges related to adaptation, learning, and effective utilisation.

The descriptive analysis showed a moderate level of digital adaptability among academic staff, suggesting that educators possess a reasonable ability to adjust to emerging digital technologies. However, continuous skill enhancement remains necessary due to the rapid development and integration of AI-based tools in academic activities.

The correlation analysis revealed a strong and significant negative relationship between digital adaptability and AI-induced technostress. This indicates that academic staff with higher levels of digital adaptability experience lower levels of stress associated with AI technologies. Educators who are more confident and flexible in adopting digital tools are better able to manage technological complexity, uncertainty, and changing professional demands.

Furthermore, the regression analysis confirmed that digital adaptability significantly influences AI-induced technostress. The results showed that digital adaptability explained 60.2% of the variation in AI-induced technostress, highlighting its important role in reducing technology-related pressure among academic professionals. The negative regression coefficient further indicates that an increase in digital adaptability leads to a decrease in AI-induced technostress.

Overall, the findings emphasize that successful implementation of AI in higher education depends not only on technological availability but also on the capability of academic staff to adapt effectively to digital transformation.

CONCLUSION

The rapid adoption of Artificial Intelligence in higher education has created both opportunities and challenges for academic professionals. While AI technologies improve teaching, research, assessment, and administrative processes, they may also generate stress due to increased technological demands and continuous adaptation requirements.

The present study examined the relationship between digital adaptability and AI-induced technostress among academic staff working in higher education institutions of South Odisha. The findings demonstrated that digital adaptability plays a significant role in reducing AI-induced technostress. Academic staff with higher digital adaptability are more capable of accepting technological changes and managing AI-related challenges effectively.

The study concludes that enhancing digital adaptability is essential for reducing AI-induced technostress and ensuring successful AI integration in higher education. Institutions should focus on developing digital competencies, providing continuous training opportunities, and creating supportive environments that encourage positive adoption of AI-based technologies.

Limitations and Future Research Scope

Despite providing valuable insights, the present study has certain limitations that offer opportunities for future research. First, the study was conducted among academic staff working in higher education institutions of South Odisha only; therefore, the findings may have limited generalisability to other geographical regions. Future studies can include a larger and more diverse sample covering different states or countries.

Second, the study focused only on digital adaptability as a predictor of AI-induced technostress. Future researchers may consider additional factors such as AI literacy, digital self-efficacy, organisational support, technology acceptance, and institutional readiness to develop a broader understanding of AI-related stress.

Third, the present research followed a quantitative approach using survey-based data. Future studies may adopt qualitative or mixed-method approaches to gain deeper insights into the personal experiences and challenges faced by academic professionals while using AI technologies.

Lastly, future research can conduct longitudinal studies to examine how AI-induced technostress changes over time as educators become more familiar with emerging AI tools and digital transformation practices.

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