Balancing Technology and Leadership: Implications for Employee Satisfaction in Saudi Arabian Healthcare

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Abstract

Technological overload, leadership behaviours, and employee outcomes in Saudi Arabia's healthcare sector are examined in this study. The main focus was on how technological overload and leadership practices affect job happiness, self-improvement, and job clarity in this setting. Validated scales from previous research were used to poll 247 nurses and doctors from diverse healthcare departments. Analytic Dynamic Network for the Analysis of Coherence (ADANCO) software explored complex variable interactions. Path analysis was used to test the hypotheses about technological overload, leadership, and employee outcomes. The findings show that technological overload, leadership, and employee outcomes are linked. Technological overload lowers job happiness, self-improvement, and clarity. Supportive and participative leadership moderated these associations, reducing the detrimental effects of technological overload on employee well-being. This study adds to the literature by examining technology overload and leadership in Saudi Arabia's healthcare system. In this quickly changing digital age, mitigating technology stressors and promoting supportive leadership practises boost employee well-being and organisational effectiveness.

Keywords: *Technological Overload, Leadership Behaviors, Healthcare Sector, Employee Outcomes, Job Clarity.*

INTRODUCTION

The swift progress of technology has changed the workplace, creating opportunities and difficulties for organisations and people. To work productively in the digital age, employees are forced to rely on technology (Elshaer et al., 2024a). However, increased technology use has created new complications and pressures, prompting study on technological overload and employee well-being and organisational outcomes (Jeong et al., 2024). Incessant connectedness, cognitive overload, and technostress are all symptoms of technological overload in the job (Elshaer et al., 2024b). Digital distractions and information overload make it hard for people to manage work and life and keep up with modern technology (Finstad et al., 2024). Because of this, academics have studied how excessive technological demands effect job satisfaction, personal growth, job clarity, and leadership behaviour (Schmitt, 2024).

Several empirical studies have illuminated how technological overload affects employee well-being and company outcomes (Rasool et al., 2024; Ur Rehman et al., 2024). Bankins et al. (2024) examined how job satisfaction affects technostress, a key component of technology overload. They observed a strong negative connection between job satisfaction and technological stress (Hu et al., 2024). This shows that technological expectations stress and discomfort lower job satisfaction. Digital distractions produced cognitive overload, which Kilroy (2024) studied in employees' productivity and aptitude self-evaluations. Raoof et al. (2024) study found that cognitive overload hinders focus and self-improvement. Employees struggle to focus and work due to information overload. Barrett et al. (2023) evaluated cell phones' continuous connectivity and employee professional commitment awareness. Their research found that frequent contact and blurred work-life boundaries made it tougher for employees to understand their job's demands and priorities. The concern is that excessive technology demands affect workers' cognitive capacity and job expertise throughout the company (Nusrat et al., 2023). Qamar et al. (2023) studied that how leaders' behaviours effect staff interaction with a richness of technical knowledge. Wang et al. (2023) explored how exploitation and bullying affect employee happiness. Their study indicated that toxic leadership affects job satisfaction, worsening technology overload's impacts.

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Tech overload and its consequences on people and businesses have been studied, however there are still gaps (Miglioretti et al., 2023). The mediating and moderating factors that affect employee outcomes and technology overload are underestimated (Seedoyal Doargajudhur et al., 2023). Technology overload directly affects employee well-being indicators, although the mechanisms are unknown (Yao et al., 2023). More research is needed to understand how job clarity and self-improvement regulate technology overload and job satisfaction (Li et al., 2022). More research is needed on technology overload limitations and contextual considerations in different industries and organisations (Lundmark et al., 2022). Because many contemporary studies focus on certain job categories or industries, their findings cannot be extended to all organisational circumstances (Mostafa, 2022). Future studies should examine how leadership styles effect employee outcomes and technology overload. Participative and supportive leadership affects job satisfaction and well-being, according to numerous research (Hue et al., 2022). Leadership styles that affect employees' perceptions and experiences of technological overload are unknown (Junça Silva et al., 2022). To close these gaps, future research should explore psychological and organisational factors that affect technological overload on individuals and organisations.

To overcome these information gaps, this study explores the complicated interplay between technological overload, leadership styles, and employee outcomes in various organisational settings. This study combines the Job Demands-Resources (JD-R) model (Shaikh et al., 2023; Yao et al., 2023) and Social Exchange Theory (Miglioretti et al., 2023) to explain how technology overload affects employee well-being and organisational outcomes. This study examines how job clarity and self-improvement moderate technology overload-work satisfaction. It also analyses how toxic, supportive, and participative leadership, and style affect these traits. This study examines the complexity of technological overload and its effects on employee well-being and organisational success using empirical and theoretical methods.

LITERATURE REVIEW

Many workers in various industries concern about technological stress, or excessive usage of technology at work (Mushtaque et al., 2022). Multiple studies have shown that this affects employee well-being and productivity. The constant interconnectivity of digital devices causes an excessive quantity of technological advances, which makes it hard to separate work and life (Sani et al., 2022). Stress, burnout, and low job satisfaction result from employees' inability to detach from work due to telephones, emails, and instant messaging. Sani et al. (2022) observed that using cellphones for work-related tasks outside of work hours reduces mental detachment and subjective well-being. This constant contact prevents people from resting and maintaining a work-life balance, encouraging a state of constant availability that damages their health (Haque et al., 2021). Overloading employees with information and communication channels affects their decision-making and cognition (Haque et al., 2021). Emails, messages, and digital distractions disrupt attention and cognitive performance (Thomson et al., 2021). Cognitive overload reduces workers' focus, prioritisation, and decision-making, reducing productivity and efficacy (Groeneveld, 2021). The frequent need to navigate different digital interfaces and tools causes technostress worry, irritation, and inadequacy from not meeting technology expectations (Groeneveld, 2021). Spreading technostress damages employees' mental health and company performance. Employee engagement, performance, and company success suffer (Yener et al., 2021). Thus, to offset the negative consequences of excessive technology usage, it is essential to reduce the physical and psychological costs of digital technologies and build a supportive organisational culture that supports mindful technology use and a good work-life balance (Chhabra, 2020).

Overuse of workplace technology is technological overload, as defined by (Chhabra, 2020). Techstress, cognitive overload, and constant connectedness are covered (Oakman et al., 2020). It describes the overuse of digital technologies and information that blends employees' personal and professional life (Oakman et al., 2020). Job satisfaction is subjective and depends on job, tasks, coworkers, and fulfilment. Technological overload determines job happiness independently (Kelly et al., 2020). In many ways, it hinders employees' work satisfaction and navigation. Research shows technological overload lowers employee job satisfaction (Kelly & Moen, 2020). Zaman et al. (2021) found that technostress, a component of technological overload, lowers job satisfaction. (Elshaer et al., 2024a) found that digital distractions and constant information flow lower job

satisfaction by decreasing cognition and productivity. Schmitt (2024) discovered that cellphones' constant connectivity makes it harder for workers to mentally detach from work, diminishing job satisfaction. These findings explain how technology overload affects job satisfaction in complex ways. Kilroy (2024) research reveals excessive technology use affects job happiness. Digital distractions and information overload may hinder cognition, productivity, and job happiness (Bankins et al., 2024). Technostress's concern, irritation, and inadequacy may affect workers' mental health and job satisfaction. Technological overload affects job satisfaction, hence it must be addressed to increase employee well-being and organisational outcomes.

H₁: Techno overload significantly influences the job satisfaction of employees.

The impact of technological overload on the well-being and performance of employees has been extensively researched (Haque et al., 2021). Studies on self-enhancement have examined how excessive technology use affects self-image and ability. Sani et al. (2022) discovered that technostress from information overload and continual connectedness lowers employees' confidence in their abilities to manage job tasks and technologies. Junça Silva et al. (2022) found that technological overload causes sentiments of ineptitude and inefficacy, which hinders employees' self-improvement and confidence. Li and Griffin (2022) found that cognitive overload from digital distractions lowers self-perceptions of competence and productivity, worsening emotions of inadequacy and reducing self-improvement. Technological overload greatly affects employee self-improvement, according to scientific research (Mostafa, 2022; Seedoyal Doargajudhur & Hosanoo, 2023). Technostress, cognitive overload, and constant connectedness may negatively effect employees' self-enhancement tendencies, according to past studies (Seedoyal Doargajudhur & Hosanoo, 2023). Digital information and distractions may diminish employees' confidence in their talents and abilities, impeding self-improvement (Wang et al., 2023). Technostress's chronic feelings of incompetence and inefficacy may also limit employees' self-improvement by lowering their confidence in their personal and professional growth (Barrett et al., 2023). Thus, reducing technology overload is essential to increase employees' self-confidence and talent.

H₂: Techno overload significantly influences the self-enhancement of employees.

Employee job clarity is their understanding of business tasks, responsibilities, and expectations (Thomson et al., 2021). Multiple research show that technology overload hinders workers' professional understanding and performance (Bartsch et al., 2021). Information overload, constant connectivity, and cognitive overload describe technological overload. Christensen et al. (2020) found that technostress information overload and constant connectivity diminishes employees' professional knowledge. Digital distractions can create cognitive overload, reducing workers' focus and role knowledge, according to (Jeong et al., 2024). Task clarity degrades. Finstad et al. (2024) observed cellphones prevent worker detachment. Thus, personal and professional life blend, making job goals and obligations unclear. A study found that too much technology information lowers job clarity (Rasool et al., 2024). Studies suggest technostress, cognitive strain, and constant connectivity diminish job clarity (Hu et al., 2024). The abundance of digital information and distractions is expected to reduce employees' job clarity by making it harder for them to focus and grasp their obligations (Raoof et al.). Connectivity between work and home may also cloud employment goals and priorities. The hypothesis states that job knowledge highly correlates with technical burden (Nusrat et al., 2023). Overuse of technology must be handled to help people understand their tasks.

H₃: Techno overload significantly influences the employees' job clarity.

Research has studied the complex links between technological overload, self-improvement, and job happiness. To enhance self-esteem and confidence, seek work affirmation and recognition (Wang et al., 2020). Numerous studies have studied how technological overload affects job satisfaction and self-improvement. According to Towsen et al. (2020), technostress from technological excess hindered employees' self-improvement. Technostress lowers confidence by making people feel inadequate and ineffective (Christ-Brendemühl et al., 2020). Too many digital distractions might promote cognitive overload, which reduces self-esteem and productivity, according to Miglioretti et al. (2023). Yao et al. (2023) found prolonged smartphone use damages employees' mental health. This impacts self-improvement and job happiness. The results show that self-improvement mediates technology overload and job happiness (Lundmark et al., 2022). Studies show that too much technology inhibits self-improvement. Technostress, cognitive overload, and constant connectivity lower

employee confidence (Hue et al., 2022). Since job satisfaction depends on employees' self-perceptions of their abilities and accomplishments, reduced self-enhancement tendencies are projected to affect job satisfaction (Mushtaque et al., 2022). Self-improvement may moderate the relationship between excessive technology use and job satisfaction. It suggests self-improvement mediates technological overload and job satisfaction (Ingusci et al., 2021). This shows the intricate link between psychological qualities and organisational technology-induced stress.

H₄: Self-enhancement significantly mediates the relationship of techno overload and employees' job satisfaction.

Technological overload, work clarity, and employee job happiness have been studied extensively. Employees' comprehension of their positions, obligations, and employer expectations is job clarity (Jackson, 2021). Numerous studies show that technological overload impacts work clarity and happiness. Groeneveld (2021) found that technostress information overload and constant connectivity reduces job knowledge. Yener et al. (2021) observed that cognitive overload from digital distractions impairs people's ability to focus and understand their job requirements, reducing task clarity. Phone connectivity influences employees' capacity to disconnect from work, Chhabra (2020) discovered. Their work expectations and priorities are affected by this blurring of personal and professional life. The theory shows that task clarity strongly mediates job satisfaction and technology overload (Rasool et al., 2024). This is empirical evidence since the theory was developed. Technostress, cognitive overload, and constant connectivity cause employees to misinterpret their roles (Bankins et al., 2024). A decrease in job clarity should diminish employee job satisfaction. Understanding job expectations and responsibilities is crucial to employee satisfaction (Bankins et al., 2024). Since technology overload is linked to job happiness, job clarity may mitigate this relationship. According to the Kilroy (2024), work clarity mediates technology overload and job satisfaction. Clear communication and organisational clarity reduce the negative effects of technology-induced pressures on employee well-being and satisfaction.

H₅: Job clarity significantly mediates the relationship of techno overload and employees' job satisfaction.

The impacts of toxic leadership or abusive, manipulative and immoral behaviour by organisational leaders on employee work satisfaction and well-being have been extensively studied (Oakman et al., 2020). Numerous studies suggest that toxic leadership lowers employee morale, dedication, and performance (Kelly & Moen, 2020). Christ-Brendemühl and Schaarschmidt (2020) found that bullying and exploitation affected job satisfaction. Toxic leadership, including harsh monitoring, decreased work satisfaction and increased subordinates' intentions to leave, according to (Groeneveld, 2021). Toxic leadership harms employees' mental health, Thomson et al. (2021) found. Abusive leadership increases stress, anxiety, and depression, according to study. Research shows that toxic leadership considerably moderates the relationship between technological overload and job satisfaction (Elshaer et al., 2024a). Previous study suggests that toxic leadership may exacerbate the negative impacts of technological overload on job satisfaction. To explain, toxic leaders—abusive, manipulative, or unethical can increase technology overload by creating a hostile workplace filled of fear, mistrust, and low morale (Jeong et al., 2024). By micromanaging technical work or setting excessive demands, toxic bosses can raise staff stress and burnout (Finstad et al., 2024). A pleasant work atmosphere built on trust, collaboration, and open communication can mitigate the negative consequences of technological overload under supportive and ethical leadership (Schmitt, 2024). The idea states that toxic leadership moderates technological overload and job happiness.

H₆: Toxic leadership significantly moderates the relationship of techno overload and employees' job satisfaction.

Many studies have studied how supportive and participative leadership improves employee well-being and job satisfaction (Barrett et al., 2023). Positive organisational outcomes are connected to supportive leadership. This leadership inspires, assists, and supports subordinates. Nusrat et al. (2023) observed that supportive leadership activities boosted job satisfaction and commitment. Participative leadership, which honours employee feedback and incorporates them in decision-making, boosts employee satisfaction and engagement (Wang et al., 2023). Participative leadership empowers and fosters employee ownership, which enhances job satisfaction and motivation (Miglioretti et al., 2023). Additionally, Seedoyal Doargajudhur and Hosanoo (2023) discovered that transformational leadership, which generally incorporates supportive and participative leadership, boosts

employee well-being and happiness. Empirical data suggests that supportive and participatory leadership moderates technological overload and job satisfaction (Yao et al., 2023). Previous research suggest that supportive and engaged leadership may reduce the negative impacts of technological overload on employee job satisfaction (Li & Griffin, 2022). Encouragement, assistance, and resources from supportive leaders can alleviate technology overload stress. Participative leaders can assist employees cope with technology difficulties and feel ownership and dedication by including them in decision-making and respecting their comments (Lundmark et al., 2022). People make decisions for this. Participative leadership may reduce the negative effects of technological overload on employee job satisfaction (Mostafa, 2022). Collaboration, trust, and communication boost workplace productivity. Supportive and participatory leadership may reduce technological overload and job happiness (Hue et al., 2022). This highlights the necessity of leadership behaviour in understanding how technological pressures affect employees' perspectives.

H₇: Supportive and participative leadership significantly moderates the relationship of techno overload and employees' job satisfaction.
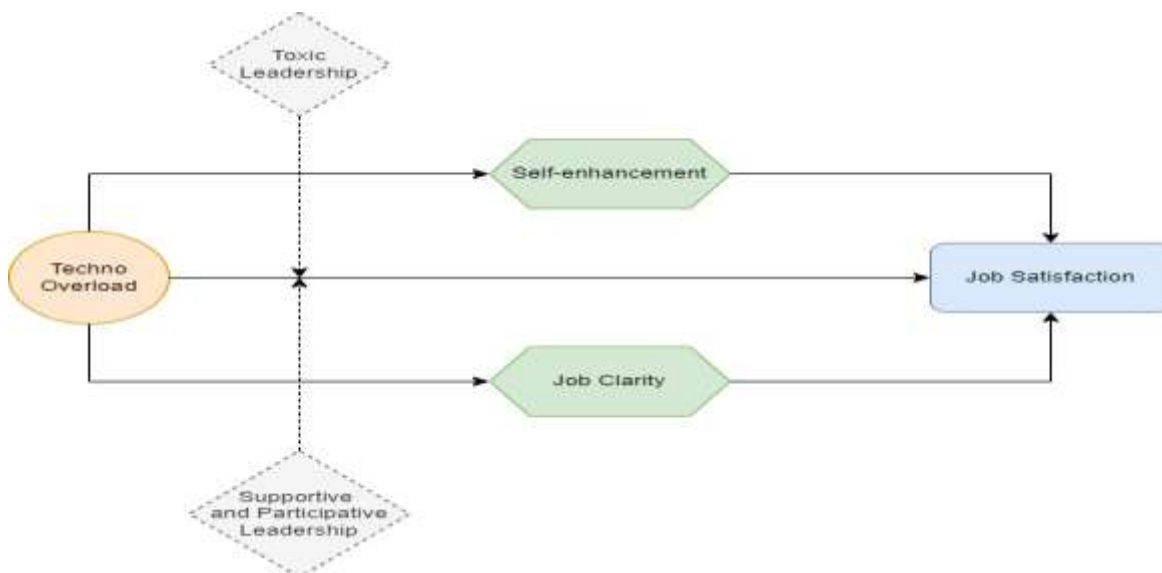

Figure 1. Theoretical model.

METHODOLOGY

The present study examined 247 nurses and doctors from various departments in Saudi Arabia's health sector. The study examined technological overload, leadership behaviours, and employee outcomes in this context. Data analysis was done using ADANCO software to explore complex variable correlations. The study used scales from previous studies to measure constructs. Validated scales assessed technological overload, leadership, job happiness, self-improvement, and job clarity. These scales were chosen for their reliability and validity in prior studies and suitability for Saudi Arabia's cultural environment. A standardised questionnaire was sent to healthcare workers across the Kingdom. Convenient sampling ensured healthcare department and job representation. The questionnaire assessed technological overload, leadership behaviours, and employee well-being and satisfaction.

Table 1. Scales used in the study.

Variable	No of items	Reference
Techno overload	Three	(Nimrod, 2017)
Self-enhancement	Four	(Lee et al., 2021)
Job clarity	Nine	(Mears et al., 2004)
Toxic leadership	Eight	(Wolor et al., 2022)
Supportive and participative leadership	Four	(Almaslukh et al., 2022)
Job satisfaction	Four	(Almaslukh et al., 2022)

Data was entered into ADANCO for analysis after collection. The software allowed for the analysis of direct and indirect effects, moderating and mediating mechanisms, and variable interrelationships. Path analysis was used to test the hypotheses about technological overload, leadership, and employee outcomes. This research used a systematic approach to investigate the dynamics of the Saudi Arabian healthcare sector and the elements that affect employee well-being and organisational success.

RESULTS

Table 2 shows the study's construct validity and reliability outcomes. Technological overload, job satisfaction, self-enhancement, job clarity, toxic leadership, and supportive and participative leadership are studied. Validity and reliability were evaluated using dijkstra-henseler's rho, jöreskog's rho, cronbach's alpha, and average variance extracted. All constructs have Dijkstra-Henseler's rho, Jöreskog's rho, and Cronbach's alpha values above 0.7, indicating good validity and reliability. Convergent validity is also indicated by the Average Variance Extracted values being above 0.5. These findings confirm the study's measuring model and construct robustness.

Table 2. Validity and Reliability confirmation.

Construct	Dijkstra-Henseler's rho (ϱ_A)	Jöreskog's rho (ϱ_c)	Cronbach's alpha(α)	Average variance extracted (AVE)
TO	0.7927	0.7795	0.7789	0.5182
JS	0.7518	0.7506	0.7505	0.5298
SE	0.7507	0.7377	0.7331	0.5735
JC	0.8789	0.8759	0.8769	0.5411
TL	0.9116	0.9035	0.9063	0.5433
SPL	0.8553	0.8521	0.8509	0.5911

Table 3 shows the confirmatory factor analysis results for indicators and constructs. Technological overload, job happiness, self-enhancement, job clarity, toxic leadership, and supportive and participative leadership are each measured. The table shows each indicator's standardised factor loadings, which indicate the intensity and direction of its link with its construct. SPL1, for instance, has factor loadings of 0.4933 for TO, 0.6370 for JS, 0.7356 for SE, 0.6409 for JC, 0.5871 for TL, and 0.7885 for SPL, indicating a high link with all components. Each indicator has variable degrees of association with each concept, reflecting the multiple constructs under examination.
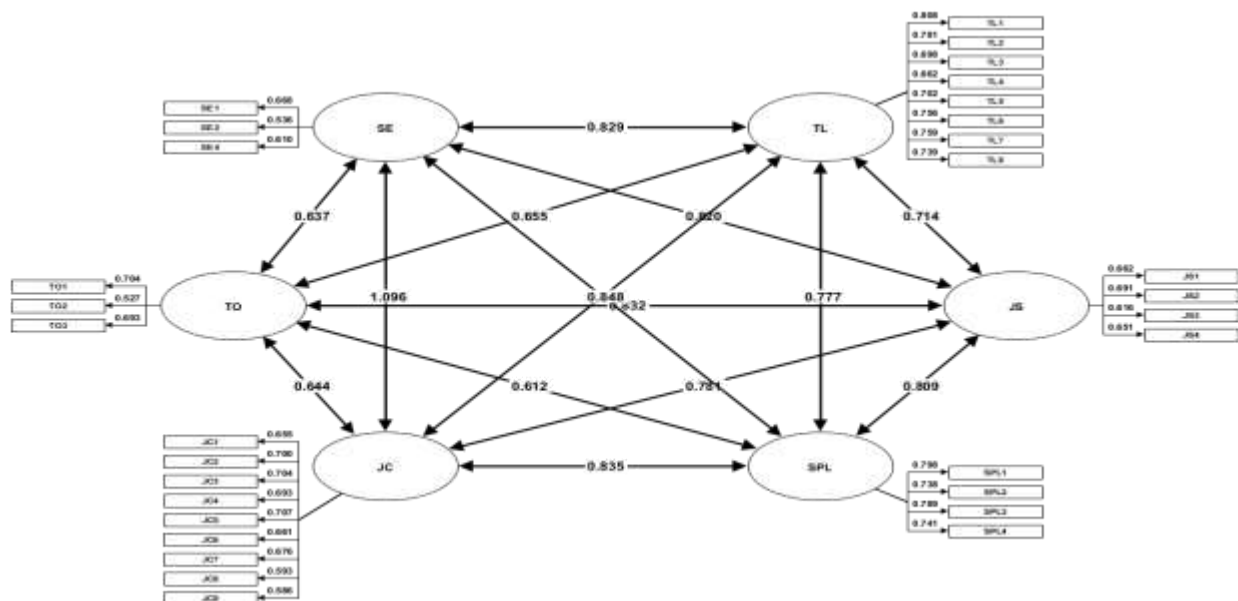

Figure 2. Estimated model.

Confirmatory Factor Analysis supports the measurement model's convergent and discriminant validity. Significant factor loadings of indicators on their constructions indicate convergent validity, demonstrating that each indicator measures its intended construct. The distinctiveness of the constructs, as shown by higher factor loadings of indicators on their constructs than other constructs, supports discriminant validity. These findings indicate that the study's assessment paradigm accurately measures technology overload, leadership behaviours, and employee outcomes, giving a solid foundation for additional research and interpretation.

Table 3. Confirmatory Factor Analysis.

Indicator	TO	JS	SE	JC	TL	SPL
SPL1	0.4933	0.6370	0.7356	0.6409	0.5871	0.7885
SPL2	0.4694	0.6325	0.5634	0.6209	0.5658	0.7829
SPL3	0.5443	0.6560	0.5626	0.6454	0.6471	0.8120
SPL4	0.3660	0.5541	0.7116	0.6379	0.5740	0.6859
SE1	0.4580	0.5750	0.7120	0.7063	0.5649	0.5416
SE2	0.3539	0.4190	0.5302	0.5993	0.4611	0.4220
SE4	0.3410	0.4872	0.5766	0.6825	0.4738	0.5589
JC1	0.3539	0.4757	0.6867	0.5838	0.5481	0.6199
JC2	0.4709	0.4788	0.6868	0.6558	0.5541	0.7123
JC3	0.4593	0.5707	0.7565	0.7211	0.4964	0.6596
JC4	0.4460	0.6378	0.6867	0.7659	0.5576	0.5671
JC5	0.4064	0.4995	0.7979	0.6337	0.5987	0.6005
JC6	0.4142	0.5477	0.8070	0.6763	0.5236	0.4616
JC7	0.4907	0.4962	0.7702	0.6813	0.5655	0.5051
JC8	0.3884	0.4721	0.6899	0.6015	0.5169	0.3998
JC9	0.4204	0.4949	0.6081	0.6385	0.5258	0.4117
TL1	0.5553	0.6511	0.6383	0.6489	0.9049	0.5830
TL2	0.5419	0.5528	0.5868	0.6416	0.7683	0.6361
TL3	0.4387	0.4093	0.6284	0.5754	0.5689	0.5707
TL4	0.4889	0.4571	0.5669	0.5297	0.6353	0.4811
TL5	0.3656	0.5315	0.6016	0.6008	0.7387	0.5298
TL6	0.4064	0.5099	0.6309	0.6483	0.7087	0.6279
TL7	0.5116	0.5677	0.6277	0.5925	0.7891	0.5795
TL8	0.5563	0.5283	0.5927	0.5794	0.7343	0.5646
JS1	0.5074	0.6615	0.5052	0.5330	0.4341	0.6226
JS2	0.5062	0.6915	0.6103	0.5585	0.5127	0.5506
JS3	0.4739	0.6166	0.5623	0.4750	0.4648	0.4742
JS4	0.6976	0.6504	0.4566	0.4887	0.4744	0.4672
TO1	0.7111	0.6219	0.4315	0.4403	0.4385	0.4427
TO2	0.5235	0.4406	0.2920	0.3617	0.3421	0.3411
TO3	0.6891	0.5397	0.4872	0.4459	0.4812	0.4001

Table 4 summarises the Measurement Items Fitness Statistics for each construct indicator. Fitness statistics, expressed by factor loadings, show the strength of each indicator-construct link. Indicators SPL1 to SPL4 had high factor loadings of 0.6859 to 0.8120, demonstrating substantial connections with Supportive and Participative Leadership (SPL). Similarly, markers SE1 to SE4 and JC1 to JC9 have significant factor loadings, indicating their role in measuring Self-Enhancement (SE) and Job Clarity (JC). Additionally, indicators TL1 to TL8 and JS1 to JS4 have high factor loadings, demonstrating their relevance to Toxic Leadership (TL) and Job Satisfaction (JS) evaluation. The Measurement Items Fitness Statistics reveal the measurement model's reliability and validity, bolstering the study's findings.

Table 4. Measurement Items Fitness Statistics.

Indicator	TO	JS	SE	JC	TL	SPL
SPL1						0.7885
SPL2						0.7829
SPL3						0.8120
SPL4						0.6859
SE1			0.7120			
SE2			0.5302			
SE4			0.5766			
JC1				0.5838		
JC2				0.6558		
JC3				0.7211		
JC4				0.7659		
JC5				0.6337		
JC6				0.6763		

JC7	0.6813	
JC8	0.6015	
JC9	0.6385	
TL1		0.9049
TL2		0.7683
TL3		0.5689
TL4		0.6353
TL5		0.7387
TL6		0.7087
TL7		0.7891
TL8		0.7343

JS1	0.6615
JS2	0.6915
JS3	0.6166
JS4	0.6504

TO1	0.7111
TO2	0.5235
TO3	0.6891

The HTMT method is used to analyse discriminant validity in Table 5. The table shows correlation ratios between constructions, with the diagonal showing correlations between the same construct. Technological Overload (TO) and Job Satisfaction (JS) have an HTMT ratio of 0.8315, which is below 1, showing good discriminant validity. Other construct pairs' HTMT ratios show sufficient discriminant validity, demonstrating the constructs' uniqueness.

Table 5. Discriminant Validity: Heterotrait-Monotrait Ratio of Correlations (HTMT).

Construct	TO	JS	SE	JC	TL	SPL
TO						
JS	0.8315					
SE	0.6298	0.8172				
JC	0.6449	0.7804	0.8044			
TL	0.6507	0.7109	0.8300	0.8163		
SPL	0.6116	0.8075	0.8475	0.8293	0.7748	

Table 6 shows Fornell-Larcker Criterion Discriminant Validity findings. The diagonal elements are the square roots of the Average Variance Extracted (AVE) for each construct, whereas the off-diagonal elements are construct correlations. The table shows that the square roots of the AVE for each construct are bigger than the correlations between the construct and other constructs, validating the measurement model's discriminant validity.

Table 6. Discriminant Validity: Fornell-Larcker Criterion.

Construct	TO	JS	SE	JC	TL	SPL
TO	0.618					
JS	0.494	0.730				
SE	0.402	0.663	0.773			
JC	0.417	0.616	0.674	0.741		
TL	0.500	0.618	0.674	0.663	0.643	
SPL	0.376	0.653	0.691	0.682	0.596	0.791

Model Goodness of Fit Statistics for research constructs are shown in Table 7. Statistics include R2, Adjusted R2, Q-predict, RMSE, and MAE. These metrics reveal the model's explanatory strength and forecast accuracy for each construct. The model explains a lot of Job Satisfaction (JS) score variance, as seen by its high R2 values. Low RMSE and MAE values indicate the model's predictive accuracy, with greater fit between observed and anticipated scores.

Table 7. Model Goodness of Fit Statistics.

Construct	Coefficient of determination (R²)	Adjusted R²	Q²predict	RMSE	MAE
JS	0.842	0.838	0.420	0.063	0.079
SE	0.402	0.399			
JC	0.417	0.414			

Table 8 shows how variables affect Job Satisfaction (JS) directly, indirectly, and altogether. Each predictor variable directly affects JS, with greater Beta coefficients suggesting stronger connections. The table also shows indirect effects of mediator variables (SE and JC) on TO and JS. The total effect combines direct and indirect effects to show how each predictor variable affects JS. Finally, Cohen's f2 values show effect size, with bigger values indicating practical significance.

Table 8. Variables Effect.

Effect	Beta	Indirect effects	Total effect	Cohen's f²
TO -> JS	0.5165	0.1418	0.6583	0.8993
TO -> SE	0.6340		0.6340	0.6721
TO -> JC	0.6454		0.6454	0.7139
SE -> JS	0.3092		0.3092	0.0105
JC -> JS	0.3105		0.3105	0.1230
TL -> JS	0.2091		0.2091	0.0152
SPL -> JS	0.3817		0.3817	0.2713

Table 9 shows the Path Analysis results for each hypothesis (H1 to H7), including original coefficients, standard bootstrap values, and percentile bootstrap quantiles. Each hypothesis row shows the effect size, standard error, t-value, and p-values for two-sided and one-sided testing.
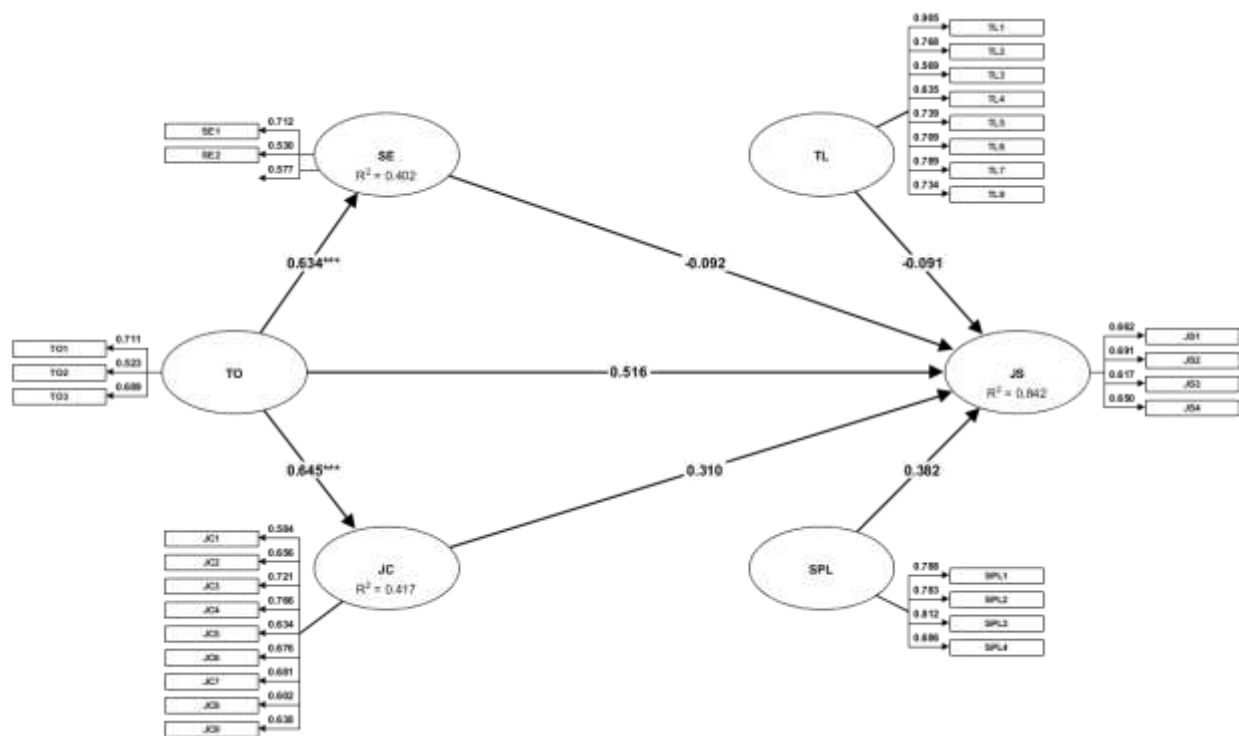

Figure 3. Structural Model for Direct and Mediated Path Analysis.

Hypothesis H1, which evaluates Technological Overload (TO) and Job Satisfaction (JS), shows a positive association with an initial coefficient of 0.833. The standard bootstrap results show a mean coefficient of 0.832 and a standard error of 0.061. The t-value of 13.702 and the two- and one-sided p-values of 0.000 corroborate this relationship's statistical significance. According to the percentile bootstrap quantiles, the true population

parameter is estimated to fall between 0.635 and 0.990. Each hypothesis' coefficient magnitude, standard error, and significance levels are listed in the table. These findings reveal the strength and significance of the hypothesised variable correlations. Table 9 helps comprehend Path Analysis results and evaluate research model concepts.

Table 9. Path Analysis.

Effect	Original coefficient	Standard bootstrap results					Percentile bootstrap quantiles			
		Mean value	Standard error	t-value	p-value (2-sided)	p-value (1-sided)	0.5%	2.5%	97.5%	99.5%
H1	0.833	0.832	0.061	13.702	0.000	0.000	0.635	0.713	0.944	0.990
H2	0.634	0.636	0.100	6.329	0.000	0.000	0.340	0.429	0.821	0.862
H3	0.645	0.644	0.087	7.395	0.000	0.000	0.404	0.474	0.803	0.854
H4	0.814	0.813	0.073	11.157	0.000	0.000	0.595	0.654	0.950	0.982
H5	0.785	0.784	0.063	12.459	0.000	0.000	0.593	0.654	0.897	0.917
H6	0.720	0.717	0.069	10.491	0.000	0.000	0.489	0.567	0.830	0.858
H7	0.808	0.802	0.065	12.387	0.000	0.000	0.595	0.648	0.914	0.932

DISCUSSION

The discussion part of this paper examines the subtle effects of technological overload on employee well-being and organisational outcomes, as well as the moderating and mediating factors. By accepting the five assumptions in this study, we may understand the complicated relationship between technological overload, leadership behaviours, and employee outcomes. This discussion explains how the study's findings affect organisational practice and intervention tactics to reduce technological overload and improve employee well-being by reviewing earlier empirical studies and theoretical frameworks.

This study's first and second assumptions reveal that technological overload impacts job happiness, clarity, and self-improvement. The findings support previous studies that technological overload in the workplace damages employee well-being and organisational outcomes. Technology overload negatively impacts employees' subjective job experiences, supporting the first hypothesis that it significantly impacts job satisfaction. This supports previous findings that technological overload impairs mental health, job engagement, and workplace satisfaction. The second hypothesis shows that self-improvement mediates work satisfaction and technology overload. Technology overload can lower job satisfaction directly and indirectly through self-improvement. Tech overload lowers employees' self-esteem, productivity, and efficacy, diminishing job satisfaction and self-improvement. Technology-induced pressures complicate the relationship between psychological qualities and organisational outcomes (Yener et al., 2021). These principles affect organisational behaviour and interventions to reduce the negative impacts of technological overload on employee well-being and productivity. Companies can adjust interventions to reduce stress and boost job satisfaction. Due to technology overload, job satisfaction and self-improvement decrease. One can learn to prioritise, manage digital distractions, and balance work and leisure through training. Technological overload might hinder self-improvement and job happiness, according to (Thomson et al., 2021). However, a friendly workplace that promotes open communication, participatory decision-making, and compassionate leadership can help. Because of these assumptions, technological overload is shown as a complex organisational problem that requires extensive intervention measures to promote employee well-being and performance.

The third and fourth hypotheses explain the link between excessive technology use, workplace transparency, and leadership. A prior study found that excessive technology use diminishes job clarity and influences worker experiences and attitudes through leader behaviour. The previous year's study illuminated this. Overuse of technology may make it harder for employees to understand their roles and company goals (Jam et al., 2016). This issue must be addressed since excessive technology use can affect workers' cognitive function and task comprehension. Finally, how leadership affects job happiness and how technology burdens people. Clear communication, teamwork, and trust should be encouraged to reduce the negative impacts of technological overload on staff {Seedoyal Doargajudhur, 2023 #6806}. It supports studies showing how leadership styles affect employee technical stress. To lessen technology's influence, promote employee well-being, and boost productivity, leaders must be supportive and engaged. Because of these views, companies can use operational

techniques to reduce technological overload and promote employee well-being. A collaborative, empowering firm can help employees overcome technological challenges and understand their roles {Jeong, 2024 #6809}. Prioritising tasks, managing digital distractions, and balancing work and pleasure may also help. Managing too much technology requires a holistic approach to enhance employee well-being and corporate success. These notions emphasise human and organisational details.

The fifth, sixth, and seventh assumptions help explain the complex relationships between technological overload, leadership, employee well-being, and organisational outcomes. The findings suggest studying how technological overload affects employee outcomes and how leadership might regulate or reduce this relationship. Overuse of technology can cause confusion and lower job satisfaction. Technology overuse lowers job satisfaction and responsibility knowledge. Effective communication, responsibilities, and support can reduce the negative effects of technological overload on workers. Self-improvement may affect job happiness and technology duties. Technology overuse can lower job happiness, confidence, productivity, and effectiveness {Hue, 2022 #6805}. Creating a welcoming workplace that promotes personal growth and professional satisfaction is crucial. Leadership can improve job satisfaction and lessen technology-related stress, according to the seventh hypothesis. Leadership that engages employees can mitigate the negative effects of technological overload on job satisfaction. This can be achieved by creating an open, cooperative, and trustworthy workplace. To decrease technology's effect, promote employee well-being, and boost productivity, use a supportive and involved leadership style.

They can improve technology management, personnel happiness, and business operations. Employees should receive personal growth, supporting and cooperative leadership, and professional advancement opportunities to overcome technical challenges and stay motivated. Prioritising tasks, controlling digital disruptions, and balancing work and leisure can also help. To overcome technological overload and improve employee performance, human and organisational factors must be assessed. This study discusses technological overload's effects on persons and businesses and its complexity. Thinking about work clarity, self-improvement, and leadership Firms can moderate initiatives to reduce technological overload, improve employee well-being, and boost organisational effectiveness. Understanding technology overload and employee outcomes and developing evidence-based therapies to help employees navigate the digital age requires studying the mechanisms and boundary conditions that affect them.

CONCLUSION

This study revealed the complicated links between technological overload, leadership, employee well-being, and organisational success. Technical information overload hurts employees' job satisfaction, personal growth, and professional consciousness, according to study. An in-depth investigation of actual data and theoretical models achieved this. This study shows that companies must take proactive measures to address these issues. Self-improvement, job clarity, and leadership behaviours compound the negative effects of technological overload on employee results. These findings affect leadership development organisations. The study's limitations must be acknowledged, however longitudinal studies, contextual factor studies, and various work environment studies are possible. The study has helped us understand workplace technological overload, but we must recognise and address its boundaries. Addressing these gaps and using this information can help businesses establish a workplace where people can overcome technical hurdles and thrive in the digital age. Productivity, engagement, and well-being will rise in the company.

IMPLICATIONS OF THE STUDY

This research shows the complex relationship between technological overload, leadership, employee well-being, and organisational outcomes. This study examines how Job Demands-Resources (JD-R), Social Exchange Theory, and Transformational Leadership Theory interact. Research shows that excessive technology use lowers job happiness, personal growth, and task understanding, stressing the necessity to detect and cure workplace technological stress. Tech overload affects employee performance through self-improvement, work clarity, and leadership. These findings explain psychological processes and contextual factors that affect employee responses to technological challenges, improving theoretical frameworks. Recognition of supportive

and participative leadership as essential to avoiding the negative effects of technological overload emphasises the role of leadership in building a healthy work environment and employee welfare. It illuminates the complex dynamics of workplace technological overload and offers the framework for future research.

These findings have major implications for firms trying to limit technology use and boost employee performance. Technical overload can negatively impact job satisfaction, self-improvement, and clarity. Specific solutions can alleviate these effects. Prioritisation, digital distraction management, and work-life balance can be helped by employee training and tools. If given open communication, participative decision-making, and compassionate leadership, employees may be able to stay happy despite the abundance of technology. Avoiding technology overload requires supportive and inclusive leadership training. These practical tactics can create a pleasant workplace that helps people overcome technology barriers and thrive in the digital age, improving well-being, productivity, and engagement.

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

For the purpose of fostering further research, numerous limits must be noted. This research sheds light on technological overload, leadership, and employee outcomes, but it has many limitations. Cross-sectional research makes causation and temporal correlations harder to assess. Another study could use experimental or longitudinal methods to examine the causal pathways and dynamics behind these connections. The study only investigates a few variables and constructs, omitting environmental influences and individual attributes that may have altered the results. To explain behaviour, future study may include other variables. Corporate culture, coping strategies, and technology tolerance are examples.

Technological overload, leadership behaviours, and employee outcomes are mediated and moderated in the study, although their complexity may require further study. The mechanisms and boundary conditions that shape these dynamics could be explored. Future research may include leadership, corporate culture, and employee perceptions. The study also examines traditional organisational staff opinions. It may ignore remote or virtual workers' technical resource overload issues. Future study may examine how technological overload impacts diverse work situations and demographics to offer personalised solutions and support systems. Future research may help us understand workplace technological overload and develop evidence-based solutions to increase employee well-being and organisational effectiveness in the digital age. Addressing these boundaries and trying new things can do this.

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