Technostress and Sustainable Employee Performance: The Mediating Role of Employee Well-Being and The Moderating Role of Perceived Organizational Support

Dr. Naimatullah Shah and Dr. Bahadur Ali Soomro

***Abstract*—** This study explores how technostress shapes sustainable employee performance in technology-driven workplaces. Drawing on the Job Demands–Resources framework, we tested direct, mediating, and moderating relationships using data from 361 full-time employees. The results show that technostress significantly undermines sustainable performance. Employees facing high levels of digital overload and constant technological pressure tend to report lower long-term productivity. More importantly, technostress also weakens employee well-being, which plays a central role in sustaining performance over time. The findings suggest that employee well-being is at the heart of this relationship. Employees who experience stronger psychological well-being are better positioned to maintain consistent and sustainable performance over time. The mediation results indicate that technostress undermines sustainable performance primarily because it erodes well-being. In simple terms, technological strain weakens long-term productivity by first affecting employees' psychological health. The analysis also highlights the buffering role of perceived organizational support. When employees feel genuinely valued and supported, the harmful effects of technostress on performance are noticeably reduced. These results underscore the importance of carefully managing digital job demands while cultivating a supportive organizational climate. Sustaining performance in digital workplaces requires not only technological efficiency but also deliberate efforts to protect employee well-being.

***Keywords*—**Technostress, Employee Well-being, Sustainable Performance, Perceived Organizational Support, Job Demands–Resources Theory, Digital Transformation.

I. Introduction

Modern workplaces have undergone transformation because digital transformation has introduced new technologies to work environments. Organizations depend on artificial intelligence and automation tools and remote work systems and advanced communication tools as their primary work systems. The new developments enable organizations to achieve better flexibility and operational efficiency and build stronger international partnerships. The new developments create work-related challenges that employees must handle. Employees need to keep adjusting their skills because technological innovations create two challenges for them. Employees face difficulties when they attempt to meet these work requirements. The experience people have with technology leads to their development of techno-stress [1, 2].

Dr. Naimatullah Shah, Dr. Bahadur Ali Soomro, College of Business, Al Yamamah University, Riyadh, Kingdom of Saudi Arabia

The COVID-19 pandemic established permanent digital work practices within organizations after organizations had implemented temporary digital work methods during the pandemic [3]. Organizations now focus more on employee performance as their work systems undergo digital transformation. Organizations now assess performance based on all aspects of employee productivity. It now includes employee well-being and their ability to stay engaged and maintain their capacity to work effectively throughout their careers [4]. The main inquiry we need to investigate concerns how organizations should maintain their performance standards while their digital requirements become more challenging.

The digital workplace describes environments in which employees depend on Information and Communication Technologies (ICTs), artificial intelligence, remote platforms, and data-driven systems. The introduction of hybrid and remote work models has changed the ways that employees conduct their communication and collaboration activities [5]. People now depend on digital tools more than ever because work–life boundaries have become less distinct [6]. The organization identifies technostress as its primary operational difficulty. [1]'s study identified five factors which cause people to experience technostress. The stressors produce mental strain and psychological fatigue. Technostress research has developed into a broader field, but researchers still focus on studying the immediate outcomes which follow short-term stress. Research on performance has moved toward examining sustainable practices. The two research areas maintain limited connections between each other.

The Job Demands–Resources (JD-R) model provides a useful theoretical lens to address this gap [7, 8]. The model demonstrates that job demands need ongoing effort because they result in work-related strain, whereas job resources enable workers to achieve their objectives and grow professionally. In the digital workplace, technostress exists as a requirement which employees need to fulfil. Employees need to use their cognitive and emotional resources to handle continuous technological advancements. When demands exceed available resources, well-being declines. Employees who experience reduced well-being tend to show less motivation and engagement which results in decreased performance over time. Employees need to achieve sustainable performance by maintaining their productivity levels while they protect their psychological health and resilience throughout their work journey.

The research uses the JD-R framework to assess technostress as a digital workplace requirement which leads to diminished employee performance. The study demonstrates how technology-related stress affects workers' performance throughout their employment period while showing how job resources help employees manage their

https://doi.org/10.17758/URUAE34.ED0626101

work stress. The research study establishes a connection between technostress and the JD-R framework. The study establishes a connection between technostress and the JD-R framework. The study provides a detailed explanation of how digital work requirements and available resources impact employee performance. The paper starts with theoretical framework development before moving to hypothesis testing and research methodology execution which ends with the presentation of research implications and limitations together with future research directions.

II. LITERTAUR REVIEW AND THEORITICAL FRAMEWOR

The implementation of digital transformation has changed all aspects of work. Organizations use artificial intelligence and automation together with remote collaboration systems to achieve better operational performance and enhanced adaptability. The new technologies create additional challenges that employees must handle. The continuous use of ICT technologies creates digital exhaustion because people need to stay connected at all times and their work and personal life boundaries become less distinct which leads to increased social isolation [3]. Digital work studies treat technostress as a fundamental concept that researchers use to study work-related stress. The model examines how people experience technological overload through its three components which are system overload and complex operations and cybersecurity compliance and the need for workers to stay available at all times [1, 2]. Technostress shows empirical links to burnout and decreased work engagement and poor decision-making abilities and inconsistent work performance [9, 10]. Technology thus operates as a double-edged phenomenon. The system increases productivity while it creates extra monitoring demands and higher skill requirements and greater job uncertainty [11, 12].

Scholars now prefer to study sustainable employee performance which maintains long-term employee productivity instead of short-term measurement methods. Sustainable performance achieves its goals through its combination of long-term employee productivity and employee well-being and resilience [4, 13]. Researchers have discovered that resources play a critical role in maintaining this equilibrium. Organizational practices which provide support will increase employee commitment and retention rates [14]. Virtual leadership establishes positive digital health outcomes through its effects on digital workplaces [15]. Resilience functions as a personal resource that enables employees to manage technological stress [16, 17]. The field has made progress through several developments yet it continues to have critical missing elements. Technostress research often focuses on immediate strain rather than long-term performance. The Job Demands–Resources (JD-R) model is frequently referenced but not fully extended to digital workplace stressors. Research evidence concerning the buffering function of perceived organizational support remains insufficient while emerging economy studies are still uncommon. A more integrated theoretical explanation is therefore needed.

The research uses the Job Demands–Resources (JD-R) theory, which describes how job demands together with job resources determine the well-being and performance outcomes of employees. The system consists of two processes that work together. The health-impairment process shows that excessive job requirements lead to psychological energy loss which results in decreased well-being. The motivational and buffering process explains how job resources enable employees to manage their work demands while maintaining their productivity. The digital workplace defines technostress as a job requirement which depletes cognitive and emotional capacity [18]. Psychological functioning starts to decline when the demands placed on individuals surpass their resources according to [8]. Research studies have shown that technostress creates negative effects on both mental health and overall well-being [19, 20].

Employee well-being consists of three components which include psychological health and emotional stability and work satisfaction. JD-R theory maintains that decreased well-being leads to lower motivation which results in decreased work performance according to [21]. Research from earlier studies demonstrates that well-being shows a strong positive relationship with productivity [22, 23]. Sustainable employee performance enables workers to maintain their productivity throughout their entire career while they stay healthy and develop their resilience [24]. The relationship between technostress and sustainable performance occurs through its effect on employee well-being. Employees who obtain POS as a job resource achieve enhanced capability to handle their work challenges and manage their resilience. The JD-R model predicts that resources buffer the negative effects of demands according to [13]'s study and empirical research shows that organizational support mitigates the harmful impact of techno-stress [25]. The proposed framework explains how technostress decreases sustainable employee performance by causing lower employee well-being according to the framework which shows that perceived organizational support reduces this adverse impact. The conceptual model is presented in Fig 1.

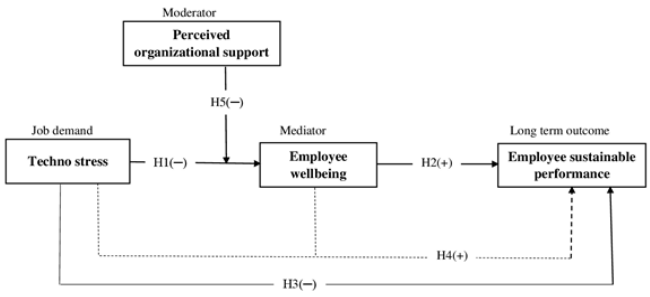

Fig. 1 Theoretical Framework of The Study
Source: Developed by The Researchers

A. *Technostress and employee well-being*

Technostress represents a major job demand which requires workers to maintain their cognitive and emotional capacities at all times [1]. JD-R theory states that when people face too much work pressure their mental resources become used up and their well-being decreases [7, 8]. Technology overload leads to increased fatigue and emotional exhaustion according to empirical research [2, 19], while people who experience high technostress tend to have worse mental health outcomes [20].

H1: Technostress negatively influences employee well-being.

B. Employee well-being and sustainable employee performance

The research demonstrates that employees with better wellness display greater work dedication and ability to bounce back from challenges and their overall commitment to work [21]. The studies establish a direct relationship between improved employee wellness and increased work output and organizational performance [22, 23].

H2: Employee well-being positively affects sustainable employee performance.

C. Technostress and sustainable employee performance

Workers who face excessive job demands will experience a decline in their work productivity and engagement with their tasks because of their situation [8]. The research demonstrates that technostress negatively impacts both job performance and work productivity [1, 20].

H3: Technostress negatively influences sustainable employee performance.

D. Mediating role of employee well-being

The JD-R theory demonstrates that job requirements lead to performance declines because they decrease employee well-being according to [8]. Research evidence demonstrates that employee well-being serves as a bridge between work-related stressors and their performance results [20, 21].

H4: Technostress adversely impacts employee performance through its negative effects on employee well-being.

E. Moderating role of perceived organizational support

The organization uses perceived organizational support as a vital job resource which protects employees from experiencing negative impacts caused by job requirements [13]. Employees who receive strong organizational support from their company show better technostress coping abilities according [25, 26].

H5: Perceived organizational support moderates the relationship between technostress and employee well-being such that the negative influence is weaker when perceived organizational support is high.

III. METHODS

A. Research design

The research employs a quantitative cross-sectional survey method to conduct its investigation. The study investigates how technostress impacts employee well-being and organizational support detection and employee performance sustainability. The researchers chose a survey method because their study required testing theoretical connections between hidden psychological concepts in workplace environments [27]. The design uses the Job Demands–Resources (JD-R) framework to define technostress as a work demand and POS as a work resource that affects employee well-being and performance [7, 8]. Researchers use structural equation modelling to investigate how unobservable variables mediate and moderate their relationships [28]. Researchers use cross-sectional data to test theories and validate models even though this data type restricts their ability to demonstrate causal relationships [29].

B. Research context

The study took place in Pakistan because organizations there are rapidly adopting digital technologies for their everyday business activities. Digital platforms and automated systems together with remote communication tools have become standard tools through which the banking and telecommunications and higher education and manufacturing industries conduct their operations. The new changes create better efficiency and competitive advantages for businesses. The new technological requirements increase operational demands for the employees. Research findings indicate that technostress develops when organizations experience technological progress which exceeds their current readiness level [1, 30]. Pakistan provides researchers with a valuable setting which enables them to investigate how digital pressure affects the sustainability of employee performance.

C. Participants and sampling

The complete population study included full-time staff members from medium to large companies who use digital tools in their daily work. The study required six months of employment as a minimum requirement because researchers needed to study workplace system usage. Researchers employed purposive sampling methods to select their study participants. The researchers used their professional networks and formal study explanation letters to contact organizations for their research needs. The research team required participants to take part in the study after they had gained access to the research site. The research team distributed 500 questionnaires through both online and paper distribution methods. The study retained 361 usable questionnaires after researchers eliminated all incomplete and inconsistent survey answers. The research requires this sample size to conduct structural equation modelling which enables testing mediation and moderation effects with sufficient statistical power [31].

D. Data collection and ethical considerations

The research study included a questionnaire which contained a cover letter that described its research objectives. The document confirmed that all information would remain secret and that study participation was entirely optional. The research team did not gather any data which could identify individual participants. The study applied multiple procedural solutions to decrease the occurrence of common method bias. The researchers separated the psychological boundaries of predictor variables and outcome variables. The study design used random item sequencing together with reverse-coded items. The research team followed all established survey research guidelines by [27]. The research study received approval from institutional ethical standards and researchers used all collected data for academic research purposes only.

E. Measures

The researchers utilized established measurement tools which had already proven their effectiveness for all studied variables according to the data presented in Table 1. The researchers made minor modifications to the text when needed because they wanted to convey the right meaning while keeping the original message intact. All items were evaluated using a five-point Likert scale which ranged from

strongly disagree (1) to strongly agree (5) as its response options.

Technostress - The researchers used a 10-item scale which they adapted from the [1] technostress creators instrument to measure technostress. The scale measures various aspects of technology-related stress through its assessment of overload, personal life intrusion, mental workload, vulnerability and uncertainty. The instrument has been widely utilized in research concerning organizational systems and information systems while demonstrating strong reliability throughout various research environments [30]. The researchers defined technostress as a continuous job demand which forces employees to use their cognitive and emotional capacities.

Employee well-being - The researchers used a six-item scale which they derived from [32] subjective well-being framework to measure employee well-being. The scale measures employee satisfaction together with assessment of positive work-related emotional experiences. The JD–R framework uses well-being as a psychological state which shows how job demands create effects that persist through time.

Perceived organizational support - The researchers used an eight-item version of the Survey of POS developed by [33]. The tool measures employee understanding of how their organization values their work and protects their well-being. POS functions as a contextual resource which protects against technostress effects while supporting long-lasting performance.

Sustainable employee performance - Sustainable performance was measured using a five-item scale which researchers developed by combining elements from sustainable HRM and performance studies [34, 35]. The measurement tool assesses how employees maintain their work output during extended periods without showing signs of fatigue or productivity drops. The current focus on sustainability demonstrates that organizations now understand they must achieve performance targets while safeguarding employee wellness and their organization's future operational capacity.

Control variables - The researchers included age, gender, education and organizational tenure as control variables because previous studies have shown these elements can affect well-being and performance assessments.

F. Data analysis

The analysis of data was conducted through SPSS and SmartPLS 4 software. The partial least squares structural equation modeling process was executed through a two-step procedure which followed the guidelines established by [31]. Statistical analysis of descriptive statistics and correlation data and reliability testing was done through SPSS. Common method variance was assessed using Harman's single-factor test, and multicollinearity was evaluated through variance inflation factor (VIF) values [27]. The SmartPLS 4 software was used to conduct an evaluation of the measurement and structural models. The study established reliability and convergent validity through the examination of indicator loadings and composite reliability and average variance extracted (AVE) [36]. The study evaluated discriminant validity through the application of Fornell–Larcker criterion and heterotrait–monotrait ratio method [37]. The structural model evaluation process involved path coefficient analysis through bootstrapping which used 5,000 resamples. Model explanatory power was assessed through R^2 and effect size indicators. The researchers tested mediation through bootstrapped indirect effects while they studied moderation by developing an interaction term between technostress and perceived organizational support to determine its significance.

IV. RESULTS

A. Demographic characteristics

Table I displays the demographic data which describes the characteristics of the study participants. The study included a final sample of 361 full-time workers who were employed in medium and large companies. The respondents showed balanced demographic distribution which included slightly more than half of the respondents as male and the rest as female. The age distribution showed that most people belonged to the 26 to 35 age range while the next largest group included people from 36 to 45 years, which indicated that the workforce mainly consisted of young employees and those who had reached mid-career stage. The majority of study participants possessed a bachelor's degree or higher educational qualification, while many others had achieved postgraduate academic credentials. The majority of participants reported work experience which ranged from one year to six years, which showed that they had acquired substantial organizational experience. The distribution of job positions showed that most employees worked in entry-level and middle management jobs, while only a few held senior management positions. The sample provides a representation of a workforce which contains diverse educational backgrounds and professional knowledge and works in environments which heavily rely on digital technology.

TABLE I. DEMOGRAPHIC PROFILE OF RESPONDENTS (N = 361)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	201	55.7
	Female	160	44.3
Age group [years]	18–25	52	14.4
	26–35	168	46.5
	36–45	89	24.7
	46–55	38	10.5
	> 55	14	3.9
Education level	High School	41	11.4
	Bachelor's	186	51.5
	Master's	102	28.3
	MPhil/PhD	32	8.9
Job tenure [years]	< 1	36	10.0
	1–3	118	32.7
	4–6	96	26.6
	7–10	71	19.7
	10+	40	11.1
Job position	Entry level	149	41.3
	Middle management	146	40.4
	Senior management	66	18.3

Source: Authors' own survey

B. Descriptive statistics and correlations

Table II shows the study variables through its description and statistical analysis of their relationships. The average scores demonstrate that the sample exhibits moderate levels of technostress and perceived organizational support and employee well-being and sustainable performance. Employee well-being and sustainable performance both

show a negative relationship with technostress which reaches statistical significance. The data indicates that increased digital pressure results in decreased psychological health and reduced ability to maintain performance throughout time. The way employees perceive organizational support leads to improved well-being results which benefit sustainable performance in a meaningful way. Sustainable performance receives a positive boost from employee well-being. The initial relationship between the two variables shows connection with Job Demands–Resources framework anticipated outcomes.

TABLE II. DESCRIPTIVE STATISTICS AND CORRELATION ANALYSIS

Variable	Mean	SD	1	2	3	4
1. Technostress	3.41	0.72	(0.89)			
2. Perceived organizational support	3.56	0.68	-0.34**	(0.91)		
3. Employee well-being	3.48	0.70	-0.47**	0.42**	(0.90)	
4. Sustainable performance	3.52	0.66	-0.39**	0.45**	0.53**	(0.92)

Source: Calculated by the authors

C. Measurement model assessment

The measurement model assessment results are shown in Table III. All indicator loadings exceed the recommended threshold of 0.70, indicating strong item reliability. The composite reliability (CR) measurements for all constructs range between 0.900 and 0.946 which shows that the internal consistency of all constructs achieves high standards. The value of Cronbach's alpha exceeds 0.70 which serves as the minimum standard for demonstrating reliability. The average variance extracted (AVE) values exceed 0.50 for all constructs, which establishes convergent validity [36]. The measurement model results demonstrate reliable and valid performance which establishes a reliable foundation for evaluating the structural model and testing the proposed hypotheses.

TABLE III. MEASUREMENT MODEL

Construct	Item code	Loading score	CR	AVE	Alpha
Techno stress [TS]	TS1	0.838	0.946	0.635	0.936
	TS2				
	TS3				
	TS4				
	TS5				
	TS6				
	TS7				
	TS8				
	TS9				
	TS10				
Perceived organizational support [POS]	POS1	0.84	0.934	0.639	0.919
	POS2				
	POS3				
	POS4				
	POS5				
	POS6_R				
	POS7_R				
	POS8				
Employees well-being [EWB]	EWB1	0.801	0.918	0.652	0.893
	EWB2				
	EWB3				
	EWB4_R				
	EWB5				
	EWB6				
Sustainable performance [SP]	SP1	0.809	0.900	0.644	0.861
	SP2				
	SP3				
	SP4				
	SP5				

Source: Calculated by the authors

Notes: "CR=composite reliability; AVE=average variance extracted; AVE= average variance extracted; α=Cronbach's alpha reliability

D. Discriminant validity

Table IV presents the assessment of discriminant validity using the Fornell–Larcker criterion. The diagonal element shows the square root of average variance extracted (AVE) which exceeds the inter-construct correlations present in each row and column. The square root of AVE for technostress (0.797), perceived organizational support (0.799), employee well-being (0.807), and sustainable performance (0.802) exceeds their corresponding correlations with other constructs. This shows that every construct displays greater shared variance with its specific indicators than it does with any other elements in the model. The results demonstrate adequate discriminant validity which shows the constructs exist as separate empirical entities.

TABLE IV. DISCRIMINANT VALIDITY (FORNELL–LARCKER CRITERION)

Constructs	TS	POS	EWB	SP
TS	**0.797**			
POS	-0.002	**0.799**		
EWB	-0.522	0.376	**0.807**	
SP	-0.404	0.418	0.611	**0.802**

Source: Calculated by the researchers
TS=Technostress; POS=Perceived organizational support; EWB=Employees well-being; SP=Sustainable performance

E. Model fit assessment

Table V reports the results of the model fit assessment. The chi-square to degrees of freedom ratio ($\chi^2/df = 2.14$) falls below the recommended threshold of 3.00, indicating an acceptable overall model fit. The goodness-of-fit index (GFI = 0.94) and adjusted goodness-of-fit index (AGFI = 0.91) both exceed the suggested cut-off value of 0.90. Similarly, the comparative fit index (CFI = 0.96) and normed fit index (NFI = 0.93) indicate a good fit between the proposed model and the observed data. The root mean square error of approximation (RMSEA = 0.056) is below the acceptable limit of 0.08, suggesting a satisfactory level of approximation. Overall, all fit indices meet the recommended criteria, confirming that the proposed model demonstrates a good fit to the data.

TABLE V. MODEL FIT ASSESSMENTS

Model fit parameters	Appeared values	Cut-off values	Fit (Yes=√ / No=x)
$\chi 2/df$	2.14	< 3.00	√
GFI	0.94	≥ 0.90	√
AGFI	0.91	≥ 0.90	√
CFI	0.96	≥ 0.90	√
NFI	0.93	≥ 0.90	√
RMSEA	0.056	≤ 0.08	√

Source: Calculated by the researchers
Note: "χ^2/df =chi-square/degrees of freedom; GFI=goodness-of-fit index; AGFI=adjusted goodness-of-fit index; NFI=normed fit index; CFI= comparative fit index; RMSEA=root mean square error of approximation"

F. Structural model and hypothesis testing

Table VI presents the results of the path coefficient analysis show that techno stress has a significant negative effect on employee well-being ($\beta = -0.505$, $p < 0.01$), which supported the H1. Employee well-being has a positive significant effect on sustainable performance, which supported the H2 ($\beta = 0.408$, $p < 0.01$). Techno stress has a significant negative effect on sustainable performance ($\beta =$

−0.196, $p < 0.01$). Hence, H3 is accepted. The mediating paths suggest a negative mediating role of employee well-being between techno stress and sustainable performance ($\beta = -0.204$, $p < 0.01$). Therefore, H4 is supported. Finally, the moderating effect of perceived organizational support between techno stress and employee well-being is found to be positive and significant ($\beta = 0.441$, $p < 0.01$). Consequently, H5 is also accepted.

TABLE VI. PATH CO-EFFICIENT ANALYSIS

H.No.	Relationships	Estimate β	SE	CR (t-value)	p-value	Decision
H1	TS→EWB	-0.505	0.038	-13.029	0.000	√
H2	EWB→SP	0.408	0.049	8.273	0.000	√
H3	TS→SP	-0.196	0.042	-4.535	0.000	√
H4	TS→EWB→SP	-0.204	0.028	-7.176	0.000	√
H5	TS × POS→SP	0.441	0.067	6.608	0.000	√

Source: Calculated by the authors

V. DISCUSSION

The purpose of this study was to examine how technostress influences sustainable performance through employee well-being and how perceived organizational support (POS) moderates this relationship. By integrating the Job Demands–Resources (JD-R) model [7, 8] the findings provide a multi-theoretical explanation of how digital work demands translate into long-term performance outcomes. The results demonstrate that technostress significantly reduces employee well-being, which in turn enhances sustainable performance, and that perceived organizational support buffers the negative performance effects of technostress. These findings extend both foundational and contemporary technostress scholarship.

According to the JD-R theory, technostress functions as a job requirement which leads to psychological resource depletion and subsequent employee stress. The research proves that technostress negatively impacts employee well-being because it follows the initial research on technostress which showed that employees suffer emotional and cognitive problems from techno-overload, techno-invasion, and techno-complexity. The empirical studies demonstrate that digital work intensity and technology-driven interruptions lead to health problems and decrease well-being according to research conducted by [19] and [38]. Present-day reviews demonstrate that technostress continues to act as an organizational problem which affects workplace digital transformation especially in remote work environments that use AI-enabled systems [39]. The current results support the JD-R health-impairment pathway by showing that technostress reduces employees' psychological health.

The positive relationship between employee well-being and sustainable performance shows support for both JD-R theory and the larger field of research that connects well-being to performance outcomes. [23]'s study first presented their argument that psychological well-being serves as a predictor of job performance which extends beyond standard job satisfaction assessments. [40]'s study proved that positive psychological states improve performance results through their effects on motivation. In current research sustainable performance has been defined as a state of prolonged productivity which depends on employee capacity for work and power to recover from challenges [4]. The current findings align with this emerging perspective by demonstrating that employee well-being significantly enhances sustainable performance. The maintenance of stable and flexible work performance throughout time requires psychological resources in digital work.

The analysis of mediation establishes a deeper theoretical foundation for the research study. The discovery that employee well-being functions as a partial mediator between technostress and sustainable performance demonstrates how research field extends beyond its previous focus on direct stress-performance relationships [38, 41]. Previous research demonstrated that technostress decreases both work productivity and employee job satisfaction yet only a few studies have investigated the psychological factors that lead to these effects. The current findings fulfil this requirement by presenting employee well-being as the main explanatory mechanism. The results show that partial mediation exists because technostress impacts sustainable performance through two different routes. The research finding supports conservation of resources (COR) theory [42], which states that resource depletion affects both internal psychological states and external behavioral expressions.

The moderation effect of perceived organizational support provides additional theoretical insight. According to JD-R theory job resources function as protective shields that prevent harmful impacts from job demands [8]. The significant interaction between technostress and POS supports this buffering hypothesis. The negative connection between technostress and sustainable performance becomes less severe when employees perceive high organizational support. More recent studies have shown that perceived organizational support decreases technostress effects in hybrid and digital work situations [43].

The relationship between employees and their organization determines the value of POS according to Social Exchange Theory. According to SET theory employees will show positive workplace behavior as a response to receiving good treatment from their employers [33]. Employees who receive appreciation and support will increase their dedication to work while keeping their output at high levels during tough times. The organization shows itself to practice equitable treatment and genuine concern through its supporting practices which assist employees who face fast technological shifts and unpredictable situations in digital environments.

The research results provide an essential contribution through their demonstration of sustainable performance. Traditional performance research has mostly concentrated on measuring short-term productivity results. Sustainable performance requires organizations to sustain their productivity levels while protecting their workers' health. The current literature demonstrates that organizations need to implement human sustainability strategies during digital transformation processes [44] in order to prevent employee burnout and maintain their performance capacity. The existing model explains more than half of sustainable performance variability because it combines technological demands with psychological well-being and organizational support factors.

The research results prove that technostress represents a major organizational challenge which organizations face during the digital age. The operational systems of technology improve productivity while establishing better communication networks yet they create heavier mental and

emotional requirements for users to handle. The performance requirements from the workload will exceed the team's capacity when they lack proper mental health resources and social support systems. Organizations which prioritize their workers' health through support programs can reduce their potential operational dangers. The combination of JD-R and Social Exchange Theory creates a complete system which explains how technology-heavy workplaces achieve long-term performance results.

VI. RESEARCH IMPLICATIONS

This study advances theory by embedding technostress within the Job Demands–Resources (JD-R) framework and integrating Social Exchange Theory (SET) to explain both psychological and relational mechanisms. The research shows that technostress functions as a digital workplace requirement which decreases sustainable productivity because it harms employee health and well-being while perceived organizational support functions as a protective resource. The study improves understanding of digital stress impact on long-term performance by showing how digital stress affects performance through mediation and moderation relationships. The research establishes psychological well-being as the essential mechanism which drives performance maintenance in technology-dominated workplaces thus extending sustainable performance theory.

The findings show that organizations need to approach technostress management as a strategic risk which extends beyond their normal operational duties. Managers should invest in well-being initiatives, digital skill development, and workload management practices to prevent resource depletion. Organizations can reduce the negative impact of technostress on performance through strong perceived organizational support which leaders establish through empathy and recognition and HR policies that address employee needs. Organizations need to establish human-centered support systems for their digital transformation initiatives to maintain their productivity levels over time. The study advances technostress research by introducing process-based explanations which describe stress effects through their mediation and moderation links to performance outcomes. The research connects information systems fields with organizational behavior and HRM studies to promote interdisciplinary research partnerships. The study connects technostress to sustainable performance which establishes a link between digital stress research and emerging human sustainability discussions that seek to achieve long-term organizational effectiveness. Researchers should continue their investigation into digital work stress boundary conditions and its long-term effects on people.

VII. LIMITATIONS AND FUTURE RESEARCH

The study provides valuable findings but its results are constrained by multiple limitations. First the study's cross-sectional design prevents researchers from establishing definite causal relationships despite the theoretical model's foundations in JD-R and Social Exchange Theory. The relationships that scientists observed may demonstrate dynamic reciprocity instead of showing unidirectional effects because digital environments enable technostress and performance pressure to create a reciprocal relationship that develops over time. The study results show sustainable performance yet the research depended on self-reported data which creates a risk of perceptual bias because people interpret their performance according to their personal understanding. The research team applied statistical solutions to their data but they should conduct future research using multi-source data which includes supervisor evaluations and objective performance metrics to better establish construct validity. The model uses perceived organizational support as its main contextual resource but this approach does not represent all the structural and relational resources which exist within digital workplaces.

Theoretical precision should be advanced through research that applies longitudinal and multilevel and multi-source study methods. Through experience sampling and time-lagged studies researchers can study how people lose and regain resources while studying the development of technostress symptoms over time. The study requires systematic exploration of boundary conditions which include digital leadership and technological self-efficacy and HR flexibility practices and cultural context. Future research needs to differentiate between traditional technostress and AI-induced stressors because AI-driven systems and algorithmic management systems continue to gain acceptance in organizations. Theoretical development in digital work research would benefit from researchers expanding sustainable performance measurement through the addition of long-term objective indicators.

VIII. CONCLUSION

The research study investigated the relationship between technostress and sustainable performance through employee well-being which served as a mediating factor while perceived organizational support functioned as a protective resource. The research results which use the Job Demands–Resources framework and Social Exchange Theory demonstrate that technostress decreases sustainable performance through direct and indirect pathways which lead to reduced employee well-being. The findings show that digital job demands only become harmful when psychological and relational resources from the organization are not accessible to workers. Through its connection between technostress and sustainable performance, this research improves understanding of performance maintenance in technology-heavy workplaces while showing that employee well-being serves as a vital factor for maintaining long-term productivity. Organizations must achieve a balance between technological efficiency and human sustainability after they implement digital transformation at an increasing pace. Sustainable performance in the digital age requires organizations to develop both their technological capabilities and human resource management systems while creating organizational support practices.

REFERENCES

[1] M. Tarafdar, Q. Tu, B. S. Ragu-Nathan, and T. S. Ragu-Nathan, “The impact of technostress on role stress and productivity,” J. Manage. Inf. Syst., vol. 24, no. 1, pp. 301–328, 2007. https://doi.org/10.2753/MIS0742-1222240109

[2] R. Ayyagari, V. Grover, and R. Purvis, “Technostress: Technological antecedents and implications,” MIS Q., vol. 35, no. 4, pp. 831–A10, 2011. https://doi.org/10.2307/41409963

[3] K. Arya, N. Sharma, G. K. Chhabra, A. Kumar, and N. Ayedee, “Exploring COVID-19's impact on mental health in the workplace: A bibliometric analysis,” Asia Pac. J. Health Manag., vol. 20, no. 1, pp. 401–416, 2025. https://doi.org/10.24083/apjhm.v20i1.3607

[4] S. Chingan Thottathil and M. K. Nandakumar, “Integrating hedonic and eudaimonic perspectives of well-being: A conceptual model for sustaining employee well-being in the remote work context,” *Hum. Resour. Dev. Rev.*, vol. 24, no. 2, pp. 157–198, 2025.

[5] V. Vohra, S. Singh, and T. Dutta, “Embracing flexibility post-COVID-19: A systematic review of flexible working arrangements using the SCM-TBFO framework,” Glob. J. Flex. Syst. Manag., vol. 25, no. 1, pp. 1–26, 2024. https://doi.org/10.1007/s40171-023-00366-9

[6] H. Tirrel, H. R. Kaufmann, and L. Winnen, “Why not to work in flexible workplaces? A systematic literature review and development of a conceptual framework for SMEs,” *Int. Rev. Entrep.*, vol. 19, no. 4, pp. 555–584, 2021.

[7] E. Demerouti, A. B. Bakker, F. Nachreiner, and W. B. Schaufeli, “The job demands–resources model of burnout,” *J. Appl. Psychol.*, vol. 86, no. 3, pp. 499–512, 2001.

[8] A. B. Bakker and E. Demerouti, “The job demands–resources model: State of the art,” *J. Manag. Psychol.*, vol. 22, no. 3, pp. 309–328, 2007.

[9] N. H. Chowdhury, M. T. Adam, and G. Skinner, “The impact of time pressure on cybersecurity behaviour: A systematic literature review,” Behav. Inf. Technol., vol. 38, no. 12, pp. 1290–1308, 2019. https://doi.org/10.1080/0144929X.2019.1583769

[10] P. Kumar, P. Kumar, R. Kumar, N. Kumari, and V. Aggarwal, “Antecedents of satisfaction and continuance intention towards e-learning adoption in school education in India—teachers' perspective during COVID-19 pandemic,” *Int. J. Educ. Econ. Dev.*, vol. 14, no. 3, pp. 281–304, 2023.

[11] A. Goel, A. J. Baliga, D. Rangarajan, and B. Lussier, “Technology use in B2B sales: Examining the extant literature and identifying future research opportunities using morphological analysis,” *J. Pers. Sell. Sales Manag.*, vol. 45, no. 1, pp. 82–98, 2025.

[12] M. A. Hossain et al., “Digital transformation empowerment capabilities in public service systems,” J. Comput. Inf. Syst., pp. 1–23, 2025, doi: 10.1080/08874417.2025.2527293. https://doi.org/10.1080/08874417.2025.2527293

[13] A. B. Bakker, E. Demerouti, and A. Sanz-Vergel, “Job demands–resources theory: Ten years later,” *Annu. Rev. Organ. Psychol. Organ. Behav.*, vol. 10, no. 1, pp. 25–53, 2023.

[14] R. R. Ahmed, M. Azam, J. A. Qureshi, A. R. Hashem, V. Parmar, and N. Z. Md Salleh, “The relationship between internal employer branding and talent retention: A theoretical investigation for the development of a conceptual framework,” *Front. Psychol.*, vol. 13, p. 859614, 2022.

[15] D. V. Banker, S. Garg, and M. Maggon, “Virtual leadership: Bibliometrics, framework-based systematic review, and future agenda,” South Asian J. Bus. Manag. Cases, vol. 12, no. 3, pp. 300–332, 2023. https://doi.org/10.1177/22779779231206500

[16] D. Varshney and N. K. Varshney, “Self-concept and job performance: The mediating role of resilience,” Int. J. Prod. Perform. Manag., vol. 73, no. 5, pp. 1563–1586, 2024. https://doi.org/10.1108/IJPPM-10-2022-0548

[17] G. Rahul Paul and S. Khalid Perwez, “Influence of quality of work life on psychological capital of organizational leaders using artificial neural networks: A study on learning in hybrid workplace,” *Learn. Organ.*, vol. 30, no. 5, pp. 630–647, 2023.

[18] T. S. Ragu-Nathan, M. Tarafdar, B. S. Ragu-Nathan, and Q. Tu, “The consequences of technostress for end users in organizations: Conceptual development and empirical validation,” Inf. Syst. Res., vol. 19, no. 4, pp. 417–433, 2008. https://doi.org/10.1287/isre.1070.0165

[19] G. La Torre, A. Esposito, I. Sciarra, and M. Chiappetta, “Definition, symptoms and risk of techno-stress: A systematic review,” *Int. Arch. Occup. Environ. Health*, vol. 92, no. 1, pp. 13–35, 2019.

[20] A. Jaiswal *et al.*, “Teleworking: Role of psychological well-being and technostress in the relationship between trust in management and employee performance,” *Int. J. Manpower*, vol. 45, no. 1, pp. 49–71, 2024.

[21] W. B. Schaufeli and A. B. Bakker, “Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study,” J. Organ. Behav., vol. 25, no. 3, pp. 293–315, 2004. https://doi.org/10.1002/job.248

[22] J. K. Harter, F. L. Schmidt, and T. L. Hayes, “Business-unit-level relationship between employee satisfaction, employee engagement, and business outcomes: A meta-analysis,” *J. Appl. Psychol.*, vol. 87, no. 2, p. 268, 2002.

[23] T. A. Wright and R. Cropanzano, “Psychological well-being and job satisfaction as predictors of job performance,” J. Occup. Health Psychol., vol. 5, no. 1, pp. 84–94, 2000. https://doi.org/10.1037//1076-8998.5.1.84

[24] J. de Jonge and M. C. Peeters, “The vital worker: Towards sustainable performance at work,” *Int. J. Environ. Res. Public Health*, vol. 16, no. 6, p. 910, 2019.

[25] P. Spagnoli, M. Molino, D. Molinaro, M. L. Giancaspro, A. Manuti, and C. Ghislieri, “Workaholism and technostress during the COVID-19 emergency: The crucial role of the leaders on remote working,” Front. Psychol., vol. 11, p. 620310, 2020. https://doi.org/10.3389/fpsyg.2020.620310

[26] L. Rhoades and R. Eisenberger, “Perceived organizational support: A review of the literature,” *J. Appl. Psychol.*, vol. 87, no. 4, p. 698, 2002.

[27] P. M. Podsakoff, S. B. MacKenzie, J. Y. Lee, and N. P. Podsakoff, “Common method biases in behavioral research: A critical review of the literature and recommended remedies,” J. Appl. Psychol., vol. 88, no. 5, pp. 879–903, 2003. https://doi.org/10.1037/0021-9010.88.5.879

[28] J. F. Hair, W. C. Black, B. J. Babin, and R. E. Anderson, *Multivariate Data Analysis*, 8th ed. Boston, MA, USA: Cengage, 2019.

[29] A. F. Hayes, *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*. New York, NY, USA: Guilford Press, 2013.

[30] M. Tarafdar, C. L. Cooper, and J. F. Stich, “The technostress trifecta—techno eustress, techno distress and design: Theoretical directions and an agenda for research,” Inf. Syst. J., vol. 29, no. 1, pp. 6–42, 2019. https://doi.org/10.1111/isj.12169

[31] J. F. Hair, G. T. M. Hult, C. M. Ringle, and M. Sarstedt, *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*, 3rd ed. Thousand Oaks, CA, USA: Sage, 2022.

[32] E. Diener, R. A. Emmons, R. J. Larsen, and S. Griffin, “The satisfaction with life scale,” *J. Pers. Assess.*, vol. 49, no. 1, pp. 71–75, 1985.

[33] R. Huntington, S. Hutchison, and D. Sowa, “Perceived organizational support,” *J. Appl. Psychol.*, vol. 71, no. 3, pp. 500–507, 1986.

[34] K. Jiang, D. P. Lepak, J. Hu, and J. C. Baer, “How does human resource management influence organizational outcomes? A meta-analytic investigation of mediating mechanisms,” Acad. Manag. J., vol. 55, no. 6, pp. 1264–1294, 2012. https://doi.org/10.5465/amj.2011.0088

[35] B. I. Van der Heijden and A. De Vos, “Sustainable careers: Introductory chapter,” in *Handbook of Research on Sustainable Careers*, Cheltenham, U.K.: Edward Elgar, 2015, pp. 1–19.

[36] C. Fornell and D. F. Larcker, “Evaluating structural equation models with unobservable variables and measurement error,” *J. Mark. Res.*, vol. 18, no. 1, pp. 39–50, 1981.

[37] J. Henseler, C. M. Ringle, and M. Sarstedt, “A new criterion for assessing discriminant validity in variance-based structural equation modeling,” J. Acad. Mark. Sci., vol. 43, no. 1, pp. 115–135, 2015. https://doi.org/10.1007/s11747-014-0403-8

[38] H. Pirkkalainen, M. Salo, M. Tarafdar, and M. Makkonen, “Deliberate or instinctive? Proactive and reactive coping for technostress,” *J. Manage. Inf. Syst.*, vol. 36, no. 4, pp. 1179–1212, 2019.

[39] E. Mansuroğlu and A. P. Smith, “Technostress and employee well-being: A systematic review of empirical evidence,” *Comput. Hum. Behav. Rep.*, p. 100941, 2026.

[40] M. Salanova, S. Llorens, and E. Cifre, “The dark side of technologies: Technostress among users of information and communication technologies,” Int. J. Psychol., vol. 48, no. 3, pp. 422–436, 2013. https://doi.org/10.1080/00207594.2012.680460

[41] M. Tarafdar, Q. Tu, and A. T. Ragu-Nathan, “Impact of technostress on end-user satisfaction and performance,” *J. Manage. Inf. Syst.*, vol. 27, no. 3, pp. 303–334, 2010.

[42] S. E. Hobfoll, “Conservation of resources: A new attempt at conceptualizing stress,” *Am. Psychol.*, vol. 44, no. 3, p. 513, 1989.

[43] C. E. Ward and M. Harunavamwe, “The role of perceived organisational support on technostress and work–family conflict,” *SA J. Ind. Psychol.*, vol. 51, p. 2218, 2025.

[44] E. Marsh, E. Perez Vallejos, and A. Spence, “Digital workplace technology intensity: Qualitative insights on employee wellbeing impacts of digital workplace job demands,” Front. Organ. Psychol., vol. 2, p. 1392997, 2024. https://doi.org/10.3389/forgp.2024.1392997