THE IMPACT OF TECHNO-STRESSORS ON EMPLOYEES' PRODUCTIVITY IN MALAYSIA'S DIGITAL TRANSFORMATION ERA: THE MEDIATING ROLE OF COPING STRATEGIES

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Abstract
This study examines how Malaysian employees manage technostress and maintain productivity during the era of digital transformation, with a focus on the mediating role of coping strategies.Data were collected from 475 respondents in Malaysia employing convenience and snowball sampling. The study used Jamovi app version 2.4.11, cSEM package version 0.5.0, and ADANCO version 2.4 for data analysis, including Confirmatory Composite Analysis (CCA) and Partial Least Squares (PLS) path modeling. The results reveal that technostress significantly predicts coping strategies and negatively affects employee productivity. Specifically, techno-overload was found to negatively impact humor-based coping, while techno-complexity positively influenced humor-based coping and negatively correlated with denial-based coping.Additionally, techno-insecurity and techno-uncertainty were positively associated with denial-based coping. The findings underscore the critical role of coping strategies in mitigating the adverse effects of technostress on employee productivity.The study concludes that both technostress and coping mechanisms significantly impact productivity, highlighting the need for adaptive coping strategies to enhance workplace well-being and performance. These insights offer valuable guidance for decision-makers in implementing strategies to alleviate technostress and promote higher employee productivity.

Keywords: technostress; techno-stressors; coping strategies; employee productivity; digital transformation

1. Introduction

In today's fast-evolving organizational technology landscape, employees face increasing demands for computer proficiency (Wu et al., 2020). This leads to continual adaptation to new systems, resulting in what is commonly known as "technostress" (Nasirpouri Shadbad & Biros, 2022). Technology-related strain, termed "technostress," was initially coined by Craig Brod, framing it as "a contemporary disease of adaptation caused by an inability to cope with new computer technology healthily" (Brod, 1984). While workplace technologies enhance business processes, competitiveness, and offer greater flexibility to staff (Wu, 2017; Molino et al., 2020), they can also adversely impact well-being, job performance, user satisfaction, and employee productivity (Chang & Wu, 2023; Zhao et al., 2020). Interestingly, techno-stressors can also lead to positive outcomes, often associated with eustress, presenting challenges or opportunities (Hurbean et al., 2022).

Moreover, coping with uncertainty is increasingly crucial in an era of inevitable change and transformation (Durão et al., 2019). Long-term success hinges on employees' adaptability to rapid technological changes to maintain their competitive edge (Molino et al., 2020). In Malaysia, ongoing technology adoption and electronic service applications persist (Albalushi et al., 2020). Additionally, employees may utilizevarious tools to enhance workplace productivity and their success. Employees aiming to tap into future opportunities must familiarize themselves with new markets and technologies (Tarafdar et al., 2019; Hafeez et al., 2023). They must also leverage current markets and technological advancements to capitalize on success, potentially leading to technostress due to heightened demands and the complexity of work involving multiple technologies (Chang & Wu, 2023). A recent review highlighted the negative impact of technostress on six psychological and behavioral outcomes for employees, including productivity (Sarabadani et al., 2018).

Several international labor organizations have identified technostress as a threat to employee well-being, causing fatigue (Pflügner et al., 2021), anxiety (Ghosh, Bharadwaja, & Mukherjee, 2023), and physical or psychological effects (Dahabiyeh, Najjar, & Wang, 2022), subsequently reducing productivity (Pullins, Tarafdar, & Pham, 2020). Globally, digitalization and disruptions like COVID-19 have altered technology usage, leading to increased workloads (Chang & Wu, 2023) and the need to adopt new technologies, demanding cognitive and digital abilities (Delpechitre, Black, & Farrish, 2019). Recent studies estimate that workplace stress, including technostress, costs US businesses over $300 billion annually due to reduced productivity (Nasirpouri Shadbad & Biros, 2022). With digital transformation and its associated technostress being unavoidable in organizational work, it becomes crucial for both employees and organizations to develop mechanisms to mitigate its negative impacts (Hafeez et al., 2023; Kumar, Shankar, Shaik, Jain, &Malibari, 2023). Given the growing interest in understanding technostress effects on productivity, this study aims to bridge this gap.

While technostress and coping strategies have been extensively studied internationally, limited attention has been given to their implications for national policy in Malaysia. The *MyDIGITAL Blueprint (2021–2030)*, *Industry4WRD*, and the *Digital Economy Masterplan* all emphasize the need for a digitally resilient workforce to sustain competitiveness in rapid technological change. However, little empirical evidence links technostress, coping strategies, and employee productivity to these national policy objectives. Therefore, this study is positioned to contribute to theory by applying the stress–coping framework in the Malaysian digital economy and inform workforce and organizational policies that can support sustainable productivity in alignment with Malaysia’s digital transformation agenda.

The impact of technostress on employee productivity, particularly in Peninsular Malaysia, remains unknown. Drawing from coping theory (Lazarus & Folkman, 1984), which emphasizes cognitive and behavioral efforts to manage internal or external demands, this study explores employees' coping strategies to alleviate technostress and uphold productivity levels in Malaysia (Dutta & Mishra, 2023; Lathabhavan& Griffiths, 2023). Furthermore, this study extends prior research on coping strategies that mitigate the adverse effects of techno-stressors. It examines how reactive coping strategies enable employees to address technostress and sustain optimal productivity. This study seeks to understand technostress's effects on digital transformation-era employee productivity. The study examines how coping methods mediate technostress and employee productivity.

Technostress research participants may use different coping techniques (Hauk et al., 2019). Scholars often utilise problem- and emotion-focused coping techniques to reduce technological stress. Problem-focused coping entails recognising issues, brainstorming solutions, assessing them, and acting (Alieva & Powell, 2023). Problem-focused coping reduces techno-stressor-related occupational stress, according to research.Instead, emotion-focused coping manages or changes perceived threats' feelings without affecting the situation's meaning (Pirkkalainen et al., 2019). Avoidance, reduction, distance, selective attention, behavioural disengagement, and positive comparisons are examples (Folkman et al., 2004). Reactive coping methods from these approaches may buffer stress and strain in IT-enabled productivity (Pirkkalainen et al., 2019) and modulate techno-stresses and productivity results (Zhao, 2020). A research of 3,362 German knowledge workers found a competitive mediation effect where productivity demands negate the indirect effect (Becker, 2021).

Managing technostress in the workplace involves several coping methods that work depending on fit and context. This study seeks to analyse technostress and productivity in employees. This dual approach takes into account individual variations and stressor adaptation, providing useful insights for intervention strategy creation. Overall, Figure 1 demonstrates this study's conceptual structure. The graphic below displays this study's hypotheses.

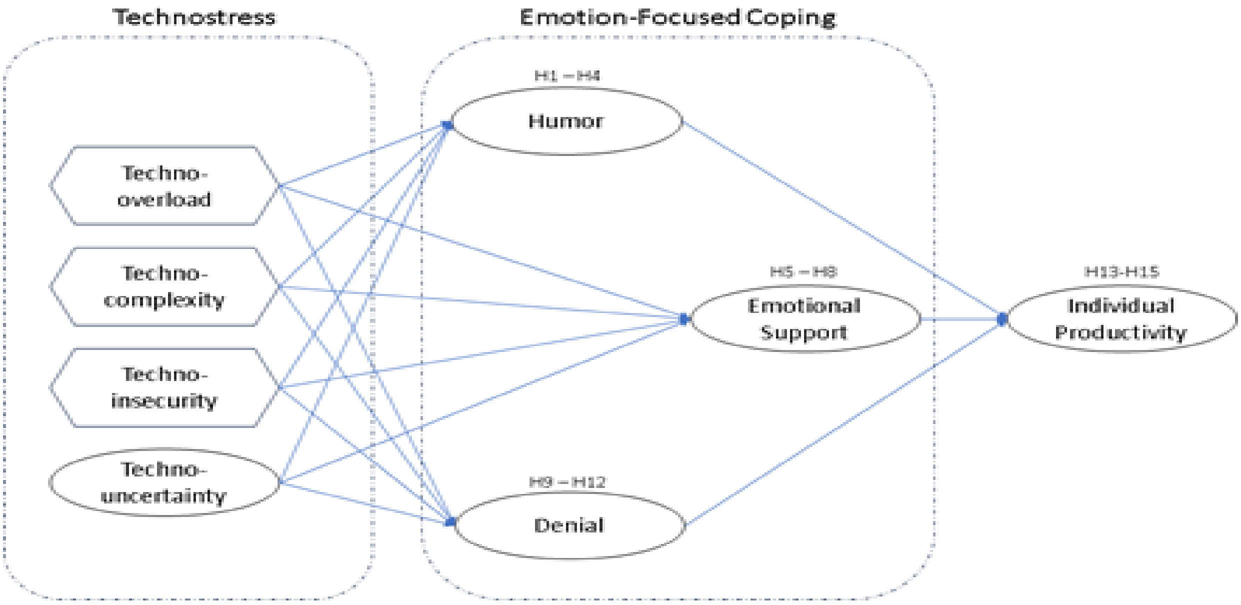

Figure 1. Conceptual Framework.

This study draws primarily on the stress–coping model (Lazarus & Folkman, 1984), which explains how individuals appraise and respond to stressors through problem-focused and emotion-focused strategies. Within the context of technostress, specific stressors such as techno-overload, techno-complexity, techno-insecurity, and techno-uncertainty can trigger distinct coping mechanisms. For instance, techno-overload may lead employees to adopt problem-focused strategies such as time management, while techno-insecurity may provoke emotion-focused strategies such as denial. Integrating this framework with the Job Demands–Resources (JD-R) model provides further insight by demonstrating how workplace and policy-level interventions can reduce job demands while increasing resources such as training, digital literacy, and psychosocial support.From a policy perspective, this integration is significant because it positions technostress as an organizational challenge and a national workforce development issue. By linking coping strategies to productivity, this framework highlights how government initiatives such as digital upskilling programs, workplace well-being policies, and HRD strategies can buffer employees against digital strain and sustain productivity in Malaysia's evolving digital economy.

2. Methods

The population of this study consists of individuals between 20 and 65 years old. These participants are working adults. The data was collected using a questionnaire. Prior to data collection, the questionnaire was validated, and a pilot study was conducted to ensure the reliability and validity of the measurement. After confirming the reliability and the validity, the study conducted the data collection. Data was collected using a structured, self-administered questionnaire given via Google Forms. Voluntary involvement was a significant feature of this study; participants were assured of anonymity to reduce evaluation fear and so mitigate any common method bias. The questionnaire's design required that all questions be answered, eliminating the possibility of missing data. To collect a broad and relevant sample, purposive sampling focused on MBA students from a top Malaysian university, followed by snowball sampling, leveraging personal networks to increase the diversity of the respondent pool. The strategic utilization of purposive and snowball sampling approaches was successful and economical, resulting in a high response rate. At the end of the data collection period, a total of 476 responses were collected, which strengthened the reliability and validity of this study.The focus on MBA students and their professional networks is justified because these respondents represent Malaysia's emerging managerial and professional workforce, most directly impacted by national digital transformation policies such as MyDIGITAL. Their experiences provide insights into how technostress is navigated by those expected to lead and sustain Malaysia's digital economy.The survey questionnaire starts with a consent form. Then, it proceeded with the filter questions, such as assessing the sentiment of the company's digital transformation effort. The Likert scale ranges from "1 = Disagree Strongly" to "5 = Agree Strongly" for all items. The study examined eight main variables, including individual productivity, emotion-focused coping, and technostress subdimensions (Tarafdar et al., 2007; Cobb et al., 2016; Fuglseth &Sørebø, 2014; Tarafdar et al., 2007). Emotion-focused coping includes humour, emotional support, and denial. Technostress has four dimensions: overload, complexity, insecurity, and unpredictability. Simmering et al. (2015) used the blue attitude scale as a marker variable to analyse standard method variation.

Assessments of reliability and validity ensured methodological rigour. All reflecting constructs had above-recommended Cronbach's alpha, composite reliability, and AVE values, demonstrating good internal consistency and convergent validity. We analysed the data using Jamovi app version 2.4.11 (The Jamovi project, 2023), cSEM package version 0.5.0 (Rademaker & Schuberth, 2020), and ADANCO version 2.4, a free composite-based structural equation modelling software from the University of Twente. We started with demographics, then exploratory data analytics to clean the data. We performed confirmatory composite analysis (CCA), a PLS path modelling with consistent estimate. When using PLS for reflective constructions, the PLSc corrects estimates. This adjustment maintains route coefficient, inter-construct correlation, and indicator loading consistency (Dijkstra & Henseler, 2015b). A research by Fuglseth and Sørebø (2014) identified technostress subdimensions of techno-overload, techno-complexity, and techno-insecurity as formative constructs, justifying the usage of cSEM and ADANCO. CCA evaluates structural composite models with reflecting and formative constructs with the same rigour as CFA in conventional factor models (Schuberth et al., 2018).

3. Results

This section presents the results of data analysis. It starts by presenting the demographic profiles, followed by the measurement model assessment and the structural model assessment.

3.1. Demographic Profiles

In this section, the data examination was conducted, and the profile of the respondents is presented. The data examination was conducted by examining outliers, missing values, and multicollinearity. During data cleaning, 18 outliers were found and eliminated from the dataset to avoid potential skewing of results (Field, 2024). Furthermore, 73 responses were removed due to straight-lining behaviour, indicating low engagement or disingenuous participation when respondents repeatedly choose the same response option across numerous questions (Ward & Meade, 2023). Following these steps, the residual dataset included 385 valid responses. The gender distribution of the respondents was diverse, with 110 women and 275 men participating. The participants ranged from 20 to 65 years, with those aged 35 to 39 accounting for 23.3% of all participants. Respondents' educational backgrounds were primarily tertiary, with 67.9% holding bachelor's degrees. A sizable proportion of respondents (82.1%) worked in management and professional sectors, showing high involvement in positions requiring decision-making. The majority (76.5%) worked in the private sector, specifically in organizations without subsidiaries, although a sizable proportion (46.2%) worked in enterprises with more than 1000 people. Local companies received approximately 61.6% of answers, compared to global corporations (38.4%). These companies were created for a median of 30 years. Geographically, respondents were spread over East and West Malaysia, including foreign and regional locations.

3.2. Measurement Model Assessment

As previously mentioned, the measurement items for the constructs were sourced from three distinct studies. The measurement items about technostress were drawn from Fuglseth and Sørebø (2014), who conceptualized technostress subdimensions, namely techno-overload, techno-complexity, and techno-insecurity, as emergent constructs, while maintaining techno-uncertainty as a reflective construct. All three emotion-focused subfactors were reflective measures adopted from Cobb et al. (2016). The reflective measurements for individual productivity were taken from Tarafdar et al. (2007). The remaining data were analyzed using the cSEM package and ADANCO. The PLS path model parameter estimates were obtained by the (cSEM) function with bootstrap-based tests of overall model fit (set to 5,000 runs) (Dijkstra & Henseler, 2015a), consistent PLS (PLSc) to estimate factor models (Dijkstra &Henseler, 2015b), and the heterotrait-monotrait ratio of correlations for discriminant validity (Henseler et al., 2015).

We first ran a CCA to evaluate the composite model. We then estimated our proposed model. Evaluating the overall fit of a model alongside a saturated structural model (in which all constructs are allowed to be freely correlated) proves valuable in validating both the measurement and composite models (Henseler, 2021). Any potential model misfit can be solely attributed to misspecifications in the composite and/or measurement models (Castillo et al., 2023). We maintained the inner weighting scheme in the cSEM package to factor as those used by ADANCO. The results suggest a misspecification in the composite models, as evidenced by SRMR and dL values surpassing the respective 95% quantile (HI95), except for dG and dML (Table 1). The SRMR value falls below 0.08, signaling an acceptable model fit (Hu & Bentler, 1999).

The composite constructions and their indicators were evaluated after comparing the model's adequacy to a saturated structural model. Given that several of the components in our study were identified as composites, a bootstrap analysis was used with 5,000 iterations to investigate weights, composite loadings, and their relevance (Benitez et al., 2020).Because the weights were calculated using Mode B (i.e., regression weights), potential multicollinearity issues were investigated by examining the variance inflation factor (VIF). The weights' VIF values ranged from 1.201 to 2.314, which were under the suggested threshold of 5, indicating no multicollinearity issues. Furthermore, most weights and loadings were statistically significant at the 0.1% level, with values ranging from 0.317 to 0.959 and 0.497 to 0.964, respectively, as delineated in Table 2.

3.3. Figures, Tables, and Schemes

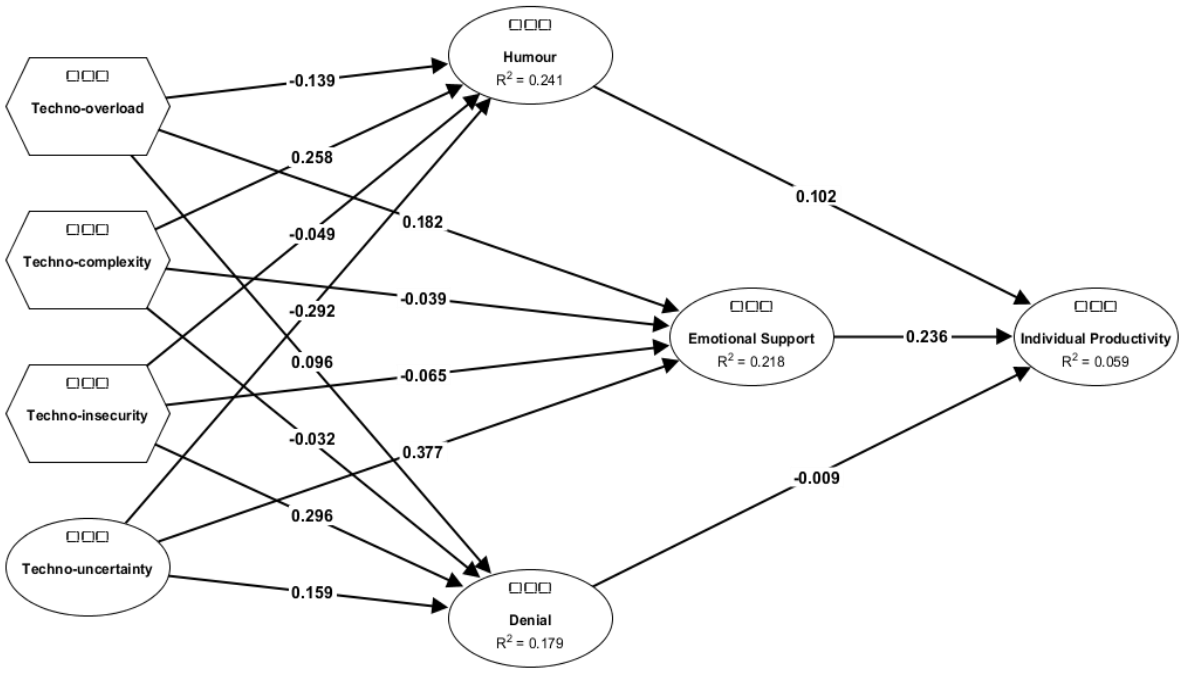

Figure 2. Structural model (Unstandardized Loading).

Table 1. Results of the confirmatory factor/composite analysis.

Discrepancy	Value	HI95	Conclusion
dG	0.216	0.255	Supported
SRMR	0.058	0.045	Reject
dL	0.843	0.501	Reject
dML	1.131	1.448	Supported

Furthermore, the coefficient of determination (R2) values provide information on the proportion of variation explained by our conceptual model. Emotional coping techniques such as humour (R2 = 0.241) and emotional support (R2 = 0.218) have a greater explanatory power than denial coping. Individual productivity (R2 = 0.059) has a smaller explained variance, implying the presence of extra unexplained factors. These findings highlight the complex relationship between technostress, coping methods, and productivity, underlining the need to address technostress and develop adaptive coping mechanisms to improve workplace well-being and performance. Figure 2 summarizes the results of our hypothesis testing using ADANCO 2.4 (Henseler, 2023).

Table 2. This is a table. Tables should be placed in the main text near the first time they are cited.

Code	Construct/Indicator	Item Removed	Mean	SD	ρA	AVE	VIF	Weight	Loading
Individual Productivity"(1: Disagree strongly, 5 Agree strongly) (reflective measurement model, Mode A consistent (PLSc), Prod02 as dominant indicator)					0.897	0.713			
	This technology helps…								
Prod01	...to improve the quality of my work	X							
Prod02	…to improve my productivity		4.410	0.885				0.317***	0.715***
Prod03	…to accomplish more work than would otherwise be possible	X							
Prod04	…me to perform my job better		4.270	0.893				0.370***	0.835***
Prod05	Overall, I feel that information system technology has effectively enhanced my job productivity"		4.400	0.801				0.427***	0.964***
Coping Strategy:"Humour (1: Disagree strongly, 5: Agree strongly) (reflective measurement model, Mode A consistent (PLSc), ECop10 as dominant indicator)					0.885	0.791			
	I have been…								
ECop10	…making jokes about it		2.320	1.275				0.514***	0.864***
Ecop11	…making fun of the situation"		2.150	1.247				0.543***	0.914***
Coping Strategy:"Emotional Support (1: Disagree strongly, 5: Agree strongly) (reflective measurement model, Mode A consistent (PLSc), ECop14 as dominant indicator)					0.722	0.555			
	I have been…								
Ecop14	…getting emotional support from others		3.920	0.924				0.518***	0.677***
Ecop15	…getting comfort and understanding from someone"		4.120	0.838				0.618***	0.808***
Coping Strategy: Denial (1: Disagree strongly, 5: Agree strongly) (reflective measurement					0.795	0.637			

model, Mode A consistent (PLSc), ECop18 as dominant indicator)							
	I have been…						
Ecop18	…saying to myself "this isn't real"		2.930	1.334		0.621***	0.887***
Ecop19	…refusing to believe that it has happened		2.600	1.379		0.489***	0.698***
Technostress:“Techno-overload (1: Disagree strongly, 5: Agree strongly) (composite model, Mode B, Ov02 as dominant indicator)							
Ov01	I have a higher workload because of increased technology complexity	X					
	I am forced by this technology to…						
OV02	...work much faster		4.100	0.945	1.557	0.450*	0.842***
Ov03	…to do more work than I can handle		4.020	0.916	1.763	0.485*	0.876***
Ov04	...work with very tight time schedules		4.090	0.954	1.710	0.188n.s	0.745***
Ov05	...change my work habits to adapt to new technologies”		4.220	0.804	1.201	0.114n.s	0.497***
Technostress:“Techno-complexity (1: Disagree strongly, 5: Agree strongly) (composite model, Mode B, Cplx04 as dominant indicator)							
Cplx01	I need a long time to understand and use new technologies	X					
Cplx02	I find new recruits to this organization know more about computer technology than I do	X					
Cplx03	I often find it too complex for me to understand and use new technologies	X					
Cplx04	I do not know enough about this technology to handle my job satisfactorily		2.290	1.198	2.314	0.054n.s	0.777***
Cplx05	I do not find enough time to study and upgrade my technology skills		2.420	1.313	2.314	0.959***	0.999***
Cplx02	I find new recruits to this organization know more about computer technology than I do”	X					
Technostress:“Techno-insecurity							

(1: Disagree strongly, 5: Agree strongly) (composite model, Mode B, Ins02 as dominant indicator)									
Ins01	I have to constantly update my skills to avoid being replaced	X							
Ins02	I am threatened by coworkers with newer technology skills		3.260	1.285			1.706	-0.008n.s	
Ins03	I do not share my knowledge with my coworkers for fear of being replaced		2.470	1.267			1.548	0.688***	
Ins04	I fell constant threat to my job security due to new technologies		2.950	1.253			1.831	0.048n.s	
Ins05	I feel there is less sharing of knowledge among coworkers for fear of being replaced		2.910	1.343			1.703	0.440*	
Ins01	I have to constantly update my skills to avoid being replaced”	X							
Technostress:“Techno-uncertainty (1: Disagree strongly, 5: Agree strongly) (reflective measurement model, Mode A consistent (PLSc), Unc02 as dominant indicator)					0.881	0.706			
Unc01	There are always new developments in the technologies we use in our organization	X							
Unc02	There are constant changes in computer software in our organization		4.140	1.012				0.347***	0.782***
Unc03	There are constant changes in computer hardware in our organization		4.100	1.104				0.394***	0.889***
Unc04	There are frequent upgrades in computer networks in our organization”		4.100	1.048				0.375***	0.846***
Technostress:“Techno-invasion (1: Disagree strongly, 5: Agree strongly) (composite model, Mode B, Ov02 as dominant indicator)									
Inv01	I spend less time with my family due to this technology	X							

Inv02	I feel my personal life is being invaded by this technology	X
Inv03	I have to be in touch with my work even during my vacation due to this technology	X
Inv04	I have sacrificed my vacation and weekend time to keep current on new technologies”	X

* †p < 0.10, *p < 0.05, **p < 0.01, ***p < 0.001, one-tailed test

The results of the hypothesis testing reveal important insights into the relationship between technostress, emotional coping strategies, and individual productivity. Notably, the beta coefficients and related effect sizes demonstrate the effects of different technostress characteristics on emotional coping mechanisms. Techno-overload has an adverse effect on humor-based coping ($b = -0.139$, $t = -2.177$, $p < 0.05$). In contrast, techno-complexity positively influences humor coping ($b = 0.258$, $t = 4.404$, $p < 0.001$) and has a negative association with denial coping (-0.032, $t = -0.506$, $p > 0.10$). Techno-insecurity and techno-uncertainty positively correlated substantially with denial coping ($b = 0.296$, $t = 4.761$, $p < 0.001$; $b = 0.159$, $t = 2.439$, $p < 0.05$). Emotional coping mechanisms, especially emotional support, significantly increase individual productivity ($b = 0.236$, $t = 3.136$, $p < 0.001$).

4. Discussion

Numerous studies have identified technology-induced stress, or technostress, as a source of anxiety (Farrish & Edwards, 2020; Nasirpouri Shadbad & Biros, 2022). Given the extensive usage of ICTs in the modern workplace, the impact of technostress due to digital transformation in Malaysia appears to be less than that indicated in a sample study by La Torre (2020), which concentrated on highly advanced technology students. This disparity may be due to the variable amount of technology used in different job contexts throughout Peninsular Malaysia.

In organizational settings, technostress is caused by individuals' attempts to adjust to quickly emerging ICTs and their use demands. This causes various negative results, including discontent, weariness, anxiety, and overwork, ultimately lowering individual productivity. This can take various forms, including overload, invasion of personal time, complexity, role ambiguity, and instability. Previous research has shown the logical link between technological pressures and decreased productivity. Tarafdar et al (2011) identified five techno-stressors that reduce organizational productivity. A study of 233 employees from various organizational levels found that technostress had a detrimental impact on productivity, consistent with previous research. Similarly, studies by Farrish and Edwards (2020) found an inverse link between technostress and performance in school among students.

Interestingly, while techno-stressors have a negative impact on productivity, there is also a positive association, as established in the research. Alam (2015) found that increasing job demands through technological stress could increase productivity. This data supports ideas about eustress and challenge hindrance stressors as potentially helpful features of stressful events. Stress that provides a challenge or opportunity can motivate and boost productivity. Job expectations may inspire workers to work more and go above and beyond to impress superiors (Ramos-Galarza & Acosta-Rodas, 2019). According to the study, technology stress reduces employee productivity, although coping techniques are crucial. Zhao's [64] study linked coping mechanisms to employee productivity, supporting this conclusion. Using coping methods can reduce the detrimental effects of stress on employment (Nguyen, Rundle-Thiele, Malik, & Budhwar, 2023). The study also shows that coping mechanisms reduce the influence of technology stress on employee productivity: earlier studies, notably Zhao (2020), link coping methods to employee productivity. Coping strategies reduce stress and increase job performance (Nguyen, Rundle-Thiele, Malik, & Budhwar, 2023).

Coping mechanisms mediate and moderate technostress (Sihag, 2021; Yener et al., 2021). Coping buffers techno-stressors' interaction and adverse effects (Sakr, Zotti, & Khaddage-Soboh, 2019; Yadav, Pandita, & Singh, 2022). Pirkkalainen et al. (2019) found that distress venting and distance from IT adversely mitigated the stress-IT-enabled productivity association. According to research, coping methods also impact the association between stress and psychological health or job results (Pullins et al., 2020; Sihag, 2021). Reactive coping is crucial for handling pressures and attaining goals. Thus, coping mechanisms help people manage technology at work, boosting productivity. A hybrid strategy using both tactics may work well.

This study has substantial implications for Malaysian governments, organisations, and higher education institutions, particularly in the context of the digital transformation agenda. Policy-wise, national efforts like the MyDIGITAL Blueprint (2021–2030) should include digital health and resilience programs that address workplace technostress. Policymakers may prevent productivity loss by including these factors in HRD programs. Policies that require ongoing digital upskilling and literacy will also reduce techno-insecurity and techno-uncertainty. Coping skills training in national workforce development frameworks would improve employee flexibility, keeping Malaysia competitive in a digital economy. Organisations must create internal regulations to protect employees from digitalization's harmful effects. Practical remedies include “right to disconnect” legislation to reduce techno-invasion and preserve work–life balance. Organisations could also invest in organised digital literacy and training programs to decrease techno-complexity, as well as counselling and stress management workshops to improve adaptive coping. Such efforts boost human well-being and organisational productivity in a fast-paced digital world.

Higher education institutions, especially universities and professional training providers, are crucial. Coping strategy education and resilience-building modules in MBA and IT curricula can equip future managers and knowledge workers with the technical and psychological skills to navigate Malaysia's digital transformation. This integration prepares the next generation of leaders to confront technostress strategically. These policy-oriented approaches demonstrate that technostress is a structural and systemic issue that demands coordinated policy, organisational, and educational responses. Managing technostress at these levels will boost Malaysia's worker resilience and digital productivity. Employees using coping methods are more likely to face techno-stressors head-on (Malik, Tripathi, Kar, & Gupta, 2022). They can adjust to technology changes more effectively and boost production with this proactive strategy (Jensen & van der Voordt, 2020). This controls emotional reactions to technological pressures. This decreases overload, anxiety, and frustration, improves mood, focus, and motivation, and promotes productivity (McDaniel, O'Connor, & Drouin, 2021).

5. Conclusion

This study provides empirical evidence that both technostress and coping techniques substantially impact employee productivity, either through direct or indirect means. The variables discussed and examined in this study can benefit business owners, employers, and employees in Malaysia and globally. This study's findings should be used to boost employee productivity by establishing a system that inspires workers and encourages them to give their utmost in all they do. The findings also help identify extra components and limitations that can be explored in upcoming research studies.In sum, this study contributes on three levels. Theoretically, it extends the stress–coping model by contextualizing technostress and coping strategies within Malaysia's digital transformation agenda. Practically, it offers organizations actionable insights into how coping strategies can be leveraged to maintain productivity in digitally intensive workplaces. From a policy perspective, it provides recommendations that align with national frameworks such as *MyDIGITAL*, emphasizing the importance of integrating digital upskilling, resilience programs, and workplace well-being policies into Malaysia's broader digital economy strategy.

Disclosure

The authors declared no conflicts of interest. No funding was received for this study.

Supplementary Materials:

Table S1: PLS-PM results for the estimated model.

Relationship	**Beta coefficient (*t*-value)**	**Effect Size (f^2)**
Technostress: Techno-overload --> Emotional Coping: Humour	-0.139 (-2.177)*	0.020
Technostress: Techno-overload --> Emotional Coping: Emotional Support	0.182 (2.046)*	0.034
Technostress: Techno-overload --> Emotional Coping: Denial	0.096 (1.613)n.s	0.009
Technostress: Techno-complexity --> Emotional Coping: Humour	0.258 (4.404)***	0.079
Technostress: Techno-complexity --> Emotional Coping: Emotional Support	-0.039 (-0.548)n.s	0.002
Technostress: Techno-complexity --> Emotional Coping: Denial	-0.032 (-0.506)n.s	0.001
Technostress: Techno-insecurity --> Emotional Coping: Humour	-0.050 (-0.795)n.s	0.003
Technostress: Techno-insecurity --> Emotional Coping: Emotional Support	-0.065 (-1.045)n.s	0.005
Technostress: Techno-insecurity --> Emotional Coping: Denial	0.296 (4.761)***	0.094
Technostress: Techno-uncertainty --> Emotional Coping: Humour	-0.292 (-4.030)***	0.080
Technostress: Techno-uncertainty --> Emotional Coping: Emotional Support	0.377 (4.908)***	0.130
Technostress: Techno-uncertainty --> Emotional Coping: Denial	0.159 (2.439)*	0.022
Emotional Coping: Humour --> Individual productivity	0.102 (2.252)*	0.011
Emotional Coping: Emotional Support --> Individual productivity	0.236 (3.136)***	0.057
Emotional Coping: Denial --> Individual productivity	-0.008 (-0.139)n.s	< 0.001
Coefficient of determination	**R^2**	**Adjusted R^2**
Emotional Coping: Humour	0.241	0.233
Emotional Coping: Emotional Support	0.218	0.210

Relationship	Beta coefficient (*t*-value)	Effect Size (f^2)
Emotional Coping: Denial	0.179	0.170
Individual productivity	0.059	0.052

Note: *t*-values in parentheses. 95% percentile bootstrap confidence interval in square bracket (based on n = 5,000 subsamples) $^{\dagger}p< 0.10$, $^{*}p< 0.05$, $^{**}p< 0.01$, $^{***}p< 0.001$, one-tailed test.

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