

DIGITAL FATIGUE AND EMPLOYEE ENGAGEMENT IN MULTINATIONAL FIRMS IN RIVERS STATE, NIGERIA

Dr. Helen Nneka Ofor & Dr. Kalapapa Benjamin Dappa

helen.ofor@iaue.edu.ng, kalapapa.dappa@iaue.edu.ng

**Department of Employment Relations and Human Resource Management,
Faculty of Administration and Management,
Ignatius Ajuru University of Education, Rumuolumeni, Port Harcourt, Rivers State,
Nigeria**

Abstract

This study examined the relationship between digital fatigue and employee engagement in selected multinational firms in Rivers State, Nigeria. The increasing use of digital technologies, virtual communication, and online work platforms has improved organisational efficiency but has also intensified digital fatigue among employees. Digital fatigue was examined through information overload and technostress, while employee engagement was measured using dedication and vigor. The study was anchored on the Job Demands-Resources (JD-R) Theory. A correlational research design was adopted, with data collected from employees of selected multinational firms in Rivers State. The study population comprised 620 employees drawn from 8 purposively selected multinational firms in Rivers State, Nigeria, and a sample size of 243 was determined using the Taro Yamane formula. A total of 243 questionnaires were distributed, 228 (93.83%) were retrieved and used for analysis, while 15 (6.17%) were not returned. Data were analyzed using descriptive statistics and the Pearson Product Moment Correlation Coefficient (PPMCC) at a 0.05 level of significance. The findings showed that information overload and technostress were strongly and negatively related to dedication and vigor. The study concludes that digital fatigue reduces employee engagement by diminishing employees' enthusiasm and energy at work. It recommends adopting clear digital communication policies, providing technological support and stress management programmes, promoting healthy digital work practices, and strengthening employee wellness initiatives to reduce digital fatigue and improve engagement.

Keywords: *Digital Fatigue, Information Overload, Technostress, Employee Engagement, Vigor.*

INTRODUCTION

The increasing adoption of digital technologies has transformed workplace operations across industries. Organisations now rely on digital communication tools, cloud-based systems, and collaborative platforms to improve efficiency, coordination, and decision-making. These technologies have also supported remote and hybrid work arrangements, enabling employees to work across geographical boundaries. While digitalization has enhanced organisational performance, it has also increased employees' exposure to continuous online interactions, creating new psychological and occupational challenges (Bahamondes-Rosado et al., 2023).

Multinational firms are among the organisations most affected by this transformation because their operations depend heavily on digital communication across countries and time zones. Employees are expected to respond promptly to emails, virtual meetings, and instant messages while managing multiple digital tasks simultaneously. Although these technologies improve flexibility and productivity, they also increase cognitive workload and continuous connectivity, exposing employees to higher levels of work-related stress (Bahamondes-Rosado et al., 2023).

One emerging challenge associated with digital work is digital fatigue, which refers to the mental, emotional, and physical exhaustion resulting from prolonged use of digital technologies and continuous online engagement. Employees who spend long hours attending virtual meetings,

processing digital information, and responding to electronic communications are more likely to experience fatigue and reduced well-being. A systematic review by Bahamondes-Rosado et al. (2023) identified techno-fatigue as one of the most common outcomes of intensive technology use in the workplace.

Digital fatigue is commonly reflected through information overload and technostress. Information overload occurs when employees receive more digital information than they can effectively process, resulting in mental exhaustion, reduced concentration, and poor decision-making. In multinational firms, employees often manage large volumes of emails, reports, notifications, and online communications, making it difficult to prioritize tasks effectively. Excessive information processing has been linked to increased stress and reduced work effectiveness (Ioannou, 2023).

Technostress, on the other hand, refers to the stress employees experience as a result of continuous interaction with digital technologies and the demands associated with adapting to new systems. Rapid technological changes, system complexity, and expectations of constant availability can leave employees feeling overwhelmed and emotionally exhausted. Research shows that technostress depletes employees' psychological resources and may reduce their motivation and overall work effectiveness (Juyumaya & Torres, 2023).

These challenges have important implications for employee engagement, which reflects employees' enthusiasm, energy, and commitment to their work. As organisations continue to expand their use of digital technologies, understanding how information overload and technostress influence employee engagement has become increasingly important, particularly in multinational firms where digital communication is central to daily operations.

Statement of the Problem

The growing reliance on digital technologies has fundamentally changed how employees perform their work, particularly in multinational firms where communication, coordination, and decision-making are largely technology driven. Although digital platforms have improved organisational efficiency and flexibility, they have also increased employees' exposure to continuous connectivity, frequent virtual meetings, excessive electronic communication, and heavy information processing. These digital demands have contributed to the emergence of digital fatigue, a condition associated with cognitive exhaustion, emotional strain, and reduced workplace well-being (Bahamondes-Rosado et al., 2023).

Digital fatigue has become an important organisational concern because it is commonly manifested through information overload and technostress. Employees who are required to process excessive amounts of digital information while adapting to rapidly changing technologies may experience mental exhaustion, reduced concentration, stress, and declining motivation. Recent studies have shown that prolonged exposure to technology-related demands depletes employees' psychological resources and adversely affects their well-being, work attitudes, and job performance (Pansini et al., 2023; Bahamondes-Rosado et al., 2023).

Employee engagement, reflected in employees' dedication and vigor, is essential for sustaining productivity, innovation, and organisational competitiveness. However, increasing digital work demands may undermine these positive work behaviours by reducing employees' energy, enthusiasm, and commitment to their jobs. As organisations continue to expand their use of digital technologies, understanding how digital fatigue influences employee engagement has become increasingly important.

Despite the growing body of research on technostress and digital work, existing studies have focused predominantly on employee burnout, psychological well-being, remote work, and technology acceptance in developed economies (Bahamondes-Rosado et al., 2023; Nastjuk et al., 2023). Comparatively, empirical evidence on digital fatigue as a broader construct, particularly its dimensions of information overload and technostress, remains limited in the Nigerian context. More specifically, there is a paucity of studies examining how these dimensions influence employees' dedication and vigor in multinational firms operating in Rivers State.

This gap in the literature makes it difficult for managers and policymakers to develop evidence-based strategies for minimizing digital fatigue and sustaining employee engagement in technology-driven workplaces. It is this empirical and contextual gap that necessitated this study, which investigates the relationship between digital fatigue and employee engagement in multinational firms in Rivers State.

Purpose of the Study

The main purpose of this study is to examine the relationship between digital fatigue and employee engagement in multinational firms in Rivers State. Specifically, the study seeks to:

- i. Examine the relationship between information overload and dedication in multinational firms in Rivers State.
- ii. Determine the relationship between information overload and vigor in multinational firms in Rivers State.
- iii. Examine the relationship between technostress and dedication in multinational firms in Rivers State.
- iv. Determine the relationship between technostress and vigor in multinational firms in Rivers State.

Research Questions

The following research questions guide the study:

- i. What is the relationship between information overload and dedication in multinational firms in Rivers State?
- ii. What is the relationship between information overload and vigor in multinational firms in Rivers State?
- iii. What is the relationship between technostress and dedication in multinational firms in Rivers State?
- iv. What is the relationship between technostress and vigor in multinational firms in Rivers State?

Research Hypotheses

The following null hypotheses will be tested in the study:

- H01: There is no significant relationship between information overload and dedication in multinational firms in Rivers State.
- H02: There is no significant relationship between information overload and vigor in multinational firms in Rivers State.
- H03: There is no significant relationship between technostress and dedication in multinational firms in Rivers State.
- H04: There is no significant relationship between technostress and vigor in multinational firms in Rivers State.

Conceptual Framework

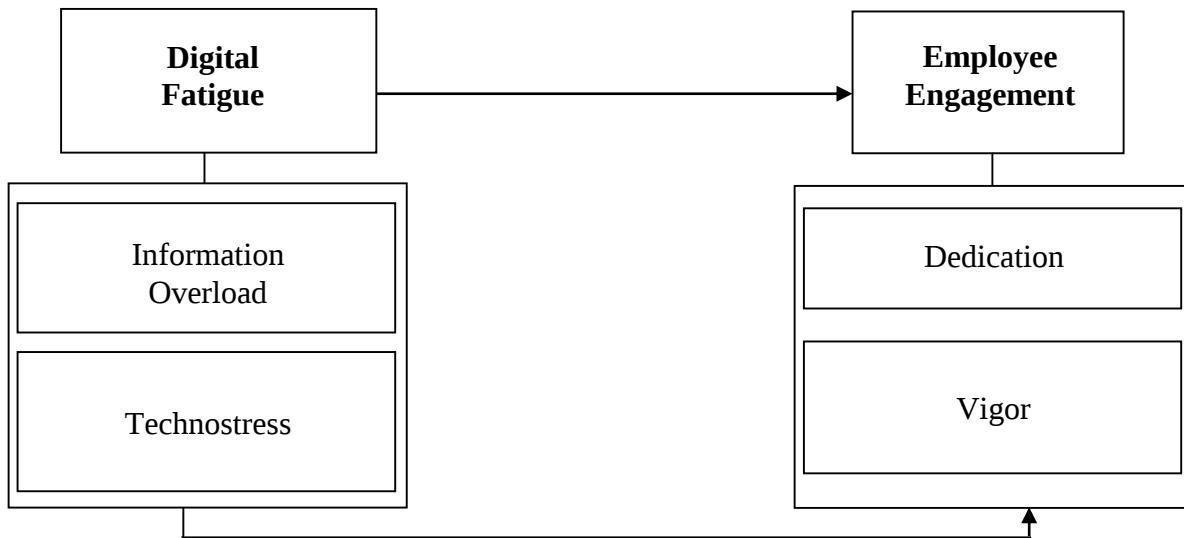


Figure 1: Conceptual Framework Showing the Relationship between Digital Fatigue and Employee Engagement in Multinational Firms in Rivers State.

Source: The dimensions of Digital Fatigue, comprising Information Overload and Technostress, were adapted from Tarafdar et al. (2007), Rasool et al. (2022), Wang et al. (2022), and Bahamondes-Rosado et al. (2023). The measures of Employee Engagement, comprising Dedication and Vigor, were adapted from Schaufeli et al. (2002) and Schaufeli and Bakker (2004), and supported by recent studies on employee engagement in digital work environments by Marsh et al. (2024).

LITERATURE REVIEW

Conceptual Review

Digital fatigue refers to the physical, mental, and emotional exhaustion resulting from prolonged use of digital technologies and continuous online interactions. As organisations increasingly rely on digital communication platforms, cloud-based systems, and virtual collaboration tools, employees are expected to remain constantly connected and responsive. Although these technologies improve organisational efficiency and flexibility, excessive digital engagement can increase stress, reduce concentration, and negatively affect employees' well-being (Bahamondes-Rosado et al., 2023). Digital fatigue is particularly evident in multinational firms, where employees depend heavily on digital technologies to communicate and collaborate across different locations and time zones. Continuous virtual meetings, frequent electronic communications, and prolonged screen time increase employees' cognitive workload and may gradually reduce their energy and enthusiasm for work. A systematic review by Bahamondes-Rosado et al. (2023) identified techno-fatigue as one of the major consequences of intensive technology use, emphasizing that prolonged exposure to technology-related demands can impair employees' psychological well-being and work performance.

Information Overload

Information overload refers to a situation in which employees receive more information than they can effectively process, making it difficult to prioritize tasks, make decisions, and maintain concentration. The increasing use of digital communication technologies has substantially increased the volume and speed of information exchanged within organisations. Consequently, employees often experience interruptions from emails, instant messages, online meetings, and digital notifications, all of which compete for their attention. Arnold et al. (2023) observed that information

overload has become a significant occupational challenge because it contributes to cognitive strain, mental fatigue, and reduced work effectiveness.

In multinational firms, information overload is more pronounced because employees communicate with colleagues, clients, and supervisors across different countries and time zones. Managing multiple communication channels and processing large amounts of digital information may overwhelm employees, reducing their ability to remain focused, motivated, and fully engaged in their work.

Technostress

Technostress refers to the psychological strain employees experience when they struggle to cope with the demands associated with digital technologies. It may result from rapid technological changes, complex digital systems, continuous connectivity, or pressure to learn new technologies. Employees experiencing technostress often report feelings of frustration, anxiety, fatigue, and emotional exhaustion, which may adversely affect their work performance and overall well-being (Pansini et al., 2023).

The growing dependence on digital technologies has made technostress an important organisational issue, particularly in multinational firms where employees rely extensively on technology for communication, coordination, and decision-making. According to Nastjuk et al. (2024), technology-related demands such as techno-overload and techno-invasion consume employees' psychological resources and are associated with lower job satisfaction, increased exhaustion, and reduced work engagement. Consequently, employees experiencing high levels of technostress may find it difficult to sustain the energy, commitment, and enthusiasm required to perform effectively in technology-driven work environments.

Concept of Employee Engagement

Employee engagement refers to a positive and fulfilling work-related state in which employees are energetic, committed, and psychologically connected to their work. Engaged employees are willing to invest physical, cognitive, and emotional effort in accomplishing organisational goals. Although work engagement is traditionally described through three dimensions namely vigor, dedication, and absorption, recent evidence suggests that vigor and dedication are the core dimensions most strongly associated with positive organisational outcomes such as job satisfaction, organisational commitment, and performance (Mazzetti et al., 2023).

In today's technology-driven workplace, employee engagement has become increasingly important because organisations depend on employees who are motivated, resilient, and committed to achieving organisational objectives. In multinational firms, where employees frequently work across geographical boundaries using digital technologies, maintaining high levels of engagement is essential for sustaining productivity and innovation. However, excessive digital demands may reduce employees' psychological energy and commitment, making it difficult to remain fully engaged in their work (Pansini et al., 2023).

Dedication

Dedication refers to employees' sense of enthusiasm, significance, pride, inspiration, and commitment toward their work. Dedicated employees are emotionally attached to their jobs, remain motivated during challenging situations, and willingly contribute to organisational success. Evidence from a recent meta-analysis indicates that dedication is strongly associated with job satisfaction, organisational commitment, and other desirable workplace outcomes, making it an important indicator of employee engagement (Mazzetti et al., 2023).

Vigor

Vigor describes employees' energy, mental resilience, persistence, and willingness to invest effort in their work despite workplace challenges. Employees with high vigor are more likely to sustain performance, cope effectively with demanding tasks, and remain productive under pressure. Mazzetti et al. (2023) found that vigor, together with dedication, has stronger relationships with positive work outcomes than the absorption dimension, highlighting its importance in measuring employee engagement.

Digital Fatigue and Employee Engagement

Digital fatigue has become an emerging challenge in organisations that depend heavily on digital technologies. Employees who are continuously exposed to information overload, virtual meetings, and constant technological interaction may experience mental exhaustion and depleted psychological resources. As these conditions persist, employees are less likely to maintain the energy, enthusiasm, and commitment required for effective job performance (Bahamondes-Rosado et al., 2023). Research also suggests that technology-related job demands, particularly technostress, reduce employee well-being and engagement when organisations fail to provide adequate support and resources (Pansini et al., 2023). Consequently, reducing digital fatigue is essential for sustaining employees' dedication, vigor, and overall engagement in multinational firms.

Theoretical Framework

Job Demands-Resources (JD-R) Theory

This study is anchored on the Job Demands-Resources (JD-R) Theory developed by Demerouti, Bakker, Nachreiner, and Schaufeli. The theory explains how workplace demands and organisational resources influence employees' psychological well-being, motivation, and work engagement.

According to Bakker and Demerouti (2023), job demands refer to aspects of work that require sustained physical or psychological effort and may lead to stress, exhaustion, and burnout when excessive. Examples of job demands include workload pressure, information overload, emotional demands, and technological strain. On the other hand, job resources refer to organisational or personal factors that help employees manage work demands, achieve goals, and maintain motivation.

The theory argues that excessive job demands deplete employees' physical and psychological energy, thereby reducing engagement and increasing exhaustion. In contrast, supportive work conditions and adequate resources improve employee motivation, dedication, vigor, and workplace well-being (Bakker & Demerouti, 2023).

The JD-R Theory is relevant to this study because information overload and technostress represent digital job demands capable of exhausting employees psychologically and emotionally. When employees are exposed to excessive digital communication, continuous connectivity, and technological pressure, their energy and enthusiasm toward work may decline. Consequently, employee dedication and vigor may be negatively affected.

The theory was adopted for this study because it provides a suitable explanation for the relationship between digital fatigue and employee engagement in multinational firms in Rivers State. The theory clearly explains how excessive digital demands contribute to reduced employee dedication and vigor within organisations.

Empirical Review

Rasool et al. (2022) conducted a systematic review to examine the effects of technology overload in the workplace. The study identified interruption overload, work-life conflict, stress, social

overload, and reduced productivity as the major consequences of excessive technology use. It also highlighted training, self-efficacy, and effective time management as strategies for minimizing technology overload. Although the study provides important insights into technology-related workplace challenges, it focused on technology overload generally rather than its influence on employee engagement, particularly dedication and vigor, in multinational firms.

Pansini et al. (2023) carried out a systematic literature review to examine technostress from the perspective of the Job Demands–Resources (JD-R) model. The review found that technostress functions as a job demand that negatively affects employees' well-being, productivity, and work performance when adequate organisational resources are lacking. While the study established the adverse effects of technostress, it did not specifically investigate how technostress influences employee engagement among employees of multinational firms in Nigeria.

Mazzetti et al. (2023) conducted a meta-analysis involving 113 independent samples to examine the antecedents and outcomes of work engagement using the Job Demands–Resources model. The study found that vigor and dedication had stronger relationships with positive organisational outcomes, including job satisfaction and organisational commitment, than the absorption dimension. Although the study strengthens the understanding of employee engagement, it did not examine digital fatigue or its dimensions as predictors of engagement.

Bahamondes-Rosado et al. (2023) systematically reviewed studies on technostress during the COVID-19 period and found that techno-overload, techno-invasion, and techno-fatigue were among the most common technology-related stressors affecting employees' psychological well-being and work performance. The review concluded that prolonged digital exposure increases mental exhaustion and reduces employees' capacity to cope with workplace demands. However, the study focused primarily on technostress and did not empirically examine employee engagement in multinational firms within the Nigerian context.

The reviewed studies therefore demonstrate that excessive digital demands adversely affect employees' well-being and work outcomes. However, there is limited empirical evidence on how the dimensions of digital fatigue, particularly information overload and technostress, influence employee engagement measured by dedication and vigor among employees of multinational firms in Rivers State. This gap provides the basis for the present study.

METHODOLOGY

This study adopted the correlational research design to examine the relationship between digital fatigue and employee engagement in multinational firms in Rivers State, Nigeria, without manipulating the study variables. The design enabled the determination of the extent and direction of relationships between information overload, technostress, dedication, and vigor.

The study population comprised 620 management and non-management employees drawn from 8 purposively selected multinational firms in Rivers State, Nigeria. The firms were selected because they are major organisations with significant reliance on digital technologies, virtual communication systems, and technology-driven work processes, making them appropriate for examining digital fatigue and employee engagement. The selected firms also provided diverse operational contexts, structured work systems, and employees who regularly interact with digital platforms in their daily activities.

The study population consisted of employees from departments such as administration, information technology, operations, finance, customer service, human resource management, marketing, logistics, and technical services. The sample size of 243 respondents was determined using the Taro

Yamane (1967) formula for finite populations. A stratified random sampling technique was adopted by grouping employees into management and non-management categories, after which simple random sampling was used to ensure adequate representation and minimize sampling bias. A total of 243 questionnaires were distributed, 228 (93.83%) were retrieved and used for analysis, while 15 (6.17%) were not returned.

Primary data were collected through a structured questionnaire, while secondary data were obtained from textbooks, journals, conference papers, scholarly articles, and relevant online materials. The questionnaire consisted of demographic information and items measuring information overload, technostress, dedication, and vigor using a five-point Likert scale ranging from Strongly Agree (5) to Strongly Disagree (1).

The instrument was validated through face and content validation by experts in management and research methodology. Reliability was established through a pilot study using Cronbach's Alpha, with coefficients of 0.70 and above considered acceptable. Data were collected through direct questionnaire administration with the assistance of trained research assistants. Digital fatigue was measured using information overload and technostress, while employee engagement was measured using dedication and vigor.

Data were analyzed using descriptive statistics, including frequency, percentage, mean, and standard deviation, while hypotheses were tested using the Pearson Product Moment Correlation Coefficient (PPMC) at a 0.05 significance level using SPSS. The null hypothesis was rejected where the p-value was less than 0.05 and accepted where the p-value exceeded 0.05. Ethical standards were maintained through informed consent, voluntary participation, confidentiality, anonymity, and the use of information strictly for academic purposes.

Sample Size

The sample size for the study was determined using the Taro Yamane (1967) formula for finite population:

$$n = \frac{N}{1 + N(e)^2}$$

Where:

n = Sample size

N = Population size (620)

e = Level of significance (0.05)

Substituting the values into the formula:

$$n = \frac{620}{1 + 620(0.05)^2}$$

$$n = \frac{620}{1 + 620(0.0025)}$$

$$n = \frac{620}{1 + 1.55}$$

$$n = \frac{620}{2.55}$$

$$n = 243$$

Approximately, the sample size for the study is 243 respondents.

Population of the Study

Table 1: Sample Size Allocation and Questionnaire Distribution among Selected Multinational Firms in Rivers State

S/N	Selected Multinational Firms	Population	Sample Size	Questionnaire Distributed	Questionnaire Retrieved	Questionnaire Used
1	Renaissance Africa Energy Company Limited	90	35	35	33	33
2	Chevron Nigeria Limited	80	31	31	29	29
3	TotalEnergies EP Nigeria Limited	75	29	29	27	27
4	ExxonMobil Nigeria	80	31	31	29	29
5	Halliburton Energy Services Nigeria	75	29	29	27	27
6	SLB (formerly Schlumberger) Nigeria	70	27	27	26	26
7	Baker Hughes Nigeria	75	29	29	28	28
8	TechnipFMC Nigeria	75	32	32	29	29
	Total	620	243	243	228	228

Source: Researcher's Field Survey, 2026.

Table 2: Variables Measurement/Operationalization

S/N	Variables	Dimensions/Measures	Number of Items	Cronbach's Alpha
1	Digital Fatigue	Information Overload	5	0.846
		Technostress	5	0.854
2	Employee Engagement	Dedication	5	0.872
		Vigor	5	0.861
	Overall Reliability Coefficient		20	0.858

Source: Researcher's Field Survey, 2026.

The reliability results indicate that all constructs are internally consistent and reliable, with Cronbach's alpha values of 0.846 for information overload, 0.854 for technostress, 0.872 for dedication, and 0.861 for vigor, all exceeding the acceptable benchmark of 0.70. The overall reliability coefficient of 0.858 confirms that the instrument is reliable for data collection and analysis.

Table 3: Response Rate of Questionnaire Distribution and Retrieval

Details	Frequency	Percentage
Number of Copies Distributed	243	100%
Number of Copies Retrieved	228	93.83%
Number of Copies Not Returned	15	6.17%
Number of Copies Invalid	0	0%
Number of Copies Used for Analysis	228	93.83%

Source: Researcher's Field Survey, 2026.

The table shows that 243 questionnaires were administered to respondents across selected multinational firms in Rivers State. A total of 228 questionnaires were successfully retrieved, representing a response rate of 93.83%, while all retrieved questionnaires were found valid and used for analysis. This indicates a high response rate, suggesting that the data collected were adequate and suitable for statistical analysis and hypothesis testing.

DATA RESULTS

Table 4: Descriptive Statistics on Information Overload

S/N	Information Overload Items	N	Min.	Max.	Sum	Mean	Std. Dev.
1	Employees receive excessive digital information daily	228	1.0	5.0	941.0	4.127	0.7934
2	Frequent emails and notifications create work pressure	228	1.0	5.0	936.0	4.105	0.8072
3	Employees struggle to process multiple digital tasks simultaneously	228	1.0	5.0	948.0	4.158	0.7816
4	Excessive online communication affects employees' concentration	228	1.0	5.0	932.0	4.088	0.8145
5	Information overload contributes to mental exhaustion among employees	228	1.0	5.0	955.0	4.189	0.7683
	Valid N (listwise)	228					

Source: SPSS (Version 27) Result, 2026.

Table 5: Descriptive Statistics on Technostress

S/N	Technostress Items	N	Min.	Max.	Sum	Mean	Std. Dev.
1	Employees experience stress due to continuous technology usage	228	1.0	5.0	944.0	4.140	0.7881
2	Rapid technological changes create pressure among employees	228	1.0	5.0	938.0	4.114	0.8026
3	Employees feel mentally exhausted from digital work demands	228	1.0	5.0	951.0	4.171	0.7764
4	Technical interruptions negatively affect employees' work performance	228	1.0	5.0	933.0	4.092	0.8113
5	Continuous online connectivity contributes to employee fatigue	228	1.0	5.0	957.0	4.197	0.7638
	Valid N (listwise)	228					

Source: SPSS (Version 27) Result, 2026.

Table 6: Descriptive Statistics on Dedication

S/N	Dedication Items	N	Min.	Max.	Sum	Mean	Std. Dev.
1	Employees remain enthusiastic about their work responsibilities	228	1.0	5.0	939.0	4.118	0.7987
2	Employees demonstrate strong commitment toward organisational goals	228	1.0	5.0	946.0	4.149	0.7845
3	Employees feel proud of the work they perform	228	1.0	5.0	952.0	4.175	0.7724
4	Employees remain emotionally attached to their jobs	228	1.0	5.0	935.0	4.101	0.8062
5	Dedication improves employees' involvement in workplace activities	228	1.0	5.0	960.0	4.211	0.7597
	Valid N (listwise)	228					

Source: SPSS (Version 27) Result, 2026.

Table 7: Descriptive Statistics on Vigor

S/N	Vigor Items	N	Min.	Max.	Sum	Mean	Std. Dev.
1	Employees demonstrate high levels of energy at work	228	1.0	5.0	943.0	4.136	0.7905
2	Employees remain mentally resilient during work pressure	228	1.0	5.0	948.0	4.158	0.7811
3	Employees are willing to invest effort in organisational activities	228	1.0	5.0	955.0	4.189	0.7693
4	Employees persist despite challenging work conditions	228	1.0	5.0	937.0	4.110	0.8044
5	Vigor enhances employees' productivity and workplace performance	228	1.0	5.0	961.0	4.215	0.7568
Valid N (listwise)		228					

Source: SPSS (Version 27) Result, 2026.

The results from Tables 4 to 7 show that respondents generally agreed that digital fatigue significantly influences employee engagement in selected multinational firms in Rivers State. Information overload recorded high mean values, indicating that employees experience excessive digital communication, multiple online tasks, and mental exhaustion arising from continuous information flow within the workplace. Technostress also recorded high mean scores, suggesting that employees experience technological pressure, digital work strain, and stress associated with continuous connectivity and technological changes.

Similarly, dedication and vigor recorded high mean values, indicating that employees demonstrate enthusiasm, emotional commitment, resilience, and willingness to invest effort toward organisational activities despite workplace demands. The findings further suggest that information overload and technostress influence employee engagement by affecting employees' dedication and vigor within multinational firms in Rivers State.

Inferential Statistical Analysis

The Pearson Product Moment Correlation Coefficient (PPMCC) was employed as the inferential statistical tool for testing the hypotheses of this study. This method was considered appropriate because it measures the strength and direction of the linear relationship between continuous variables derived from Likert-scale responses. The analysis examined the relationship between digital fatigue (information overload and technostress) and employee engagement (dedication and vigor) among employees in multinational firms in Rivers State. All hypotheses were tested at a 0.05 level of significance using SPSS Version 27.

Table 8: Information Overload and Dedication

Pearson Correlation		Information Overload	Dedication
Information Overload	Correlation Coefficient	1.000	-0.732**
	Sig. (2-tailed)	.	0.000
	N	228	228
Dedication	Correlation Coefficient	-0.732**	1.000
	Sig. (2-tailed)	0.000	.

	N	228	228
Correlation is significant at the 0.01 level (2-tailed).			

Source: SPSS (Version 27) Result, 2026.

Table 9: Information Overload and Vigor

Pearson Correlation		Information Overload	Vigor
Information Overload	Correlation Coefficient	1.000	-0.714**
	Sig. (2-tailed)	.	0.000
	N	228	228
Vigor	Correlation Coefficient	-0.714**	1.000
	Sig. (2-tailed)	0.000	.
	N	228	228
Correlation is significant at the 0.01 level (2-tailed).			

Source: SPSS (Version 27) Result, 2026.

Table 10: Technostress and Dedication

Pearson Correlation		Technostress	Dedication
Technostress	Correlation Coefficient	1.000	-0.748**
	Sig. (2-tailed)	.	0.000
	N	228	228
Dedication	Correlation Coefficient	-0.748**	1.000
	Sig. (2-tailed)	0.000	.
	N	228	228
Correlation is significant at the 0.01 level (2-tailed).			

Source: SPSS (Version 27) Result, 2026.

Table 11: Technostress and Vigor

Pearson Correlation		Technostress	Vigor
Technostress	Correlation Coefficient	1.000	-0.726**
	Sig. (2-tailed)	.	0.000
	N	228	228
Vigor	Correlation Coefficient	-0.726**	1.000
	Sig. (2-tailed)	0.000	.
	N	228	228
Correlation is significant at the 0.01 level (2-tailed).			

Source: SPSS (Version 27) Result, 2026.

The results presented in Tables 8 to 11 reveal a strong negative and statistically significant relationship between digital fatigue and employee engagement among employees in multinational firms in Rivers State.

Specifically, Table 8 shows that information overload has a strong negative relationship with dedication ($r = -0.732$, $p < 0.01$). This implies that employees who experience excessive digital

information, numerous notifications, and overwhelming communication demands are less likely to remain emotionally committed and enthusiastic toward their work responsibilities.

Table 9 reveals a strong negative and significant relationship between information overload and vigor ($r = -0.714$, $p < 0.01$). This indicates that excessive information flow and digital communication reduce employees' physical energy, mental resilience, and willingness to invest effort in organisational activities.

Table 10 shows that technostress has a strong negative relationship with dedication ($r = -0.748$, $p < 0.01$), suggesting that employees who experience stress arising from continuous technology usage, digital pressure, and technological complexity are less likely to demonstrate emotional attachment and commitment toward their work roles.

Finally, Table 11 indicates a strong negative relationship between technostress and vigor ($r = -0.726$, $p < 0.01$). This implies that employees experiencing technological strain and continuous digital connectivity often become mentally exhausted and less energetic in performing workplace activities.

Generally, the findings indicate that digital fatigue, particularly information overload and technostress, significantly reduces employee engagement by negatively affecting dedication and vigor among employees in multinational firms in Rivers State.

Summary of Hypotheses

Table 12: Summary of Hypothesis Testing

S/N	Hypothesis	Result	Decision
H01	There is no significant relationship between information overload and dedication in multinational firms in Rivers State.	$r = -0.732$, $p\text{-value} = 0.000$	Reject H01 since $p\text{-value} < 0.05$
H02	There is no significant relationship between information overload and vigor in multinational firms in Rivers State.	$r = -0.714$, $p\text{-value} = 0.000$	Reject H02 since $p\text{-value} < 0.05$
H03	There is no significant relationship between technostress and dedication in multinational firms in Rivers State.	$r = -0.748$, $p\text{-value} = 0.000$	Reject H03 since $p\text{-value} < 0.05$
H04	There is no significant relationship between technostress and vigor in multinational firms in Rivers State.	$r = -0.726$, $p\text{-value} = 0.000$	Reject H04 since $p\text{-value} < 0.05$

Source: Researcher's Field Survey and SPSS Output (Version 27, 2026).

DISCUSSION OF FINDINGS

The findings of this study indicate that digital fatigue significantly influences employee engagement among employees of multinational firms in Rivers State. Specifically, information overload and technostress were found to have strong negative relationships with dedication and vigor. These findings support previous studies which show that excessive digital demands and technology-related stress deplete employees' psychological resources, reduce well-being, and weaken work engagement (Bahamondes-Rosado et al., 2023; Pansini et al., 2023).

A strong negative relationship was found between information overload and dedication ($r = -0.732$), indicating that employees exposed to excessive digital communication and large volumes of information are less likely to remain enthusiastic and emotionally committed to their work. This finding is consistent with Arnold et al. (2023), who observed that information overload contributes to cognitive strain, mental fatigue, and reduced work effectiveness by overwhelming employees' information-processing capacity.

Similarly, information overload showed a strong negative relationship with vigor ($r = -0.714$), suggesting that excessive digital communication reduces employees' energy and psychological resilience. This finding agrees with Bahamondes-Rosado et al. (2023), who reported that prolonged exposure to technology-related demands, including techno-overload, contributes to fatigue and diminished occupational well-being.

The study further revealed a strong negative relationship between technostress and dedication ($r = -0.748$), implying that employees experiencing technological pressure and continuous connectivity are less likely to maintain commitment and enthusiasm toward their work. This finding supports the systematic review by Pansini et al. (2023), which identified technostress as a significant job demand associated with emotional exhaustion, reduced well-being, and lower work performance when adequate organisational resources are lacking.

In addition, technostress exhibited a strong negative relationship with vigor ($r = -0.726$), indicating that employees who struggle with technological demands are more likely to experience reduced energy, motivation, and persistence in carrying out their work responsibilities. This finding is consistent with the meta-analysis by Nastjuk et al. (2024), which concluded that technostress creators, particularly techno-overload and techno-invasion, are associated with increased exhaustion and lower work engagement.

Finally, the findings confirm that digital fatigue, reflected through information overload and technostress, negatively affects employee engagement in multinational firms in Rivers State. Excessive digital demands reduce employees' dedication and vigor, highlighting the need for organisations to implement strategies that promote healthy digital work practices, provide adequate technological support, and minimize unnecessary technology-related pressures.

CONCLUSION

The study concludes that digital fatigue has a significant negative relationship with employee engagement among employees in multinational firms in Rivers State. Specifically, information overload and technostress were found to significantly reduce dedication and vigor within the workplace. This implies that employees who experience excessive digital communication, continuous technological pressure, and overwhelming information demands are more likely to experience mental exhaustion, reduced enthusiasm, and declining workplace energy. Therefore, digital fatigue represents a major organisational challenge capable of weakening employee engagement, workplace productivity, and overall organisational effectiveness within multinational firms.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations are made in line with the objectives, research questions, and hypotheses:

1. Management of multinational firms in Rivers State should establish effective digital communication policies capable of reducing excessive emails, notifications, and unnecessary online meetings in order to minimize information overload among employees.

2. Organisations should provide regular technological support, employee training, and stress management programmes to help employees cope effectively with technostress and changing digital work demands.
3. Human resource departments should develop employee wellness initiatives and flexible work arrangements aimed at improving employees' psychological well-being, dedication, and vigor within digitally intensive work environments.
4. Multinational firms should encourage healthy digital work practices such as scheduled breaks, manageable online workloads, and reduced after-work digital communication in order to improve employee engagement and workplace productivity.

REFERENCES

- Amah, E., & Ahiauzu, A. (2022). Industrial relations climate and organisational performance in Nigerian firms. *International Journal of Business Systems and Economics*, 13(2), 45–58.
- Arnold, M. A., Goldschmitt, M. G., & Rigotti, T. (2023). Dealing with information overload: A comprehensive review. *Frontiers in Psychology*, 14, Article 1122200. <https://doi.org/10.3389/fpsyg.2023.1122200>
- Bahamondes-Rosado, H., García-Izquierdo, M., & Sáez-Navarrete, C. (2023). Digital fatigue in the workplace: A systematic review of its antecedents and outcomes. *International Journal of Environmental Research and Public Health*, 20(9), 5708. <https://doi.org/10.3390/ijerph20095708>
- Bahamondes-Rosado, M. E., Cerdá-Suárez, L. M., Dodero Ortiz de Zevallos, G. F., & Espinosa-Cristia, J. F. (2023). Technostress at work during the COVID-19 lockdown phase (2020–2021): A systematic review of the literature. *Frontiers in Psychology*, 14, Article 1173425. <https://doi.org/10.3389/fpsyg.2023.1173425>
- Bakker, A. B., & Demerouti, E. (2023). Job demands–resources theory: Taking stock and looking forward. *Journal of Occupational Health Psychology*, 28(1), 1–14. <https://doi.org/10.1037/ocp0000354>
- Bakker, A. B., Demerouti, E., & Sanz-Vergel, A. I. (2023). Burnout and work engagement: The JD-R approach. *Annual Review of Organisational Psychology and Organisational Behavior*, 10, 167–193. <https://doi.org/10.1146/annurev-orgpsych-120920-053151>
- Breevaart, K., & Bakker, A. B. (2022). Daily job demands and employee work engagement: The role of daily transformational leadership behavior. *Journal of Occupational Health Psychology*, 27(1), 98–110. <https://doi.org/10.1037/ocp0000313>
- Carver, C. S., Scheier, M. F., & Segerstrom, S. C. (2022). Optimism. *Clinical Psychology Review*, 93, 102138. <https://doi.org/10.1016/j.cpr.2022.102138>
- Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology*, 86(3), 499–512. <https://doi.org/10.1037/0021-9010.86.3.499>

- Gideon, L., & Agustine, N. (2024). Quality of work life and employee work passion among electricity distribution companies in South-South Nigeria. *Nigerian Journal of Management Sciences*, 25(1), 118–130.
- Luthans, F., Youssef-Morgan, C. M., & Avolio, B. J. (2021). *Psychological capital and beyond*. Oxford University Press.
- Marsh, E., Vallejos, E. P., & Spence, A. (2024). Information overload and digital stress in the workplace: Implications for employee well-being and productivity. *Information Technology & People*, 37(2), 540–558. <https://doi.org/10.1108/ITP-07-2022-0564>
- Marsh, H. W., Parker, P. D., Guo, J., & Dicke, T. (2024). Employee engagement in digitally enabled work environments: Emerging evidence and future directions. *Journal of Organisational Behavior*. Advance online publication.
- Mazzetti, G., Robledo, E., Vignoli, M., Topa, G., Guglielmi, D., & Wilmar B. Schaufeli (2023). Work engagement: A meta-analysis using the Job Demands–Resources model. *Psychological Reports*, 126(3), 1069–1107. <https://doi.org/10.1177/003329412111051988>
- Nastjuk, I., Trang, S. T. N., Grummeck-Braamt, J.-V., Adam, M. T. P., & Monideepa Tarafdar (2024). Integrating and synthesizing technostress research: A meta-analysis on technostress creators, outcomes, and information systems usage contexts. *European Journal of Information Systems*, 33(4), 561–591. <https://doi.org/10.1080/0960085X.2023.2244578>
- Newman, A., Ucbasaran, D., Zhu, F., & Hirst, G. (2021). Psychological capital: A review and synthesis. *Journal of Organisational Behavior*, 42(3), 233–255. <https://doi.org/10.1002/job.2485>
- Odia, J. O., & Omofonmwan, S. I. (2021). Industrial conflict management and organisational productivity in public enterprises in Nigeria. *African Journal of Management Studies*, 12(3), 66–79.
- Osadebay, E., Okafor, C., & Nwankwo, B. (2024). Psychological capital and employee engagement in service organisations in Nigeria. *International Journal of Management and Social Sciences*, 15(2), 72–88.
- Pansini, M., Buonomo, I., De Vincenzi, C., Ferrara, B., & Benevene, P. (2023). Positioning technostress in the Job Demands–Resources model perspective: A systematic literature review. *Healthcare*, 11(3), Article 446. <https://doi.org/10.3390/healthcare11030446>
- Rasool, S. F., Wang, M., Tang, M., Saeed, A., & Iqbal, J. (2022). How toxic workplace environment effects the employee engagement: The mediating role of organisational support and employee well-being. *International Journal of Environmental Research and Public Health*, 19(4), 2294. <https://doi.org/10.3390/ijerph19042294>
- Rasool, S. F., Wang, M., Zhang, Y., & Samma, M. (2022). Sustainable work performance: The roles of workplace violence, organisational stress, and occupational burnout. *International Journal of Environmental Research and Public Health*, 19(3), 912. (This study discusses digital workload and information overload as workplace stressors.)

- Rasool, T., Warraich, N. F., & Sajid, M. (2022). Examining the impact of technology overload at the workplace: A systematic review. *SAGE Open*, 12(3). <https://doi.org/10.1177/21582440221114320>
- Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of Organisational Behavior*, 25(3), 293–315. <https://doi.org/10.1002/job.248>
- Schaufeli, W. B., De Witte, H., & Desart, S. (2020). Manual: The Utrecht Work Engagement Scale. Utrecht University.
- Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness Studies*, 3(1), 71–92. <https://doi.org/10.1023/A:1015630930326>
- Sharma, P., & Sharma, S. (2021). Employee-management relationship and organisational effectiveness in service organisations. *Journal of Human Resource and Sustainability Studies*, 9(3), 402–417. <https://doi.org/10.4236/jhrss.2021.93025>
- Shin, Y., Hur, W. M., & Kang, S. (2022). The role of resilience and optimism in employee well-being and work engagement. *Current Psychology*, 41(9), 5942–5953. <https://doi.org/10.1007/s12144-020-01050-5>
- Tarafdar, M., Cooper, C. L., & Stich, J. F. (2021). The technostress trifecta—Techno eustress, techno distress and design: Theoretical directions and an agenda for research. *Information Systems Journal*, 31(1), 6–42. <https://doi.org/10.1111/isj.12169>
- Tarafdar, M., Tu, Q., Ragu-Nathan, B. S., & Ragu-Nathan, T. S. (2007). The impact of technostress on role stress and productivity. *Journal of Management Information Systems*, 24(1), 301–328. <https://doi.org/10.2753/MIS0742-1222240109>
- Taro Yamane. (1967). *Statistics: An introductory analysis* (2nd ed.). Harper and Row.
- Wang, X., Liu, L., Zou, F., Hao, J., & Wu, H. (2022). Associations of occupational stressors, perceived organisational support, and psychological capital with work engagement among nurses during COVID-19 pandemic. *BMC Nursing*, 21(1), 1–10. <https://doi.org/10.1186/s12912-022-00881-8>
- Wang, X., Tan, S. C., & Li, L. (2022). Measuring digital fatigue and its impact on employee well-being in the post-pandemic workplace. *Frontiers in Psychology*, 13, 904903. <https://doi.org/10.3389/fpsyg.2022.904903>
- Zhang, Y., Zhao, H., & Liu, X. (2025). Digital fatigue and employee engagement in hybrid work environments. *Journal of Organisational Effectiveness: People and Performance*, 12(1), 44–61. <https://doi.org/10.1108/JOEPP-06-2024-0121>