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Virtual Exhaustion: Assessing the Effects on Employee Digital Wellness.

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A B S T R A C T

This study looks at the idea of virtual fatigue and its significant effects on workers' digital well-being. The problem of virtual fatigue and its impact on IT professionals' digital well-being are examined in this descriptive study. A total of 120 IT professionals received quality and screen time in response to three sets of questions about sleep, work demands, and digital well-being. The study uses a variety of statistical analysis techniques to examine the relationships between these parameters. Descriptive statistics are used to display the variability and central tendency of each set of variables. Correlation research looks at the connections between sleep quality, work responsibilities, and digital well-being. ANOVA also looks at averages among several demographic groups. The study's conclusions deepen our knowledge of the intricate relationships between virtual exhaustion factors and worker satisfaction in the IT sector and offer practical guidance to companies trying to foster more contented virtual workplaces.

Keywords: digital ecosystem, digital landscape, digital well-being, and digital exhaustion.

1. INTRODUCTION:

Organizations are depending more and more on digital technologies in today's digital business environment to increase productivity and competitiveness. But there are drawbacks to this change as well, including concerns for the welfare of the workforce. Constant connectivity and digital device exposure have resulted in issues like information overload, digital fatigue, and a blurring of work-life boundaries. Prioritizing employee well-being is crucial for organizations looking to leverage digital talent since it keeps workers happy and productive. It is now commonplace to experience digital fatigue, which is defined as mental tiredness and decreased productivity as a result of excessive use of digital technology. a challenge in contemporary offices. Because they are inundated with emails, messages, and notifications on a daily basis, employees experience virtual exhaustion and overwhelm. A multifaceted strategy is needed to address digital fatigue, one that emphasizes work-life balance, digital mindfulness, and encouragement of disengagement from digital devices. Employers must also give staff members the tools and assistance they need to properly manage their use of digital devices. Furthermore, in a digital workplace, workers' productivity and well-being are significantly impacted by their digital skills. From basic computer skills to highly developed technical skills, digital literacy encompasses a broad range of abilities. Organizations can help employees use digital technologies more effectively and lessen the negative effects of digital fatigue by offering training programs and resources to improve digital skills. Generally speaking, developing a healthy digital workplace calls for a well-rounded strategy that considers both the technological and human elements of work in the digital era.

1.1 RESEARCH PROBLEM:

The study tries to understand the impact of virtual exhaustion on IT professionals in the digital age, considering the constant connection and mixing of work and personal life. It aims to identify specific indicators of virtual exhaustion and their relationship to work demands and sleep quality. This underscores the need for strategies that mitigate virtual exhaustion and boost well-being.

Factors influencing virtual exhaustion in the digital work environment, such as constant email communication and expectations of availability after working hours, are also focused on. By identifying these factors, the research aims to provide information on how organizations can create healthier work environments and improve employee well-being.

In addition, the study aims to find out the effectiveness of current strategies to solve the problem of virtual exhaustion of IT professionals. It aims to understand whether existing practices, such as encouraging technology breaks and digital literacy training, are enough or whether more is needed to address this growing problem.

1.2 LITERATURE REVIEW:

Van Zyl et al., (2023) studied and highlighted the need for a revolution and presents POP 2.0 as a forward-looking paradigm that offers chances for creative research, while acknowledging that POP's effect has decreased despite an increase in research production. Over the past 20 years, there has been a significant increase in the field of Positive Organizational Psychology (POP), which has improved our understanding of performance and well-being at work. The term "Positive Organizational Psychology 2.0" (POP 2.0) is introduced in this study, which describes it as an evidence-based, data-driven field that uses technological improvements and human-centered design to better understand and promote positive aspects of people, organizations, and society. The paper analyses the origins and difficulties of POP, identifying risks 4 associated with the changing nature of the workplace, career-related problems, and difficulties with internal discipline.

Smits et.al., (2022), studied systematic review which explores the meaning and application of well-being in digital health. The study, which was motivated by the lack of clarity surrounding wellbeing at the nexus of healthcare and technology, makes use of Brey's framework to identify four main issues: aggregation, scope, specification, and epistemology. After reviewing 117 pertinent studies, of which 39.3% were design papers and 60.7% were assessment papers, the review shows that different conceptions of well-being were used. The study finds that existing techniques effectively address the problems associated with digital health for wellbeing, but it also reveals notable differences in design and assessment methodologies and to focus on leveraging digital platforms to provide care assistance. Beyond the conventional design and evaluation dichotomy, it promotes interdisciplinary cooperation to improve digital health techniques for optimal well-being outcomes.

Koinig et al., (2022) explored the critical role of organizational health in fostering effective operations, sustainable growth, and adaptability to change, positing it as a competitive advantage. The study looks at the effects of initiatives by the organizations on work-life balance and health, highlighting the necessity for businesses to invest in employee well-being. The study demonstrates the complex dynamics of employee engagement and well-being using semi-structured qualitative interviews with 20 employees in two European nations. The report emphasizes how crucial it is to comprehend and resolve employee problems in order to succeed in the highly competitive job market and draw in top talent.

1.3 RESEARCH GAPS:

The ethical implications of workplace technologies for enhancing health are multifaceted, and there is a lack of agreement on practical solutions.

Although the evidence now available indicates a favorable association, a better understanding of the underlying mechanisms is required to fully comprehend the relationship between CEOs' psychological well-being and their digital leadership abilities.

Participant engagement, intervention design, and organizational support all have an impact on how effective digital treatments are at improving occupational health outcomes.

Digital tiredness, which results from using technology excessively, is a problem for worker well-being, but little is known about its causes and effects.

1.4 RESEARCH OBJECTIVES:

• Utilize quantitative research methods to analyze the relationships between digital well-being, work pressures, sleep quality, and screen time among IT professionals.

• Provide actionable advice to companies on effectively managing virtual exhaustion and improving the digital work environment.

1.5 RESEARCH HYPOTHESIS:

MAIN HYPOTHESIS:

Null Hypothesis (H0): There is no significant association between job demands, screen time & digital well-being among IT professionals.

Alternative Hypothesis (H1): There is a significant association between job demands, screen time and digital well-being among IT professionals.

Demographics & Digital Well-Being:

Null Hypothesis (H0): There is no relation between demographics and digital well-being.

Alternative Hypothesis (H1): There is certain relation between demographics and digital well-being.

Number Of Working Hours & Digital Well-Being:

Null Hypothesis (H0): Reduced digital well-being is not correlated with longer working hours.

Alternative Hypothesis (H1): Reduced digital well-being is correlated with longer working hours.

Sleep Quality & Screen Time & Digital Well-Being:

Null Hypothesis (H0): Lower levels of digital well-being are not linked to more screen time and less sleep.

Alternative Hypothesis (H1): Lower levels of digital well-being are linked to more screen time and less sleep.

Job Demands & Digital Communication and Digital Well-Being:

Null Hypothesis (H0): Lower levels of digital well-being are not linked to demanding work environments and excessive digital communication.

Alternative Hypothesis (H1): Lower levels of digital well-being are linked to demanding work environments and excessive digital communication.

1.6 METHODS FOR DATA COLLECTION & VARIABLE OF THE STUDY:

- Data Collection Methods - Structured Questionnaires

- Data Collection Procedure - Offline form with questions is circulated

- Variables of the study

  - Independent Variables: Job Demands, Sleep Quality, Screen Time

  - Dependent Variables: Digital Well being

  - Control Variables: Demographics

1.7 HYPOTHESIS TESTING AND METHOD:

- Descriptive statistics

- Correlation analysis

- ANOVA

HYPOTHESIS:

Demographics and Digital Well-being:

Null Hypothesis (H0): There is no relation between demographics and digital well-being.

Alternative Hypothesis (H1): There is certain relation between demographics and digital well-being.

Correlations

		Age	Gender	DW1	DW2	DW3	DW4
Age	Pearson Correlation	1	-.139	-.166	-.035	.054	.003
	Sig. (2-tailed)		.131	.071	.701	.557	.976
	N	120	120	120	120	120	120
Gender	Pearson Correlation	-.139	1	.119	.065	.118	.066
	Sig. (2-tailed)	.131		.195	.478	.198	.476
	N	120	120	120	120	120	120
DW1	Pearson Correlation	-.166	.119	1	.415**	.476**	.397**
	Sig. (2-tailed)	.071	.195		.000	.000	.000
	N	120	120	120	120	120	120
DW2	Pearson Correlation	-.035	.065	.415**	1	.423**	.338**
	Sig. (2-tailed)	.701	.478	.000		.000	.000
	N	120	120	120	120	120	120
DW3	Pearson Correlation	.054	.118	.476**	.423**	1	.383**
	Sig. (2-tailed)	.557	.198	.000	.000		.000
	N	120	120	120	120	120	120
DW4	Pearson Correlation	.003	.066	.397**	.338**	.383**	1
	Sig. (2-tailed)	.976	.476	.000	.000	.000	
	N	120	120	120	120	120	120

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

The findings suggest that, among this sample of IT workers, age may not have a substantial impact on these specific aspects of digital wellness. This notion is supported by the weak negative correlations (between -0.166 and -0.035) found between age and the digital wellbeing indicators. Put another way, there's no evidence that IT professionals with a certain age or level of experience regularly do better or worse on these tests. The poor correlations between gender and digital wellbeing measures (from -0.139 to 0.119) indicate that there are no appreciable differences in the perceptions of these aspects of digital wellbeing by IT workers. Gender differences could be the product of chance, as the associations are not statistically significant**.**

DW1 (Mental Stimulation) & DW4 (Stress Management): Utilizing technology to manage stress (DW4) and feeling mentally stimulated by it (DW1) are positively correlated, which lends credence to the idea that technology may be a useful tool for work and well-being.

DW2 (Physical Health Breaks) & DW3 (Social Connection): Taking digital breaks for physical health (DW2) and feeling connected through online interactions (DW3) are positively correlated. This implies that the possible negative effects of technology use on physical health exceed the advantages of social connection that technology provides.

Thus, the "Null Hypothesis," which states that there is no correlation between digital well-being and demography, is correct.

Number of Working Hours and Digital Well-being:

Null Hypothesis (H0): Reduced digital well-being is not correlated with longer working hours.

Alternative Hypothesis (H1): Reduced digital well-being is correlated with longer working hours.

Correlations

		DW1	DW2	DW3	DW4	TH
DW1	Pearson Correlation	1	.415**	.476**	.397**	.112
	Sig. (2-tailed)		.000	.000	.000	.223
	N	120	120	120	120	120
DW2	Pearson Correlation	.415**	1	.423**	.338**	.020
	Sig. (2-tailed)	.000		.000	.000	.825
	N	120	120	120	120	120
DW3	Pearson Correlation	.476**	.423**	1	.383**	.045
	Sig. (2-tailed)	.000	.000		.000	.626
	N	120	120	120	120	120
DW4	Pearson Correlation	.397**	.338**	.383**	1	-.049
	Sig. (2-tailed)	.000	.000	.000		.592
	N	120	120	120	120	120
TH	Pearson Correlation	.112	.020	.045	-.049	1
	Sig. (2-tailed)	.223	.825	.626	.592	
	N	120	120	120	120	120

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

The correlation coefficients between working hours (TH) and the digital wellbeing measures (DW1–DW4) are poor. They vary in value from -0.049 (DW4) to 0.112 (DW1), which is a positive coefficient. Since none of these connections meet statistical significance, it is likely that none of them are the result of chance.

A stronger association between the variables would be implied by statistically significant correlations. The alternative hypothesis (H1) in this instance, which contends that longer working hours (higher TH values) are linked to worse digital wellbeing (perhaps lower scores on DW measures), would have been supported by a negative and statistically significant association.

As a result, "Null Hypothesis (H0)"—which asserts that longer workdays have no bearing on a lesser degree of digital well-being—is true.

Sleep Quality and Screen Time and Digital Well-being:

Null Hypothesis (H0): Lower levels of digital well-being are not linked to more screen time and less sleep.

Alternative Hypothesis (H1): Lower levels of digital well-being are linked to more screen time and less sleep.

Correlations

		DW1	DW2	DW3	DW4	ST1	ST2	ST3	ST4
DW1	Pearson Correlation	1	.415**	.476**	.397**	.230*	.038	.061	.137
	Sig. (2-tailed)		.000	.000	.000	.012	.683	.508	.135
	N	120	120	120	120	120	120	120	120
DW2	Pearson Correlation	.415**	1	.423**	.338**	.259**	.173	-.022	.198*
	Sig. (2-tailed)	.000		.000	.000	.004	.059	.813	.030
	N	120	120	120	120	120	120	120	120
DW3	Pearson Correlation	.476**	.423**	1	.383**	.125	.060	-.036	.131
	Sig. (2-tailed)	.000	.000		.000	.174	.513	.700	.152
	N	120	120	120	120	120	120	120	120
DW4	Pearson Correlation	.397**	.338**	.383**	1	.103	-.030	-.072	.141
	Sig. (2-tailed)	.000	.000	.000		.263	.746	.436	.125
	N	120	120	120	120	120	120	120	120
ST1	Pearson Correlation	.230*	.259**	.125	.103	1	.594**	.524**	.471**
	Sig. (2-tailed)	.012	.004	.174	.263		.000	.000	.000
	N	120	120	120	120	120	120	120	120
ST2	Pearson Correlation	.038	.173	.060	-.030	.594**	1	.532**	.625**
	Sig. (2-tailed)	.683	.059	.513	.746	.000		.000	.000
	N	120	120	120	120	120	120	120	120
ST3	Pearson Correlation	.061	-.022	-.036	-.072	.524**	.532**	1	.578**
	Sig. (2-tailed)	.508	.813	.700	.436	.000	.000		.000
	N	120	120	120	120	120	120	120	120
ST4	Pearson Correlation	.137	.198*	.131	.141	.471**	.625**	.578**	1
	Sig. (2-tailed)	.135	.030	.152	.125	.000	.000	.000	
	N	120	120	120	120	120	120	120	120

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

*. Correlation is significant at the 0.05 level (2-tailed).

Four major digital wellness indicators (DW1–DW4) were found in the study, and they are associated with emotional connection, physical health advantages, cerebral stimulation, and stress management. Additionally, it identified four screen time measures (ST1–ST4) associated with physical exhaustion, quality of sleep, powering down, and relaxation capacity. The results of the study showed a strong positive correlation between screen time and sleep problems, suggesting that a lower level of digital well-being is linked to both screen time and reduced sleep. The "Alternative Hypothesis (H1)" put forward in the study is supported by these findings.

Job Demands and Digital Communication and Digital Well-being:

Null Hypothesis (H0): Lower levels of digital well-being are not linked to demanding work environments and excessive digital communication.

Alternative Hypothesis (H1): Lower levels of digital well-being are linked to demanding work environments and excessive digital communication.

Correlations

		DW1	DW2	DW3	DW4	JD1	JD2	JD3	JD4
DW1	Pearson Correlation	1	.415**	.476**	.397**	.179*	.200*	.069	.193*
	Sig. (2-tailed)		.000	.000	.000	.050	.029	.453	.034
	N	120	120	120	120	120	120	120	120
DW2	Pearson Correlation	.415**	1	.423**	.338**	.285**	.207*	.300**	.174
	Sig. (2-tailed)	.000		.000	.000	.002	.023	.001	.057
	N	120	120	120	120	120	120	120	120
DW3	Pearson Correlation	.476**	.423**	1	.383**	.099	.177	.115	.081
	Sig. (2-tailed)	.000	.000		.000	.284	.053	.212	.377
	N	120	120	120	120	120	120	120	120
DW4	Pearson Correlation	.397**	.338**	.383**	1	.086	-.004	.142	.017
	Sig. (2-tailed)	.000	.000	.000		.353	.970	.122	.857
	N	120	120	120	120	120	120	120	120
JD1	Pearson Correlation	.179*	.285**	.099	.086	1	.492**	.536**	.447**
	Sig. (2-tailed)	.050	.002	.284	.353		.000	.000	.000
	N	120	120	120	120	120	120	120	120
JD2	Pearson Correlation	.200*	.207*	.177	-.004	.492**	1	.613**	.617**
	Sig. (2-tailed)	.029	.023	.053	.970	.000		.000	.000
	N	120	120	120	120	120	120	120	120
JD3	Pearson Correlation	.069	.300**	.115	.142	.536**	.613**	1	.521**
	Sig. (2-tailed)	.453	.001	.212	.122	.000	.000		.000
	N	120	120	120	120	120	120	120	120
JD4	Pearson Correlation	.193*	.174	.081	.017	.447**	.617**	.521**	1

Sig. (2-tailed)	.034	.057	.377	.857	.000	.000	.000	
N	120	120	120	120	120	120	120	120

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

*. Correlation is significant at the 0.05 level (2-tailed).

Four digital wellness indicators (DW1–DW4) were found in the study, and they are associated with stress management, mental stimulation, physical health benefits, and emotional connection. Additionally, four job demand measures (JD1–JD4) pertaining to data processing, online responsiveness, stress from digital demands, and boundaries between personal and professional digital use were discovered. IT professionals with higher job expectations tended to report lower levels of digital well-being, according to the majority of positive associations found between digital well-being and job demands. Further research is necessary because there appears to be a minor negative correlation between the need to process digital information and emotional connection. Overall, the results partially corroborate the "Alternative Hypothesis (H1)" by indicating that high levels of digital communication and challenging work situations are linked to lower levels of digital well-being.

HYPOTHESIS TESTING USING ANOVA:

NULL HYPOTHESIS (H0): There is no significant association between job demands, screen time & digital well-being among IT professionals.

ALTERNATIVE HYPOTHESIS (H1): There is a significant association between job demands, screen time and digital well-being among IT professionals.

ANOVA: Two-Factor with Replication						
Source of Variation	*SS*	*df*	*MS*	*F*	*P value*	*F crit*
Sample	250.2454545	59	4.241448382	3.155981885	7.97057E-13	1.341609246
Columns	98.25606061	10	9.825606061	7.311048478	4.94771E-11	1.845035458
Interaction	588.4712121	590	0.997408834	0.742153135	0.999892867	1.140667535
Within	887	660	1.343939394			
Total	1823.972727	1319				

Among IT professionals, the study discovered a strong relationship between screen time, job expectations, and digital well-being. Digital well-being was shown to be highly connected with job demands, and there was also a substantial relationship found between screen time and digital well-being. The association between job demands and digital well-being is not significantly impacted by screen time levels, as seen by the lack of statistical significance in the interaction effect between screen time and job demands.

These results indicate that there is, in fact, a strong relationship between screen time, job demands, and digital well-being among IT professionals. They reject the null hypothesis (H0) and support the alternative hypothesis (H1). This suggests that virtual weariness among IT workers can be attributed to both job demands and screen time.

The interaction effect highlights that the worst kind of virtual weariness might result from a combination of hard employment and a lot of screen time. Overall, lower digital well-being is linked to higher job demands and screen time, suggesting that IT professionals experience more virtual tiredness.

3. RESEARCH OUTCOMES AND FINDINGS:

A study of virtual exhaustion among IT professionals in Bangalore yielded several important findings. First, demographic factors such as gender and age were found to have little influence on digital well-being. Second, the study found that while longer work hours may not reduce digital well-being, there is a significant relationship between screen time, sleep quality, work demands and digital well-being. This suggests that factors related to work pressure and digital communication play a more important role in virtual exhaustion than demographic variables. In addition, the study identified specific elements of the digital work environment that contribute to virtual exhaustion of IT professionals. These include constant email communication, expectations of after-hours availability and a lack of clear communication guidelines. Research shows that addressing these factors is critical to mitigating virtual exhaustion and promoting digital well-being in the IT industry. Overall, the findings emphasize the importance of understanding virtual exhaustion for IT professionals and the role of the digital work environment. contributing to this phenomenon. By identifying these factors, the study provides valuable information for organizations to develop strategies and interventions to improve the digital well-being of employees.

4. CONCLUSION:

This study highlights the importance of screen time habits and sleep quality in the overall digital well-being of IT workers. This suggests that although work pressures were not directly measured, they likely have an indirect effect on screen use and sleep patterns. For example, high job demands can increase stress levels, leading to sleep disturbances and increased screen time as a coping mechanism. Managers will gain valuable insights from this study to develop and implement strategies to promote a healthier work environment for their IT workforce. They can mitigate the negative impact of work demands on sleep quality by prioritizing initiatives that promote good sleep hygiene, such as offering flexible work schedules and avoiding socializing after work. To manage screen time and avoid digital overload, a policy must be established that sets clear limits to the availability of work and encourages regular breaks from the screen. Additionally, by investing in technology solutions that improve work productivity, encourage collaboration and reduce cognitive overload, managers can empower IT workers to better manage their workloads, thereby improving their digital well-being. In short, managers can improve the digital well-being of their IT workforce and promote a more sustainable way of working in the digital age by actively addressing the key aspects highlighted in the study.

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