

ONE SCREEN, TWO ROLES: DIGITAL FATIGUE IN THE ERA OF WORK FLEXIBILITY

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ABSTRACT

The rapid growth of digital technology and flexible working arrangements has significantly transformed modern work patterns. Employees are increasingly required to remain connected through digital platforms, creating challenges related to work-life balance and psychological well-being. This study aims to examine the influence of digital hyper-connectivity, role conflict, and work flexibility on digital fatigue and employee productivity/well-being. The study employed a quantitative research approach using Structural Equation Modeling–Partial Least Squares (SEM-PLS) with SmartPLS software for data analysis. Data were collected through an online questionnaire distributed to 107 respondents consisting of employees who actively use digital communication technologies in their work activities. The research instrument used a five-point Likert scale ranging from strongly disagree to strongly agree.

The findings indicate that digital hyper-connectivity has a significant positive effect on digital fatigue, suggesting that employees who continuously engage with digital communication systems tend to experience higher levels of exhaustion. Role conflict also contributes positively to digital fatigue, particularly when employees struggle to balance professional and personal responsibilities. In addition, work flexibility was found to increase digital fatigue due to irregular working hours and blurred boundaries between work and private life. Furthermore, digital fatigue significantly affects employee productivity and well-being, leading to reduced concentration, emotional exhaustion, and decreased work performance.

This study contributes to the understanding of digital work challenges in flexible working environments and provides practical implications for organizations in developing healthier digital communication policies and improving employee well-being in the digital era.

Keywords: digital fatigue, digital hyper-connectivity, role conflict, SmartPLS, work flexibility

1. INTRODUCTION

The rapid development of digital technology has significantly transformed organizational work systems in recent years. The implementation of remote working, hybrid working, and

flexible working arrangements has increased employees' dependence on digital communication platforms such as email, instant messaging applications, video conferencing tools, and cloud-based collaboration systems. Although these technologies improve efficiency and accessibility, they also create new challenges related to employee psychological well-being and work-life balance. One of the major problems emerging in the digital work environment is digital fatigue, a condition characterized by mental exhaustion, stress, reduced concentration, and emotional burnout caused by excessive exposure to digital technology and continuous online communication. Preliminary observations indicate that many employees experience difficulties separating work responsibilities from personal life due to continuous digital connectivity. Employees frequently receive work messages outside formal working hours and often feel pressured to respond immediately. Flexible work systems, which were initially introduced to improve autonomy and convenience, have unintentionally blurred the boundaries between work and personal activities. As a result, employees increasingly experience role conflict, prolonged working hours, and emotional exhaustion. This research is important because digital fatigue has become a growing concern in modern organizations. Excessive digital interaction not only affects employee productivity but also influences psychological well-being, motivation, and overall job satisfaction. Understanding the factors contributing to digital fatigue is necessary for organizations to create healthier and more sustainable digital work environments. The urgency of this study is reinforced by the increasing adoption of flexible work systems after the COVID-19 pandemic. Many organizations continue implementing hybrid and remote working arrangements even after the pandemic period. Consequently, employees remain highly dependent on digital technology in their daily work activities. Without proper management, continuous digital exposure may increase stress, burnout, and declining employee performance. Recent discussions regarding digital work environments have focused on technostress, work-life balance, employee well-being, and the psychological impact of remote working systems. Researchers and organizations have increasingly discussed the negative consequences of digital hyper-connectivity, particularly regarding employees' inability to disconnect from work-related communication. The concept of "always-on culture" has become an important issue in organizational studies because employees are expected to remain continuously available through digital devices. During the last two years, several important issues related to digital work systems have emerged both nationally and internationally. Internationally, discussions about digital well-being, burnout, and work flexibility have become increasingly significant due to the long-term implementation of hybrid working systems. Many companies in Europe and North America have started introducing policies limiting communication outside formal working hours. Nationally, organizations in Indonesia are also facing challenges related to employee stress, increased online workload, and declining work-life balance caused by digital work systems.

The data used in this study are primary data collected through questionnaires distributed online to 107 respondents actively using digital technology in their work activities. The research instrument applies a Likert scale ranging from strongly disagree to strongly agree. The variables examined in this study include digital hyper-connectivity, role conflict, work flexibility, digital fatigue, and productivity/well-being. Several policies related to employee digital well-being have also become important topics in organizational management. Some organizations have implemented policies limiting work communication after working hours and encouraging employees to maintain work-life balance. Internationally, the "right to disconnect" policy has gained attention as an effort to protect employees from excessive digital work demands. These policies demonstrate the growing awareness of the importance of maintaining employee mental health in the digital era. Based on these conditions, this study aims to analyze the influence of

digital hyper-connectivity, role conflict, and work flexibility on digital fatigue and employee productivity/well-being using the Structural Equation Modeling–Partial Least Squares (SEM-PLS) approach. This research is expected to contribute both theoretically and practically to the development of healthier digital work systems and organizational policies in the era of work flexibility.

2. LITERATURE REVIEW

Digital hyper-connectivity refers to a condition in which employees remain continuously connected to digital communication systems such as email, instant messaging applications, online meetings, and collaborative platforms. The increasing use of digital technology in flexible work environments has created an “always connected” culture that requires employees to remain available regardless of working hours. According to Tarafdar et al. (2021), excessive digital connectivity can increase technostress, emotional exhaustion, and work pressure among employees.

Research conducted by Molino et al. (2021) found that employees working remotely experienced increased fatigue due to excessive use of communication technology and multitasking activities. Continuous digital interaction negatively affects employees’ concentration and psychological well-being.

Role conflict occurs when employees experience incompatible demands between work responsibilities and personal or family obligations. Flexible work systems often blur the boundaries between work and personal life, increasing work-family conflict.

Allen et al. (2021) explained that role conflict significantly affects employee psychological well-being because individuals struggle to balance professional and personal responsibilities simultaneously. Employees experiencing role conflict tend to experience stress and emotional exhaustion.

Work flexibility refers to employees’ ability to determine their working time and location independently. Flexible work systems became increasingly popular after the COVID-19 pandemic.

According to Ipsen et al. (2021), flexible work arrangements provide convenience and autonomy but may also extend working hours and reduce employees’ ability to separate work from personal life. Employees frequently experience irregular schedules and excessive workloads.

Digital fatigue is a condition of mental and physical exhaustion caused by excessive use of digital devices and online communication platforms. Continuous exposure to screens and virtual meetings contributes to fatigue.

Fauville et al. (2021) introduced the concept of “Zoom fatigue,” explaining that excessive video conferencing activities increase cognitive burden and emotional exhaustion.

Productivity reflects employees’ ability to complete tasks effectively, while well-being refers to employees’ physical and psychological condition.

Grant et al. (2021) explained that employee well-being significantly affects work productivity, motivation, and organizational performance. Employees experiencing stress and fatigue often show lower concentration and reduced productivity levels.

3. METHODS

This study employed a quantitative research approach to examine the effect of digital hyper-connectivity, role conflict, and work flexibility on digital fatigue and productivity/well-being among employees in the digital work environment. A quantitative approach was selected because it allows the researcher to measure relationships between variables objectively using statistical analysis.

The population of this study consisted of employees who actively use digital technology and online communication platforms in their daily work activities. The total number of respondents involved in this study was 107 employees from various occupational backgrounds implementing flexible working systems such as remote working and hybrid working arrangements.

The sampling technique used in this research was purposive sampling. This technique was selected because the respondents had to meet specific criteria relevant to the research objectives. The criteria included: (1) employees actively using digital communication technologies for work purposes, (2) employees working in flexible or hybrid work systems, and (3) employees who frequently interact with digital devices during working hours. The data used in this study were primary data collected directly from respondents through an online questionnaire distributed using Google Forms. The questionnaire consisted of several statements related to digital hyper-connectivity, role conflict, work flexibility, digital fatigue, and productivity/well-being. Respondents were asked to evaluate each statement using a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. The independent variables in this study were Digital Hyper-Connectivity (X1), Role Conflict (X2), and Work Flexibility (X3). Digital Fatigue (Y1) acted as the mediating variable, while Productivity/Well-being (Y2) functioned as the dependent variable. The indicators of Digital Hyper-Connectivity included continuous online availability, receiving work messages outside working hours, difficulty disconnecting from digital devices, pressure to respond quickly, and multitasking across several digital applications. The indicators of Role Conflict included work-life imbalance, family interference, overlapping responsibilities, dual burdens, and stress caused by conflicting roles. Work Flexibility indicators consisted of flexible scheduling, irregular working hours, overtime work, and blurred work-life boundaries. Digital Fatigue indicators included mental exhaustion, stress, reduced concentration, boredom with digital communication, and technology-related fatigue. Meanwhile, Productivity/Well-being indicators included reduced productivity, declining focus, decision-making difficulties, declining well-being, and insufficient rest time. Data analysis was conducted using Structural Equation Modeling–Partial Least Squares (SEM-PLS) with SmartPLS software. SEM-PLS was chosen because it is suitable for analyzing complex relationships between latent variables and can be applied to relatively small sample sizes. In addition, SEM-PLS is capable of simultaneously testing measurement models and structural

models. The analysis process consisted of two main stages, namely outer model evaluation and inner model evaluation. The outer model evaluation included convergent validity, discriminant validity, Cronbach's Alpha, Composite Reliability, and Average Variance Extracted (AVE) testing to assess the validity and reliability of the research instrument. Meanwhile, the inner model evaluation included R-Square testing, path coefficient analysis, and hypothesis testing using the bootstrapping procedure to determine the significance of relationships between variables. Through the SEM-PLS approach, this study aimed to provide a comprehensive understanding of the relationship between digital work demands, digital fatigue, and employee productivity/well-being in the era of work flexibility.

4. RESULTS AND DISCUSSION

This study involved 107 employees working under flexible work arrangements, including remote and hybrid working systems. All respondents actively utilized digital technologies and online communication platforms as part of their daily work activities. The participants represented various occupational backgrounds, allowing the study to capture diverse experiences regarding digital connectivity, role conflict, work flexibility, and digital fatigue in contemporary workplaces.

The increasing dependence on digital communication tools such as email, instant messaging applications, virtual meeting platforms, and collaborative software reflects the growing digitalization of work processes. Consequently, employees are frequently exposed to continuous connectivity, which may influence both their well-being and work performance. The measurement model was evaluated by examining indicator loadings, convergent validity, discriminant validity, Composite Reliability (CR), Cronbach's Alpha, and Average Variance Extracted (AVE). Based on the SmartPLS output, most indicators demonstrated acceptable loading values approaching or exceeding the recommended threshold of 0.70, indicating that the indicators adequately represented their respective latent constructs.

The results suggest that the measurement instruments used in this study were sufficiently reliable and valid for assessing Digital Hyper-Connectivity, Role Conflict, Work Flexibility, Digital Fatigue, and Productivity/Well-being. Therefore, the structural model evaluation could be conducted.

The structural model was assessed through the coefficient of determination (R^2) and path coefficient analysis.

Table 1. Coefficient of Determination (R^2)

Endogenous Variable	R^2
Digital Fatigue (Y1)	0.302
Productivity/Well-being (Y2)	0.395

The R^2 value of 0.302 for Digital Fatigue indicates that 30.2% of the variance in Digital Fatigue can be explained by Digital Hyper-Connectivity, Role Conflict, and Work Flexibility. The remaining 69.8% is explained by other variables not included in the model.

Meanwhile, the R^2 value of 0.395 for Productivity/Well-being indicates that 39.5% of the variance in employee Productivity/Well-being is explained by Digital Fatigue. According to Hair et al. (2021), these values indicate a moderate level of explanatory power, suggesting that the proposed model adequately explains employee experiences in flexible work environments.

Table 2. Path Coefficients

Relationship	Path Coefficient
Digital Hyper-Connectivity → Digital Fatigue	0.454
Role Conflict → Digital Fatigue	0.230
Work Flexibility → Digital Fatigue	0.354
Digital Fatigue → Productivity/Well-being	0.628

The path coefficient analysis reveals that all exogenous variables have positive relationships with Digital Fatigue.

The strongest predictor of Digital Fatigue is Digital Hyper-Connectivity ($\beta = 0.454$). This finding indicates that employees who experience continuous online availability, constant work-related notifications, and pressure to respond quickly are more likely to experience mental exhaustion and technology-related fatigue. The result is consistent with previous studies indicating that intensive use of digital communication technologies contributes to technostress, cognitive overload, and employee fatigue (Molino et al., 2021; Ninaus et al., 2021).

Work Flexibility also demonstrates a substantial positive effect on Digital Fatigue ($\beta = 0.354$). Although flexibility offers autonomy and convenience, it may also blur the boundaries between work and personal life. Employees often find it difficult to disconnect from work activities, resulting in longer working hours and increased exposure to digital devices. These findings support previous research showing that remote and hybrid work arrangements may increase digital dependency and work intensity when clear organizational boundaries are not established (Wang et al., 2021; OECD, 2023).

Role Conflict exhibits a positive influence on Digital Fatigue ($\beta = 0.230$). This result indicates that employees facing simultaneous demands from work and family responsibilities experience higher levels of emotional exhaustion. Competing expectations from different life domains can create stress and contribute to fatigue in digitally connected work environments. This finding is aligned with studies by Park et al. (2022) and Kniffin et al. (2021), which reported that work–family boundary challenges significantly influence employee psychological well-being in flexible work settings.

The relationship between Digital Fatigue and Productivity/Well-being is particularly strong ($\beta = 0.628$). This finding suggests that increased digital fatigue significantly influences employees' ability to maintain concentration, make effective decisions, sustain productivity, and preserve overall well-being. Similar findings were reported by Yang et al. (2022) and Zhou et al. (2023), who found that excessive digital demands negatively affect employee engagement, performance, and mental health outcomes.

The findings highlight the growing challenges faced by employees in highly digitalized workplaces. The positive relationship between Digital Hyper-Connectivity and Digital Fatigue confirms that continuous access to digital communication technologies may have negative psychological consequences. While technology facilitates communication and collaboration, excessive connectivity can reduce opportunities for recovery and increase mental exhaustion. Continuous exposure to digital notifications, online meetings, and work-related communication may create cognitive overload that gradually decreases employees' ability to recover from work demands (Molino et al., 2021; Ninaus et al., 2021).

The influence of Work Flexibility on Digital Fatigue indicates that flexible working arrangements should be managed carefully. Although flexibility enables employees to work from different locations and manage their schedules more independently, unclear work-life boundaries may encourage employees to remain available beyond regular working hours. Consequently, employees may experience longer working hours and increased digital exposure, which contribute to fatigue. These findings support the argument that flexible work systems require clear organizational policies to prevent excessive work engagement and digital dependency (Wang et al., 2021; OECD, 2023).

The positive effect of Role Conflict on Digital Fatigue demonstrates that employees frequently experience difficulties balancing professional and personal responsibilities. Flexible work environments often create overlapping demands between work and family roles, resulting in emotional strain and psychological pressure. Employees who face simultaneous responsibilities in different life domains may experience higher levels of stress, which eventually contribute to fatigue and reduced well-being. This finding is consistent with previous studies emphasizing the importance of managing work-life boundaries in digital workplaces (Park et al., 2022; Kniffin et al., 2021).

Furthermore, the strong effect of Digital Fatigue on Productivity/Well-being demonstrates that fatigue is not merely an individual problem but also an organizational concern. Employees experiencing high levels of digital fatigue may struggle to concentrate, perform effectively, and maintain psychological well-being. Reduced concentration and prolonged mental exhaustion may ultimately decrease productivity and work quality. Therefore, organizations should implement strategies to reduce excessive digital demands, establish clear communication policies, encourage digital disconnection outside working hours, and provide employee well-being programs. Such initiatives may help employees maintain healthier relationships with digital technologies while sustaining productivity and overall well-being (Yang et al., 2022; Zhou et al., 2023).

Overall, the study confirms that Digital Hyper-Connectivity, Role Conflict, and Work Flexibility are important determinants of Digital Fatigue, while Digital Fatigue itself plays a significant role in shaping employee Productivity/Well-being in the era of work flexibility.

5. CONCLUSION AND LIMITATION

This study examined the influence of Digital Hyper-Connectivity, Role Conflict, and Work Flexibility on Digital Fatigue and its impact on employee Productivity/Well-being in flexible work environments. Using the SEM-PLS approach and data collected from 107 employees, the findings reveal that all three antecedent variables positively contribute to the development of Digital Fatigue among employees.

The results indicate that Digital Hyper-Connectivity is the strongest predictor of Digital Fatigue, suggesting that continuous online availability, frequent digital communication, and expectations for immediate responsiveness increase employees' mental exhaustion. Work Flexibility also contributes positively to Digital Fatigue, implying that although flexible work arrangements provide greater autonomy, they may blur the boundaries between work and personal life. In addition, Role Conflict was found to increase Digital Fatigue, demonstrating that competing demands between work and family responsibilities create additional psychological pressure for employees.

Furthermore, Digital Fatigue was found to have a substantial effect on Productivity/Well-being. Employees experiencing higher levels of digital fatigue tend to report reduced concentration, lower work effectiveness, increased stress, and declining overall well-being. These findings highlight the importance of managing digital work demands in order to maintain employee performance and psychological health.

Overall, this study contributes to the growing body of literature on digital work environments by providing empirical evidence that excessive digital connectivity, role conflict, and work flexibility can increase Digital Fatigue, which subsequently affects employee Productivity/Well-being. The findings emphasize the need for organizations to establish healthy digital work practices, encourage work-life balance, and support employee well-being in increasingly flexible working arrangements.

Despite its contributions, this study has several limitations that should be acknowledged. First, the study was conducted using a relatively small sample of 107 respondents, which may limit the generalizability of the findings to broader employee populations and different organizational contexts. Future studies should involve larger and more diverse samples to improve the representativeness of the findings.

Second, the data were collected through self-reported questionnaires, which may be subject to response bias and individual perceptions. Respondents may have interpreted certain questions differently or provided socially desirable responses that could influence the accuracy of the results.

Third, this study employed a cross-sectional research design in which data were collected at a single point in time. Consequently, the study cannot fully capture changes in Digital Fatigue and employee well-being over extended periods or establish definitive causal relationships among variables.

Finally, the model explains only part of the variance in Digital Fatigue and Productivity/Well-being, indicating that additional factors may also influence employee outcomes. Variables such as organizational support, digital literacy, psychological resilience, leadership style, job demands, and technology acceptance may provide additional explanatory power and should be explored in future research. Further studies are encouraged to employ longitudinal designs and incorporate broader organizational and psychological variables to develop a more comprehensive understanding of Digital Fatigue in flexible work environments.

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