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(IJMOE)www.gaexcellence.com/ijmoe**BEYOND DEMOGRAPHICS: PERSONAL,
ENVIRONMENTAL, RESOURCE, AND ORGANIZATIONAL
DRIVERS OF WORK FROM HOME EFFECTIVENESS
AMONG ADMINISTRATIVE STAFF IN NORTHERN
MALAYSIAN PUBLIC UNIVERSITIES**Amelia Hakimi^{1*}, Shahrina Othman², Muhamad Ali Imran Kamarudin³¹Alumni Centre, Universiti Utara Malaysia, Malaysia amelia@uum.edu.my <https://orcid.org/0009-0005-9404-7137>²Othman Yeop Abdullah Graduate School, Universiti Utara Malaysia, Malaysia shahrina.othman@uum.edu.my <https://orcid.org/0000-0002-7599-7744>³School of Business Management, Universiti Utara Malaysia, Malaysia aliimran@uum.edu.my <https://orcid.org/0000-0002-2157-237X>

*Corresponding Author

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Abstract:

Work from Home (WFH) has evolved from a temporary response to the COVID-19 pandemic into a permanent component of flexible work arrangements in many public sector organizations. Although WFH has become established, empirical evidence on the personal, environmental, resource-related, and organizational factors influencing its effectiveness in public higher education remains limited. This study investigates the influence of Personal, Environmental, Resource, and Organizational (PERO) factors on Work from Home Effectiveness (WFHE) among administrative staff in public universities in Northern Malaysia. Guided by Job Performance Theory and the Job Demands-Resources (JD-R) Model, a quantitative cross-sectional survey was conducted with 300 administrative employees from public universities in Kedah, Penang, Perlis, and Perak. Data were analysed using Statistical Package for the Social Sciences (SPSS) 29 and SmartPLS 4. Independent sample t-tests and one-way Analysis of Variance (ANOVA) revealed no statistically significant differences in WFH effectiveness across the examined demographic characteristics. Partial Least Squares Structural Equation Modelling (PLS-SEM) analysis demonstrated that the PERO model explained 78.1% of the variance in WFH effectiveness ($R^2 = .781$). Personal factors emerged as the strongest positive predictor, followed by organizational and resource factors, whereas environmental factors had a significant negative effect. The findings indicate that WFH

effectiveness depends more on individual readiness, organizational support, reliable digital resources, and coherent institutional work systems than on demographic characteristics. They provide additional empirical support for the JD-R model by highlighting the importance of integrated personal, organizational, and technological resources. These findings offer evidence-based guidance for university leaders and policymakers in developing sustainable hybrid work policies that strengthen employee performance, organizational resilience, and digital transformation in public higher education institutions.

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Keyword:

Hybrid Work; Job Demands-Resources Model; Malaysia; PERO Factors; Public Universities; Work from Home Effectiveness;



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Introduction

The Work from Home (WFH) mode is one of the hallmarks of the post-pandemic world of work, particularly for knowledge-intensive, digitally mediated jobs. There is recent systematic evidence that remote work can have positive impacts on productivity and well-being when job tasks, digital infrastructure, and management systems align with remote work (Anakpo et al., 2023). Higher education institutions are part of this transition, as universities need to continue teaching, provide student services, keep records, handle finances, coordinate human resources and administration, and perform other administrative functions while employees work remotely under flexible or hybrid work arrangements. Additionally, a systematic review of WFH in higher education reveals that universities have used WFH as a crisis management strategy and as a strategic approach associated with flexibility, resilience, and employee support (Al-Naabi & Al-Shukaili, 2024).

The adoption of WFH arrangements is particularly relevant in the Malaysian context, where flexible working has become more formally recognized following the pandemic. Moreover, flexible working practices now require employment contracts, occupational safety, data protection, and employer-employee responsibilities to be taken into account, according to Malaysian legal scholarship (Wahab et al., 2024). This institutional change aligns with broader global data indicating that hybrid working is feasible without negatively impacting performance. For instance, a randomized study reported that when hybrid WFH was implemented and supported by a structured framework, there was no impact on performance or retention rates (Bloom et al., 2024).

While the literature on WFH is growing, much of it focuses on corporate staff, academics, or the general workforce. Nonetheless, administrative staff at public universities have been relatively overlooked, even though they are the backbone of their operations. Administrative

staff can benefit from telecommuting by minimizing commuting, processing routine paperwork digitally, and organizing services through virtual platforms. However, remote work can create role ambiguity, communication delays, weak supervision, home distractions, and digital-skill gaps. There is mixed evidence on the benefits of remote work for employee performance and well-being. These benefits must be explicitly evaluated rather than taken for granted by the presence of a remote work policy (Ferrara et al., 2022).

This article builds a publishable empirical paper from the findings and discussion chapters of a thesis investigating the effectiveness of WFH among administrative staff of the public universities in Northern Malaysia. Demographic profiles and the four PERO dimensions served as the conceptual framework for the study: Personal, Environmental, Resource, and Organizational factors. The main idea of the article is that demographic differences do not account for WFH's effectiveness. Rather, the effectiveness of WFH depends on the interplay among employee self-management, stable technology, clear organizational clarity, and strong social and environmental support systems. Note that this argument is based on the recent Job Demands-Resources (JD-R) theory, which views job outcomes as the result of job demands that deplete energy and job resources that facilitate motivation and performance (Bakker & Demerouti, 2024).

Literature Review and Theoretical Framing

There are two points will be discussed in Literature Review.

Work from Home Effectiveness in Higher Education

WFH effectiveness refers to how productive employees are, how well they can complete tasks, how responsive they are, how satisfying they are, and how well they can coordinate their efforts at work while away from the traditional office setting. Student records, scheduling, procurement, finance, communication, reporting, records management, and stakeholder support are all examples of administrative functions in higher education. Although digital technologies enable administrative tasks such as communication, document management and online service delivery, their effectiveness depends on reliable infrastructure, adequate digital competencies and institutional support. Many public universities continue to face challenges related to internet connectivity, system integration, cybersecurity and employees' digital readiness, which may hinder the effective implementation of remote work (Chung et al., 2021; Smite et al., 2023). Al-Naabi and Al-Shukaili (2024) highlighted several important aspects of WFH in higher education including institutional support, access to technology, digital competence, and policy clarity. Thus, the effectiveness of WFH should not be interpreted as some sort of a preference among employees, but as a multi-dimensional outcome of the institution.

On the other hand, new research indicates that WFH can be productive if employees have the right tools and guidelines. Martin et al. (2022) concluded that digital tools used at home or in the office affect job satisfaction, job stress, and productivity. Likewise, Bloom et al. (2024) highlighted that hybrid models can achieve acceptable performance while supporting retention. These results suggest that the presence of public university administrators in the workplace is not the only factor to consider when evaluating the value of remote work. Other factors, such as measurable outputs, digital readiness, and the continuity of administrative services, should also be considered.

PERO Factors and the Job Demands Resources

The study explored four predictor categories based on the PERO framework, namely Personal Factors (PF), Environmental Factors (EF), Resource Factors (RF), and Organizational Factors (OF). Personal factors include self-discipline, motivation, time management, work-life balance, and family-related factors. The remote social environment, communication climate, peer and perceived organizational support are environmental factors. Resource factors are technology, equipment, internet access, training, and development. Organizational factors range from structure, culture, and leadership to reporting and rewards. These dimensions are theoretically compatible with the JD-R model, as they differentiate between personal, social, technological, and organizational resources.

JD-R theory suggests that job demands can deplete energy, engagement, and well-being when they exceed an employee's coping capacity. Meanwhile, job resources can enhance motivation and performance when they are present (Bakker & Demerouti, 2024). Resources and demands also happen in digitally transformed work, via technology, communication intensity, monitoring practices, and norms of virtual collaboration. Building on this, Scholze and Hecker (2024) demonstrated that the potential for digitization is multiple-sided, which can be used as a supportive resource or as a demanding demand. This is particularly applicable to WFH, as the same technology that makes WFH flexible can increase workload, surveillance pressure, or communication overload.

A particular challenge in remote work is the lack of informal cues for employees, which is why leadership and social support are crucial. Based on a systematic review, the following leadership behaviors are identified as key in WFH contexts: communication, trust, feedback, support, autonomy, and attention to health (Lundqvist et al., 2023). Colleagues are also important, as they can help boost job satisfaction and work-life balance for remote workers (Buonomo et al., 2024). However, social support has to be consistent and predictable. If support is fragmented, inconsistent, or difficult to access, it may become a source of frustration rather than a resource.

Methodology

A quantitative cross-sectional research design was used, with the target population in this case being administrative staff in the public universities in the Northern part of Malaysia. The study subjects were employees with 4 years of tenure or more at the institution, to ensure they had sufficient institutional experience to discuss administrative work arrangements before, during, and after the pandemic. Consequently, data were collected using a structured questionnaire that included items assessing WFH effectiveness and the PERO dimensions.

Note that 300 questionnaires were usable, yielding a usable response rate of 65%. The data were analyzed using descriptive statistics, t-tests, and ANOVA in SPSS 29, and the measurement and structural model assessment analyses were performed in SmartPLS 4. The study was prediction-oriented and involved multiple latent constructs. Thus, PLS-SEM was appropriate. According to Hair and Alamer (2022), PLS-SEM is suitable for complex models, with an emphasis on prediction, theory development, and handling non-normal data.

In the first examination, the study explored differences in WFH effectiveness based on test participants' demographic variables using independent samples t-tests and one-way Analysis of Variance (ANOVA). The next step was to evaluate common method variance using Harman's one-factor test. The indicators' loadings, Cronbach's alpha, composite reliability, average variance extracted, and the heterotrait-monotrait ratio were used to test the measurement model. Other than that, collinearity statistics, coefficient of determination, predictive relevance, effect size, path coefficient, t-value, and p-value were employed to assess the structural model.

Findings

Respondent Profile and Demographic Differences

The respondent profile revealed that the majority were female (196, 65.3%), while male respondents (104) constituted 34.7%. The largest age group was 30-39 years, representing 35.3% of respondents, followed by 40-49 years at 26.3% and 25-29 years at 19.7%. The majority of respondents (56.7%) were married, with 29.7% single. The education profile was concentrated at the diploma and bachelor's degree levels, with 42.0% at the diploma level and 43.3% at the bachelor's level.

Consequently, the service profile covered administrative diversity at public universities. The most populous groups were administration and support staff (20.3%), information systems staff (13.0%), talent and arts staff (12.3%), social staff (12.3%), and finance staff (11.0%). The length-of-service profile indicated that 42.7% served for 5-10 years and 22.3% served for 11-15 years. Almost half of the respondents (47.9%) reported having no dependents, and 41.7% reported having a partner and children. The traits suggest that samples were obtained from a variety of life situations, job roles, and institutional experiences of employees.

All demographic tests indicated that WFH effectiveness was high and did not differ significantly across demographic categories. There was no significant difference between the male and female respondents on the gender test, $t = 0.270$, $p = .787$. Similarly, staff age was not significant ($F(4, 295) = 1.003$, $p = .406$), although the mean WFH effectiveness score was highest among employees under 24 years of age. All the other factors (marital status, education, service classification, length of service, living situation, dependents, partner WFH status, pandemic WFH experience, and post-pandemic WFH experience) had p -values $> .05$. As a result, the first hypothesis was supported: the effectiveness of WFH was not significantly different between demographic profiles.

Measurement Model Results

The results of the measurement model confirmed its reliability and validity. The internal consistency coefficient (Cronbach's alpha) for the environmental factors scale was .896, and for the personal factors scale was .949, both of which exceed the recommended level. Construct reliability was good, as composite reliability values ranged from .926 to .955. Meanwhile, convergent validity was adequate, with average variance extracted values ranging from .624 to .773 for items in the WFH effectiveness and organizational factors categories, respectively. The findings lend support to the conclusion that the indicators measured what they were intended to measure with an acceptable degree of precision.

Discriminant validity was obtained using Heterotrait-Monotrait (HTMT) Ratio of Correlations, which was $< .85$. The highest HTMT value was for the relationship between resource factors and environmental factors (.844), which remains within the accepted criterion. This result suggests a relationship between the constructs and that they are empirically different. Common method variance was not a serious threat, as Harman's single-factor test indicated that the first factor accounted for 47.004% of the total variance, which is below the 50% threshold. Furthermore, there was no collinearity problem in the model, as the variance inflation factor values were below the conservative threshold of 5 (range: 1.747–4.161).

Table 1: Structural Model Results for Predictors of WFH Effectiveness

Hypothesis	Path	t-value	p-value	Decision
H2	Personal factors -> WFH effectiveness	14.189	.000	Supported
H3	Environmental factors -> WFH effectiveness	11.896	.000	Supported
H4	Resource factors -> WFH effectiveness	12.415	.000	Supported
H5	Organizational factors -> WFH effectiveness	12.986	.000	Supported

Note. $R^2 = .781$; adjusted $R^2 = .778$; $Q^2 = .351$. Source: Thesis survey data, $n = 300$.

Structural Model Results

The structural model assessment revealed strong explanatory and predictive capabilities of the PERO framework in explaining WFH effectiveness. The model using the PERO factors accounted for 78.1% of the overall variance in WFH effectiveness, with an adjusted R^2 of .778. The Predictive Relevance (Q^2) value was .351, indicating meaningful predictive ability. The values indicate that the PERO conditions had a significant impact on WFH effectiveness among administrative staff.

Personal factors were the most significant positive predictor of WFH effectiveness, $t = 14.189$, $p < .001$. Resource factors also had a significant positive effect, $t = 12.415$, $p < .001$. Organizational factors were significant, $t = 12.986$, $p < .001$. On the other hand, environmental factors had a significant negative effect, $t = 11.896$, $p < .001$. This negative coefficient was significant, indicating that the environment was not a straightforward support structure in this study. The lack of communication, peer connection, access to supervisors, or perceived support could have reduced WFH effectiveness.

Discussion

Demographic Characteristics Were Not Significant Predictors of Work from Home Effectiveness.

The lack of significant demographic differences indicates that WFH effectiveness was generally felt across all employee groups, rather than by gender, age, level of education, marital status, or year of service. This is a significant finding, as when it comes to WFH conversations, it is typically assumed that certain people, such as younger workers, employees with fewer dependents, or those in tech jobs, are the best candidates. This is not the case from the findings. On the contrary, employees across demographic groups reported relatively high WFH effectiveness, suggesting that institutional work systems may be more important than demographic identity.

This aligns with the remote work literature, which indicates that WFH outcomes are influenced by the suitability of the work, digital infrastructure, management expectations, and organizational design, rather than by individual demographic characteristics (Anakpo et al., 2023). The results also support the JD-R theory, as the demographic characteristics are not necessarily job resources or demands but rather influence outcomes through the job context (Bakker & Demerouti, 2024). The implication for public universities is that a hybrid work policy should not be based on stereotypical assumptions about a population. Instead, policy should focus on universal access to reliable resources, fair performance standards, and consistent support.

Personal Factors Were the Strongest Positive Driver of Work from Home Effectiveness.

Note that personal factors were the most influential factors for WFH effectiveness. This indicated that having the flexibility to manage time, stay motivated, organize work, maintain self-control, and adjust to home-working environments was associated with positive WFH experiences among employees. Similarly, Jab et al. (2024) identified three key factors: personal responsibility, boundary management, and self-discipline that healthy hybrid work employees believe are relevant for hybrid public administrators. In this study, personal readiness was observed as the starting point for administrative employees to reap rewards from their flexibility to work remotely.

Nonetheless, the finding should not be interpreted as shifting responsibility entirely to employees. A lack of clear expectations, insufficient tools, or insufficient feedback from supervisors can all lead to decreased employee motivation. While remote work can boost autonomy and satisfaction, it can also be stressful, diminish social connection, and erode boundaries between work and life, warned Ferrara et al. (2022). Thus, personal factors need to be addressed through institutional practices that include clearly defined daily targets, workload planning, boundary-setting guidance, wellness checks, and flexible scheduling, which do not promote availability.

Environmental Factors Negatively Influenced Work from Home Effectiveness.

One of the most theoretically intriguing results of the study is the negative effect of environmental factors. The findings indicate that the social and supportive climate of remote work could have been inconsistent, inadequate, or unstructured. In the real-world office, people

can obtain immediate clarification, see how things are conducted and ask for immediate help from others. Hence, the same kinds of support mechanisms must be intentionally replaced with digital ones in a home environment. The remote environment can become a job demand rather than a job resource if employees receive delayed feedback, lack quality communication, have little peer interaction, and have limited visibility into their supervisor.

Findings differ from others, indicating that colleagues and leaders offer opportunities to improve work-life balance and job satisfaction for remote workers (Buonomo et al., 2024). In contrast, social support is not unimportant. It simply means that social support should be effective and result in a helping action. Lundqvist et al. (2023) stated that communication, trust, empathy, feedback, and a balance between autonomy are essential for remote leadership. Universities that offer nominal support but lack consistent communication patterns can make their support feel disjointed or onerous. This is why the negative effects of environmental factors on WFH effectiveness may have been observed in the current study.

Resource Factors Enhanced Work from Home Effectiveness.

The results revealed a significant positive effect, with resource factors exerting a significant influence on WFH effectiveness. This discovery further demonstrates the significance of technology, equipment, stable Internet access, digital platforms, software access, and training to the performance of remote administration. In universities, administrative tasks include document management, database administration, student records, approvals, reporting systems, email communication, and virtual meetings. Without good digital tools, workers could waste time on technical issues rather than their primary tasks. In line with this, this finding was interpreted as consistent with the direct link between home-office digitalization and job satisfaction, stress, and productivity reported by Martin et al. (2022).

Resource finding is also a sign of the overall digitalization of work. According to Scholze and Hecker (2024), digital technologies can provide resources for jobs if they enable efficiency, autonomy, and access to information. However, they can become demands if they create overload or insecurity. The present study discovered a positive coefficient for the resources, suggesting that functional tools had a positive effect on WFH effectiveness. This should include providing equipment and making a concerted effort to enhance ongoing digital and cybersecurity education, as well as to provide proactive support on Information Technology (IT) helpdesks.

Organizational Factors Strengthened Work from Home Effectiveness.

This study revealed that, among organizational factors, having a clear structure, a positive culture, clear leadership, and a recognition system had a significant positive impact on WFH effectiveness. It indicates that WFH is effective when it is clearly structured, the environment is positive, there is clear leadership, and there is a recognition system. Moreover, administrative personnel should be clear about reporting requirements, output expectations, task priorities, lines of communication, working hours, the escalation process, and performance evaluation. Any remote working arrangements that are not handled in the same way as working in the office are not going to work, which calls for an institutional operating system.

This is consistent with the reported results that effective hybrid models can maintain performance while enhancing employee satisfaction and retention (Bloom et al., 2024). Additionally, it is based on research regarding leadership from the University of Washington, which found that remote workers require trust, autonomy, feedback, and communication from leaders (Lundqvist et al., 2023). Organizational factors play an important role in Malaysian public universities, as organizational systems tend to be hierarchical, procedure-driven, and compliance-oriented. This is due to WFH effectiveness relying on the extent to which universities can implement formal procedures into digital workflows while maintaining accountability, service quality, and staff well-being.

Practical and Policy Implications

First, the technology infrastructure for administrative staff at public universities needs to be strengthened. This encompasses safe access to institutional systems, dependable virtual private networks, authorized collaboration platforms, laptops or other devices, webcams, headsets, cloud-based document systems, and a technical support desk. Investment in digital infrastructure should be viewed as a productivity investment, not as a choice for staff benefits, as resource constraints make it an effective catalyst for WFH. Administrative employees who handle sensitive information about students, staff, and the institution should also be part of cybersecurity training.

Secondly, universities need to formalize WFH into a well-defined performance system. Remote administrative work requires written expectations, measurable outputs, response-time standards, meeting norms, documentation procedures, and transparent accountability mechanisms. Hair and Alamer (2022) highlighted the benefits of PLS-SEM for predictive modeling, and the present study indicated a high R^2 value, suggesting that the identified predictors can be used to enhance WFH effectiveness by manipulating institutions. Furthermore, clear policies reduce ambiguity and avoid the use of a physical presence norm to assess supervisors of remote employees.

Third, supervisors need to be trained in distance supervision. Regular check-ins, constructive feedback, clarity, empathy, and trust are all necessary for the remote leader. Lundqvist et al. (2023) reported that these leadership actions are crucial to employee well-being and performance in WFH. In practice, supervisors should avoid neglecting their duties or micromanaging. Using weekly planning meetings, quick progress updates, digital task boards, and escalation channels can help keep administrative teams coordinated without putting undue surveillance pressure.

Fourth, universities shall be redesigned to support the environment, as the environmental path is negative. How to design a peer support system using virtual communities of practice, cross-unit chat channels, mentoring, and planned knowledge sharing? Buonomo et al. (2024) demonstrated that colleague support can reinforce job satisfaction and work-life balance among remote employees. The negative environmental effect is that, in the present study, informal support may not have been effective for remote work. Therefore, it is advisable that support be available, predictable, and linked to universities' actual administrative processes.

Fifth, personal readiness should be supported through training and well-being initiatives. Employees must be supported in time management, setting boundaries around their work, digital self-organization, stress management, and home-work ergonomics. Seeking help from

public administration employees with hybrid working, Jab et al. (2024) identified structural and behavioral support needs. Hence, it is appropriate for public universities to incorporate employee capacity-building into their institutional policies. This is a fair method to handle WFH-related issues, without faulting staff for their problems, acknowledging the need for self-discipline and adaptability.

Theoretical Implications

This study has validated the PERO framework in the context of public university administration in Malaysia, thus enriching the WFH literature. The model indicates that WFH effectiveness is influenced by individual, environmental, resource, and organizational factors, and is not determined solely by individual characteristics. This builds on WFH's work in higher education by exploring the perceptions of administrative staff, who are less visible than academic staff but play a key role in institutional continuity.

The results further complement the JD-R theory. According to Bakker and Demerouti (2024), resources foster motivation and performance, whereas demands put strain on them when they are not managed. The present study corroborates this logic by highlighting the positive roles of personal, resource, and organizational factors. When a presumed resource is inconsistent or poorly implemented, however, it can become a demand, as evidenced by its negative environmental impact. This aligns with the more recent perspective on digital-mediated work, which needs to be reconsidered and discussed in both its positive and negative aspects (Scholze & Hecker, 2024).

Finally, the study provides a context-sensitive contribution. Note that most of the WFH studies have been conducted on samples of professional employees. There is a need for higher education-specific WFH evidence, as proposed by Al-Naabi and Al-Shukaili (2024). This study, focusing on administrative staff in Northern Malaysian public universities, provides evidence of a context of public-sector higher education characterized by hierarchy, service delivery, public accountability, and digital readiness.

Limitations and Future Research

The study has several weaknesses. First, the cross-sectional design does not allow for causal inference. The results indicate strong relationships between the PERO factors and WFH effectiveness. Nonetheless, they cannot define the nature of these relationships over time. Longitudinal designs should be used in the future to investigate whether WFH effectiveness increases as universities develop hybrid working policies and employees gain more WFH experience.

Second, the study's data were self-reported via questionnaires. While common method variance was not observed to be a serious problem based on Harman's single-factor test, subjective interpretations of the data or social desirability may be present in self-report data. Thus, future studies could incorporate survey data alongside interviews, supervisor evaluations, productivity data, digital task data, or service quality measures. Mixed-method designs help capture more in-depth experiences, as remote work can affect perceptions of self and the workplace (Ferrara et al., 2022).

Thirdly, the study was conducted among the administrative staff of public universities in the Northern region of Malaysia. The results might not be representative of private universities, other regions in Malaysia, or non-university public agencies. Comparative research on the future should explore whether similar PERO patterns would be identified across universities in urban and semi-rural settings, by university size, and within different administrative units. Nevertheless, context will remain significant, as noted by Jab et al. (2024), in hybrid work in public administration.

Future studies should consider additional factors, such as digital literacy, home workspace quality, caregiving intensity, emotional exhaustion, perceived isolation, supervisor trust, cybersecurity readiness, and the digital maturity of institutions, as these factors also influence the analysis of factors that impact institutional digital transformation. The negative environmental finding is highlighted. Through qualitative interviews, the impact of low levels of peer support, over-communication, inconsistent managerial feedback, social isolation, or unclear organizational expectations could be identified as the source of the negative effect.

Conclusion

Results indicate that there was no significant difference between the demographic profiles and WFH effectiveness. There were no statistically significant differences in effectiveness, as reported by administrative staff, across the following categories: gender, age, education, marital status, service type, number of years served, living situation, dependents, or WFH experience. This means that the WFH policy should not be based on assumptions about the demographics. The most explanatory evidence came from the PERO factors, which accounted for 78.1% of the variance in WFH effectiveness. Personal factors were the strongest positive predictors, and organizational and resource factors were the second strongest. Environmental factors were also significant but negative, indicating that weak or inconsistent communication, peer support, or supervisory structures can have a negative effect in the remote support environment. Thus, the study suggests that WFH effectiveness is an emergent characteristic of the system, shaped by individual readiness, the quality of digital resources, clarity of organizational boundaries, and support environments.

The bottom line for the public universities is that it is not enough to permit people to WFH. It demands investment in technology, communication structures, remote leadership, performance incentive systems, peer support, and employee care programs. The study demonstrates, theoretically, that the JD-R model is an appropriate one for explaining remote work but should be used with care, as not all types of resources are, in fact, resources. To achieve effective WFH in higher education administration, it is important to structure work systems to translate flexibility into effective, accountable, and sustainable institutional outcomes.

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