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DIGITAL WORK STRESS AND MUSLIM LECTURERS' INNOVATIVE WORK BEHAVIOR: ROLES OF ENGAGEMENT AND PSYCHOLOGICAL SAFETY

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Abstract: *Digital transformation has intensified technology-related demands on university lecturers, yet how digital work stress shapes their innovative work behavior remains unclear. Drawing on job demands resources theory integrated with Islamic human resource management values, this study examined the effects of digital work stress and psychological safety on the innovative work behavior of Muslim lecturers through work engagement and tested whether psychological safety buffers the effect of digital work stress on work engagement. A cross-sectional survey was conducted among 155 permanent Muslim lecturers at private universities in Banyumas Raya, Central Java, Indonesia, selected through purposive sampling. The data were analyzed using partial least squares structural equation modeling. The results showed that digital work stress reduced work engagement, whereas psychological safety enhanced both work engagement and innovative work behavior. Work engagement fully mediated the effect of digital work stress on innovative work behavior and partially mediated the effect of psychological safety. Psychological safety also weakened the negative effect of digital work stress on work engagement. The model explained 36.1% of the variance in work engagement and 32.5% of the variance in innovative work behavior. These findings extend job demands resources theory by integrating the Islamic values of amanah (trustworthiness), ihsan (excellence), itqan (diligence), and shura (consultation) and by confirming the buffering role of psychological safety in a digital academic setting. Practically, university leaders should distribute digital workloads fairly and cultivate a consultative, psychologically safe work climate to sustain lecturers' engagement and innovation.*

Keywords: *Digital Work Stress, Innovative Work Behavior, Islamic Human Resource Management, Psychological Safety, Work Engagement*

INTRODUCTION

Digital transformation has changed the way higher education institutions carry out teaching, research, and administration (Khlaif et al., 2023; Truța et al., 2023; Zheng et al., 2022). Gallup (2026) reported that only 20% of employees worldwide were engaged in their work in 2025, while employees' daily stress remained above pre-pandemic levels. The pressure arising from the use of information technology is known as digital work stress or *technostress*, namely an individual's difficulty in adapting to excessive and constantly changing technological demands (Kumar, 2024; Nastjuk et al., 2024; Tarafdar et al., 2007).

Muslim lecturers in Indonesia constitute a professional group that is highly exposed to digital work stress. Academics are expected to remain constantly connected to e-mail, online learning systems, and reporting applications, so the boundaries between working time, personal time, and time for worship have become increasingly blurred (Bourlakis et al., 2023;

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Truța et al., 2023). The shift of teaching to online modes has also increased technostress among academics (Khlaif et al., 2023; Nascimento et al., 2024; Zheng et al., 2022), and studies of higher education staff show that technostress can erode well-being and increase turnover and absenteeism (Bourlakis et al., 2023; Harunavamwe & Ward, 2022).

Islam views work as a trust (*amanah*) and an act of worship that must be carried out earnestly, as stated in the Qur'an (At-Taubah 9:105) (Kementerian Agama Republik Indonesia, 2019), and the Islamic work ethic derived from these teachings shapes employees' attitudes and behavior (Aman-Ullah & Mehmood, 2023; Zia et al., 2024). The Prophet Muhammad encouraged every task to be completed with *itqan*, that is, diligently, carefully, and thoroughly (narrated by Al-Baihaqi). Islam also affirms that Allah does not burden a soul beyond its capacity (Qur'an, Al-Baqarah 2:286), and Islamic leadership emphasizes a healthy integration of work, family, worship, and personal well-being (Udin, 2024). The Islamic work ethic even encourages creativity and innovation as a manifestation of *ihsan* (excellence) (Zia et al., 2024).

The problem is that higher education institutions need lecturers who behave innovatively, that is, who are able to explore, generate, champion, and implement new ideas (AlEssa & Durugbo, 2022; De Jong & Den Hartog, 2010; Soediro et al., 2025). Excessive digital demands drain energy and thereby reduce work engagement (Andrulli & Gerards, 2023; Consiglio et al., 2023; Harunavamwe & Kanengoni, 2023), even though work engagement is a key driver of innovative work behavior (Fiernaningsih et al., 2023; Liu et al., 2023; Zadow et al., 2023). Conversely, psychological safety, namely the belief that the work environment is safe for interpersonal risk-taking, enhances work engagement (Kassandrinou et al., 2023; Liu et al., 2023; Mao & Tian, 2022) and innovative work behavior (Elsayed et al., 2023; T. Li & Tang, 2022; Xu & Suntrayuth, 2022). This value is consistent with Islamic teachings on consultation and leaders' gentleness (Qur'an, Ali Imran 3:159; Asy-Syura 42:38).

Job demands resources (JD-R) theory explains these relationships through two processes (Bakker & Demerouti, 2017; Bakker et al., 2023; Mazzetti et al., 2023). Job demands such as digital work stress trigger an energy-depletion process that weakens engagement (Andrulli & Gerards, 2023; Nastjuk et al., 2024; Wang et al., 2023), whereas job resources such as psychological safety trigger a motivational process that fosters engagement and proactive behavior (A. C. Edmondson & Bransby, 2023; Liu et al., 2023; Mazzetti et al., 2023). Job resources can also buffer the negative impact of job demands (Bakker et al., 2023; Buzás et al., 2025; Demerouti & Bakker, 2023; Harunavamwe & Kanengoni, 2023). Islamic values enrich this theory because religiosity can function as a personal resource that sustains

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engagement (Abualigah et al., 2021; Abualigah & Koburtay, 2023), while Islamic leadership regards balanced workloads, consultation, and mutual assistance as part of its trust (Udin, 2024).

Previous studies still leave three gaps. The empirical gap arises from inconsistent findings. Some studies have found that technostress reduces engagement and well-being (Andrulli & Gerards, 2023; Truța et al., 2023; Wang et al., 2023), whereas others have identified a positive side in the form of *techno-eustress* (Nascimento et al., 2024), found that after-hours connectivity can even reduce exhaustion by increasing autonomy (van Zoonen et al., 2023), or reported dual and null effects of work stress on innovation (Buzás et al., 2025; Kasim et al., 2022; Meng & Liu, 2023). Meanwhile, research on the innovative behavior of Indonesian lecturers has focused on personal and organizational antecedents rather than digital demands (Aryani et al., 2025; Fiernaningsih et al., 2023; Soediro et al., 2025).

The methodological gap is evident in the design of previous studies. Studies on technostress among educators have often relied on reviews or qualitative designs (Bourlakis et al., 2023; Zheng et al., 2022), while quantitative studies have mostly used samples of non-academic employees (Andrulli & Gerards, 2023; Buzás et al., 2025; Kasim et al., 2022). Studies that test mediation and moderation simultaneously while controlling for common method bias also remain limited (Hair et al., 2019; Kock, 2015; Podsakoff et al., 2003).

The conceptual gap is apparent in two respects. Psychological safety has more often been positioned as a mediator of the effect of leadership on innovative behavior (T. Li & Tang, 2022; Liu et al., 2023; Xu & Suntrayuth, 2022) rather than as a resource that buffers technological pressure, even though the buffering hypothesis is a core proposition of JD-R theory (Bakker et al., 2023; Buzás et al., 2025; Demerouti & Bakker, 2023). In addition, studies on technostress and innovation have not integrated Islamic values such as *amanah*, *itqan*, and *shura*, even though these values have been shown to shape the work attitudes and behavior of Muslim employees (Abualigah et al., 2021; Aman-Ullah & Mehmood, 2023; Zia et al., 2024).

This study extends the research of Soediro et al. (2025) on lecturers' innovative work behavior and that of Buzás et al. (2025) on technostress and psychological safety, because neither study examined these variables simultaneously. It also broadens the work of Zuhaena (2026) by adding the buffering role of psychological safety and Islamic human resource management values. Accordingly, this study aims to analyze the effects of digital work stress and psychological safety on the work engagement and innovative work behavior of Muslim lecturers, to examine the mediating role of work engagement, and to test the moderating role of psychological safety. Its novelty lies in integrating JD-R theory with the values of *amanah*,

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itqan, and *shura* in a moderated mediation model. Practically, the results provide a basis for university leaders to manage digital workloads fairly and to revitalize a culture of consultation.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Job Demands Resources Theory and Islamic Human Resource Management Values

JD-R theory states that every job has job demands and job resources (Bakker & Demerouti, 2017). Job demands require sustained effort and therefore incur physiological and psychological costs, whereas job resources help achieve goals, reduce the costs of demands, and stimulate personal growth (Bakker et al., 2023; Mazzetti et al., 2023). High demands combined with low resources trigger an energy-depletion process, resources trigger a motivational process, and resources at the individual, team, and organizational levels can attenuate the negative effects of demands (Bakker & de Vries, 2021; Demerouti & Bakker, 2023).

Islamic values are consistent with this logic. The principle that a burden must not exceed one's capacity (Qur'an, Al-Baqarah 2:286) underscores the importance of controlling job demands, a concern reflected in the emphasis of Islamic leadership on healthy work-life integration (Udin, 2024). Consultation and leaders' gentleness (Qur'an, Ali Imran 3:159), as well as mutual assistance in goodness (Qur'an, Al-Maidah 5:2), are social resources that foster a sense of safety. *Amanah*, *ihsan*, and *itqan* encourage employees to work wholeheartedly and to continuously improve their work methods (Aman-Ullah & Mehmood, 2023; Zia et al., 2024). Accordingly, this study positions digital work stress as a job demand (Kumar, 2024; Tarafdar et al., 2007), psychological safety as a job resource aligned with the values of *shura* and *ukhuwah* (brotherhood) (A. Edmondson, 1999; A. C. Edmondson & Bransby, 2023), work engagement as a motivational state reflecting *amanah* and *ihsan* (Abualigah et al., 2021; Schaufeli et al., 2006), and innovative work behavior as a manifestation of *itqan* (Zia et al., 2024). The relationships among these variables are summarized in the conceptual framework presented in Figure 1.

Digital Work Stress and Work Engagement

Digital work stress is the pressure experienced by individuals due to technological demands that are excessive, complex, invasive, threatening, and constantly changing (Nastjuk et al., 2024; Tarafdar et al., 2007). Work engagement is a positive state of mind characterized by vigor, dedication, and absorption in work (Mazzetti et al., 2023; Schaufeli et al., 2006). High technological demands force lecturers to expend additional energy, thereby reducing the energy reserves available for full involvement in their tasks (Andrulli & Gerards, 2023; Wang et al., 2023). JD-R theory positions digital work stress as a demand that triggers the energy-

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depletion process and weakens engagement (Bakker & Demerouti, 2017; Bakker et al., 2023). Islam also reminds believers that burdens exceeding one's capacity are not intended (Qur'an, Al-Baqarah 2:286) and that the body has a right to rest (narrated by Al-Bukhari), so boundless digital demands risk eroding work enthusiasm. This reasoning is consistent with studies on hybrid and virtual workers (Harunavamwe & Kanengoni, 2023), remote workers experiencing burnout due to technostress creators (Consiglio et al., 2023), always-connected academics (Truța et al., 2023), teachers who use social media for work after hours (Fang et al., 2024), and employees experiencing digital work exhaustion (Buenadicha-Mateos et al., 2022; Farmanesh et al., 2025; Wang et al., 2023). Based on these arguments, the first hypothesis is formulated as follows:

H1: Digital work stress has a negative effect on lecturers' work engagement.

Psychological Safety and Work Engagement

Psychological safety is a shared belief that a work unit is safe for interpersonal risk-taking (A. Edmondson, 1999). Reviews of this literature show that psychological safety improves the work experience and supports learning behavior, so it serves as an important condition for employees to invest themselves fully in their work (A. C. Edmondson & Bransby, 2023). Lecturers who feel safe are freer to express opinions and try new methods without fear of embarrassment (A. C. Edmondson & Bransby, 2023; T. Li & Tang, 2022). JD-R theory views psychological safety as a job resource that triggers the motivational process and thereby increases engagement (Bakker & Demerouti, 2017; Mazzetti et al., 2023). Islam teaches leaders to be gentle and to consult with their followers (Qur'an, Ali Imran 3:159), so a psychologically safe environment embodies the values of *shura* and *ukhuwah* that foster earnestness at work (Udin, 2024). Empirical evidence shows a positive relationship between psychological safety and engagement among employees with high-quality relationships with their supervisors (Mao & Tian, 2022), teachers (Kassandrinou et al., 2023; Wu et al., 2025), software engineers working in a psychosocially safe climate (Zadow et al., 2023), and corporate employees (Liu et al., 2023). Based on this description, the second hypothesis is proposed as follows:

H2: Psychological safety has a positive effect on lecturers' work engagement.

Work Engagement and Innovative Work Behavior

Innovative work behavior refers to intentional actions to explore, generate, champion, and implement new ideas that benefit the job and the organization (AlEssa & Durugbo, 2022; De Jong & Den Hartog, 2010). This behavior requires energy and persistence because new ideas often face resistance and must be promoted to others (AlEssa & Durugbo, 2022). Individuals who are engaged in their work have the energy, enthusiasm, and focus needed to

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pass through each stage of innovation (Fiernaningsih et al., 2023; Zadow et al., 2023). JD-R theory explains that work engagement is a motivational state that generates proactive behavior (Bakker & Demerouti, 2017; Bakker et al., 2023). The Islamic work ethic views earnestness and *ihsan* as drivers of creativity, so employees who work wholeheartedly are encouraged to continuously improve their work methods (Zia et al., 2024). This reasoning is in line with research on vocational lecturers in Indonesia (Fiernaningsih et al., 2023), corporate employees (Liu et al., 2023), software engineers (Zadow et al., 2023), and lecturers at private universities in Indonesia (Soediro et al., 2025). Drawing on this reasoning, this study proposes the third hypothesis:

H3: Work engagement has a positive effect on lecturers' innovative work behavior.

Psychological Safety and Innovative Work Behavior

Innovation entails the risk of failure and criticism, so individuals only dare to innovate when their environment is psychologically safe (A. Edmondson, 1999; Elsayed et al., 2023). Psychological safety allows individuals to ask questions, seek feedback, and discuss mistakes openly (A. C. Edmondson & Bransby, 2023). JD-R theory regards this sense of safety as a resource that expands individuals' capacity for proactive behavior (Bakker & Demerouti, 2017). The principle of *shura* affirms that collective affairs are decided through consultation (Qur'an, Asy-Syura 42:38), so lecturers who are involved and listened to are more willing to voice new ideas (Udin, 2024). This positive relationship has been demonstrated among employees under inclusive leadership (T. Li & Tang, 2022), research and development personnel in high-tech enterprises (Xu & Suntrayuth, 2022), employees who take error risks (Elsayed et al., 2023), and employees under ethical leadership (Liu et al., 2023). This body of evidence leads to the fourth hypothesis:

H4: Psychological safety has a positive effect on lecturers' innovative work behavior.

The Mediating Role of Work Engagement

JD-R theory states that job demands affect work behavior through changes in individuals' energy and motivational states (Bakker & Demerouti, 2017; Bakker et al., 2023). Digital work stress drains lecturers' energy so that engagement declines, and low engagement makes lecturers reluctant to explore and champion new ideas (Andrulli & Gerards, 2023; Fiernaningsih et al., 2023). The effect of work stress on innovation tends to be indirect because it depends on the psychological states that are formed (Buzás et al., 2025; Meng & Liu, 2023). The Islamic work ethic regards work as *amanah*, so lecturers who lose enthusiasm due to digital pressure risk not fulfilling their mandate to innovate optimally (Aman-Ullah & Mehmood, 2023). A similar pattern has been found in the effect of technostress on well-being via work engagement (Andrulli & Gerards, 2023), the effect of technostressors on work

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outcomes via work exhaustion (Wang et al., 2023), and the effect of technostressors on voice behavior via intrinsic motivation (Buzás et al., 2025). Accordingly, the fifth hypothesis is stated as follows:

H5: Work engagement mediates the effect of digital work stress on lecturers' innovative work behavior.

The motivational process of JD-R theory indicates that job resources encourage innovative behavior by increasing engagement (Bakker et al., 2023; Mazzetti et al., 2023). Psychological safety makes lecturers feel valued, so they become more enthusiastic and dedicated and then channel this energy into new ideas (A. C. Edmondson & Bransby, 2023). The value of *ukhuwah* in Islam fosters mutual respect that strengthens earnestness and *ihsan* at work (Udin, 2024). This mechanism is supported by the finding that psychological safety and work engagement form a sequential pathway from ethical leadership to innovative behavior (Liu et al., 2023). Consistent findings have also been reported on the intermediary role of psychological safety in engagement (Mao & Tian, 2022), the intermediary role of engagement between a psychosocially safe climate and creativity (Zadow et al., 2023), and the intermediary role of creative process engagement among lecturers (Soediro et al., 2025). On this basis, the sixth hypothesis is formulated as follows:

H6: Work engagement mediates the effect of psychological safety on lecturers' innovative work behavior.

The Moderating Role of Psychological Safety

The buffering hypothesis of JD-R theory states that job resources weaken the negative effect of job demands on employees' psychological states (Bakker & Demerouti, 2017; Bakker et al., 2023). Lecturers who feel psychologically safe are more willing to admit technological difficulties and seek help from colleagues, so digital pressure does not develop into energy depletion (A. Edmondson, 1999; A. C. Edmondson & Bransby, 2023). Psychological safety also changes individuals' appraisal of technostressors from threats into manageable challenges (Buzás et al., 2025). Islam teaches mutual assistance in goodness (Qur'an, Al-Maidah 5:2) as well as patience (*sabr*) and reliance on God (*tawakkul*) in facing hardship, and religiosity has been shown to act as a resource that weakens the adverse effects of burnout (Abualigah et al., 2021; Bal & Kökalan, 2021), so lecturers working in a mutually supportive environment are better able to manage digital pressure. The buffering role of resources against technostress has been demonstrated through organizational support among hybrid workers (Harunavamwe & Kanengoni, 2023), e-work self-efficacy among remote workers (Consiglio et al., 2023), leader-member exchange (Choi, 2024), supervisor and organizational support (Mitonga-Monga & Mageza-Mokhethi, 2025; Sri Sai & Pinapati,

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2023), digital leadership (Farmanesh et al., 2025), a digital mindset (Valta et al., 2024), and psychological safety and intrinsic motivation among office workers (Buzás et al., 2025). Referring to these findings, the seventh hypothesis is proposed as follows:

H7: Psychological safety moderates the negative effect of digital work stress on lecturers' work engagement, such that the effect is weaker when psychological safety is high.

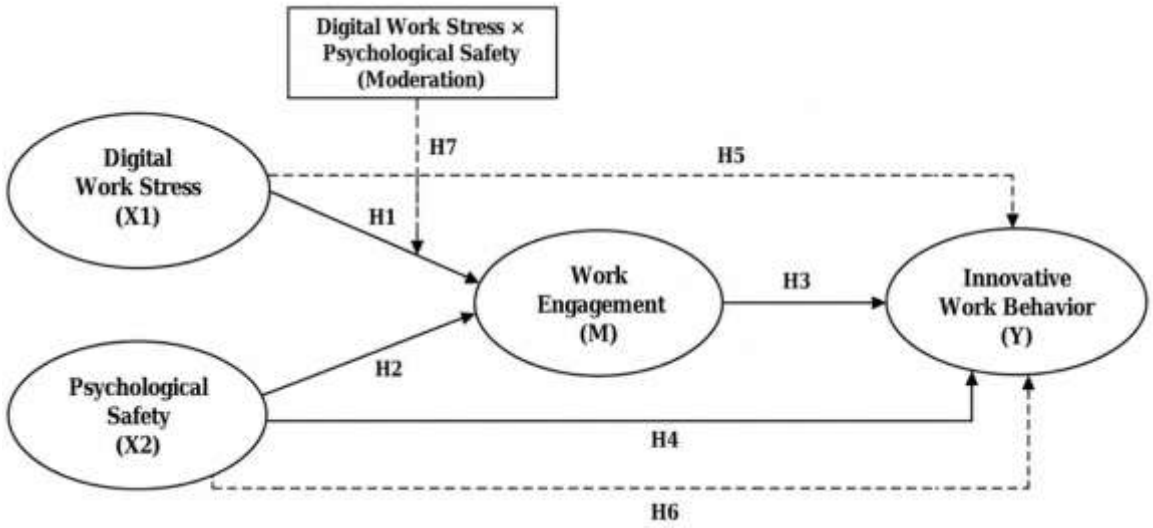


Figure 1. Conceptual Framework

RESEARCH METHODS

This study employed a quantitative approach with a cross-sectional survey design to examine the hypothesized relationships among the variables. The population comprised permanent Muslim lecturers at private higher education institutions in the Banyumas Raya region, Central Java, Indonesia, under the Higher Education Service Institution (LLDIKTI) Region VI. The sample was selected purposively based on three criteria: holding a national lecturer identification number, having at least two years of work experience, and using digital platforms for activities related to the *tridarma* (teaching, research, and community service). The minimum sample size was set at 155 respondents based on the inverse square root method for a minimum path coefficient of 0.20 at a 5% significance level (Kock & Hadaya, 2018).

Data were collected through an online questionnaire using a five-point Likert scale ranging from strongly disagree to strongly agree. The English-language instruments were translated into Indonesian through a back-translation procedure (Brislin, 1970) and pilot-tested on lecturers outside the sample. Respondents were assured of anonymity to reduce social desirability bias (Podsakoff et al., 2003). The measurement of each variable is presented in Table 1.

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Table 1. Measurement of Research Variables

Variable	Operational definition	Indicators	Items	Source
Digital work stress	Pressure experienced by lecturers due to information technology demands in performing the *tridarma*	Techno-overload, techno-invasion, techno-complexity, techno-insecurity, techno-uncertainty	23	Tarafdar et al. (2007)
Psychological safety	Lecturers' belief that their study program or work unit is safe for interpersonal risk-taking	Freedom to raise problems, acceptance of differences, tolerance of mistakes, willingness to help, appreciation of contributions	7	A. Edmondson (1999)
Work engagement	Lecturers' positive state of mind toward their work	Vigor, dedication, absorption	9	Schaufeli et al. (2006)
Innovative work behavior	Lecturers' actions to explore, generate, champion, and implement new ideas	Idea exploration, idea generation, idea championing, idea implementation	10	De Jong and Den Hartog (2010)

Data were analyzed using partial least squares structural equation modeling (PLS-SEM) with SmartPLS 4 because the model included mediation and moderation effects and was prediction-oriented (Hair et al., 2019). The measurement model evaluation covered factor loadings of at least 0.708, composite reliability between 0.70 and 0.95, average variance extracted (AVE) of at least 0.50, and heterotrait-monotrait (HTMT) ratios below 0.90 (Hair et al., 2019; Henseler et al., 2015). The structural model evaluation covered collinearity, the coefficient of determination (R^2), effect size (f^2), and predictive relevance (Q^2predict). The significance of the path coefficients was tested through bootstrapping with 5,000 subsamples. Mediation effects were classified following the procedure of Zhao et al. (2010), whereas moderation effects were tested using the two-stage interaction approach (Hair et al., 2019). Common method bias was examined through Harman's single-factor test and a full collinearity test with a variance inflation factor (VIF) threshold of 3.3 (Kock, 2015).

RESULTS AND DISCUSSION

Results

Respondent Profile and Common Method Bias

The questionnaire yielded 155 respondents. Of these, 61.0% were female, 29.0% held a doctoral degree, and 38.1% held the academic rank of *Lektor* (Lecturer). The respondents' mean age was 40.9 years, and their mean tenure was 13.7 years. Harman's single-factor test showed that the first factor explained 34.39% of the variance, below the 50% threshold. The

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full collinearity VIF values ranged from 1.249 to 1.739, below the 3.3 threshold, indicating that common method bias was not a concern (Kock, 2015).

Measurement Model

Items PS1, PS3, and PS5 were reverse-coded because they were negatively worded. Seven digital work stress items, namely TS1, TS4, TS7, TS8, TS11, TS13, and TS14, were removed stepwise because their factor loadings were below 0.708. The results of the final measurement model evaluation are presented in Table 2.

Table 2. Convergent Validity and Reliability

Variable	Final items	Loading range	Cronbach's alpha	Composite reliability	AVE
Digital work stress	16	0.720 – 0.851	0.955	0.959	0.597
Psychological safety	7	0.724 – 0.866	0.886	0.911	0.595
Work engagement	9	0.752 – 0.859	0.929	0.941	0.640
Innovative work behavior	10	0.751 – 0.839	0.937	0.947	0.640

All factor loadings exceeded 0.708 and all AVE values exceeded 0.50, so convergent validity was established. The composite reliability of digital work stress slightly exceeded 0.95 because of its large number of items, indicating that item redundancy warrants attention (Hair et al., 2019). Discriminant validity was assessed using the HTMT ratio, as presented in Table 3.

Table 3. Heterotrait–Monotrait Ratio (HTMT)

Variable	Digital work stress	Psychological safety	Work engagement
Psychological safety	0.242		
Work engagement	0.450	0.514	
Innovative work behavior	0.336	0.439	0.567

Structural Model and Hypothesis Testing

All HTMT values were below 0.90, confirming discriminant validity (Henseler et al., 2015). The highest VIF value in the structural model was 1.503, indicating no collinearity problems. The model explained 36.1% of the variance in work engagement and 32.5% of the variance in innovative work behavior. The Q^2predict values of 0.205 for work engagement and 0.131 for innovative work behavior indicated predictive relevance. The effect sizes (f^2) were medium for digital work stress on work engagement (0.183), psychological safety on work engagement (0.216), and work engagement on innovative work behavior (0.157), and small for psychological safety on innovative work behavior (0.041) and for the interaction effect (0.041). The results of hypothesis testing are presented in Table 4.

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Table 4. Results of Hypothesis Testing

Hypothesis	Path	β	SE	t	p	95% CI	Decision
H1	Digital work stress → Work engagement	−0.352	0.054	6.546	< 0.001	[−0.461; −0.249]	Supported
H2	Psychological safety → Work engagement	0.383	0.058	6.585	< 0.001	[0.267; 0.494]	Supported
H3	Work engagement → Innovative work behavior	0.399	0.068	5.908	< 0.001	[0.260; 0.524]	Supported
H4	Psychological safety → Innovative work behavior	0.188	0.066	2.876	0.004	[0.059; 0.318]	Supported
H5	Digital work stress → Work engagement → Innovative work behavior	−0.136	0.032	4.282	< 0.001	[−0.203; −0.080]	Supported
H6	Psychological safety → Work engagement → Innovative work behavior	0.157	0.035	4.512	< 0.001	[0.094; 0.229]	Supported
H7	Psychological safety × Digital work stress → Work engagement	0.162	0.052	3.098	0.002	[0.052; 0.258]	Supported
Direct effect	Digital work stress → Innovative work behavior	−0.109	0.065	1.683	0.092	[−0.230; 0.019]	Not significant

Note. β = path coefficient; SE = standard error; CI = bootstrap confidence interval (5,000 subsamples).

Table 4 shows that all hypotheses were supported. The direct effect of digital work stress on innovative work behavior was not significant, whereas its indirect effect through work engagement was significant. Based on the classification of Zhao et al. (2010), work engagement acted as a full mediator (indirect-only mediation) in H5. The direct and indirect effects of psychological safety were both significant and in the same direction, so work engagement acted as a complementary partial mediator in H6.

The positive interaction coefficient indicates that psychological safety weakened the negative effect of digital work stress on work engagement. Simple slope analysis showed that

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the effect of digital work stress on work engagement was −0.507 when psychological safety was low (one standard deviation below the mean) and −0.197 when psychological safety was high (one standard deviation above the mean). Thus, the negative effect remained at both levels but was approximately 61% smaller among lecturers who perceived high psychological safety.

Discussion

Digital work stress was shown to weaken lecturers' work engagement. This finding confirms the energy-depletion process described by JD-R theory, in which continuous job demands drain energy reserves so that vigor and dedication decline (Bakker & Demerouti, 2017; Bakker et al., 2023). Lecturers who must master various applications, respond to messages outside working hours, and keep up with never-ending system updates lose the space to become absorbed in their work. This result is consistent with the findings of Andrulli and Gerards (2023) and Harunavamwe and Kanengoni (2023), which showed that technostress reduces work engagement, and with meta-analytic evidence that technostress harms psychological outcomes (Nastjuk et al., 2024). It also reinforces the evidence that always-connected academics experience reduced well-being (Harunavamwe & Ward, 2022; Truța et al., 2023). Furthermore, the finding echoes the message of the Qur'an (Al-Baqarah 2:286) that workloads should match one's capacity so that *amanah* can be fulfilled properly.

Psychological safety was shown to increase lecturers' work engagement. Lecturers who feel safe to ask questions, disagree, and admit mistakes are more readily able to invest themselves fully in teaching and research. This finding supports the view that psychological safety improves the work experience (A. C. Edmondson & Bransby, 2023), while confirming its role as a job resource that triggers the motivational process (Bakker & Demerouti, 2017; Mazzetti et al., 2023). This result is consistent with the findings of Mao and Tian (2022), Kassandrinou et al. (2023), and Wu et al. (2025) among employees and teachers. Such a safe climate reflects the values of *shura* and *ukhuwah* taught in Islam (Udin, 2024).

Work engagement was shown to drive lecturers' innovative work behavior. Lecturers who are vigorous and dedicated have the energy to explore learning problems, design new methods, and convince colleagues to accept their ideas. This finding corroborates the evidence from Indonesian vocational lecturers reported by Fiernaningsih et al. (2023) that engagement encourages innovative work behavior. This result is in line with the studies of Liu et al. (2023), Zadow et al. (2023), and Soediro et al. (2025), which found that states of psychological involvement strengthen innovation and creativity. Strong work engagement can be viewed as a manifestation of *ihsan*, that is, working as though one is being watched by Allah, which gives rise to earnestness in innovating (Zia et al., 2024).

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Psychological safety also had a direct effect on innovative work behavior. Innovation always involves the risk of failure, so lecturers only dare to try new ideas when they are confident that failure will not result in punishment or ridicule (A. Edmondson, 1999; A. C. Edmondson & Bransby, 2023). This finding supports the results of T. Li and Tang (2022), Xu and Suntrayuth (2022), and Elsayed et al. (2023). It implies that study programs that are open to differing opinions will become fertile ground for innovation in teaching and research. The principle of *shura* gives every lecturer room to voice ideas without fear.

Work engagement proved to be the pathway linking digital work stress and innovative work behavior. Digital work stress does not directly stifle innovation; rather, it reduces innovation by diminishing lecturers' vigor and dedication. This finding helps explain why previous studies have yielded mixed results on the effect of work stress and technostress on innovation (Buzás et al., 2025; Kasim et al., 2022; Meng & Liu, 2023). The effect depends on the motivational state that is formed, consistent with the dual processes of JD-R theory (Bakker et al., 2023). Work engagement also bridged the effect of psychological safety on innovative work behavior, mirroring the pattern found by Liu et al. (2023). These findings indicate that maintaining lecturers' vigor and dedication is part of fulfilling the institution's *amanah* to continuously innovate.

Psychological safety was shown to buffer the negative impact of digital work stress on work engagement. This finding supports the buffering proposition of JD-R theory (Bakker et al., 2023; Demerouti & Bakker, 2023) and extends it to digital demands in an academic setting. Lecturers working in psychologically safe units are more willing to admit technological difficulties and seek help, so digital pressure does not turn into exhaustion. This result complements the findings of Buzás et al. (2025), who showed that technostress erodes psychological safety, and is consistent with the buffering roles of organizational support and leader–member exchange reported by Harunavamwe and Kanengoni (2023) and Choi (2024). The value of *ta'awun*, or mutual assistance in goodness (Qur'an, Al-Maidah 5:2), and the protective role of religiosity (Abualigah et al., 2021; Bal & Kökalan, 2021) explain why a mutually supportive environment can buffer digital pressure.

CONCLUSION AND SUGGESTIONS

Conclusion

This study concludes that digital work stress weakens lecturers' work engagement, whereas psychological safety strengthens both work engagement and innovative work behavior. Work engagement serves as the mechanism linking digital work stress and psychological safety with innovative work behavior. Psychological safety also functions as a

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buffer that attenuates the negative impact of digital work stress on work engagement. These findings affirm that lecturers' innovation cannot be fostered merely by providing technology; it also requires managing digital workloads and building a psychologically safe work climate. Lecturer management grounded in the values of *amanah*, *ihsan*, *itqan*, and *shura* has the potential to lead lecturers toward professional success as well as spiritual well-being, or *falah*.

Implications

Theoretically, this study extends JD-R theory to the context of Muslim lecturers in Indonesian private higher education. The findings show that the energy-depletion and motivational processes operate simultaneously and that work engagement is the mechanism through which digital demands and social resources translate into innovative work behavior. The buffering effect of psychological safety extends the buffering proposition to digital demands in an academic setting and positions psychological safety as a job resource rather than merely a mediator of leadership effects. Integrating the values of *amanah*, *ihsan*, *itqan*, and *shura* into the JD-R framework offers a values-based explanation of why fair workloads and consultative climates function as job resources for Muslim employees.

These findings also have practical implications for university leaders, particularly in Islamic higher education institutions. Leaders need to distribute digital workloads fairly in line with the principle that burdens must not exceed capacity, for example, by simplifying reporting applications and setting limits on digital communication outside working hours and during prayer times. Such healthy leadership and human resource practices are recognized as organizational resources that help employees regulate fatigue before it develops into burnout (Bakker & de Vries, 2021), and leaders who protect the boundary between work and private life support employee well-being in digitally mediated work (Schmitt, 2024). Heads of study programs need to revitalize a culture of *shura* by holding open meetings, valuing lecturers' proposals, and treating failed teaching experiments as opportunities for collective learning, as leaders' openness reduces resistance to new technologies (Siyal et al., 2023). Development programs that instill the values of *amanah*, *ihsan*, and *itqan* can also strengthen lecturers' engagement and innovation.

Limitations and Suggestions

This study has several limitations. The cross-sectional design could not capture changes in digital work stress and work engagement over time. Data were collected through self-reports, so assessments of innovative work behavior may be higher than the actual conditions. The sample was limited to lecturers at private higher education institutions in one region, so generalization to public institutions and other regions should be made with caution.

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Digital work stress was also measured as a single construct, so the distinct roles of its dimensions were not revealed. Moreover, Islamic values were used only as a basis for argumentation and were not measured as separate variables.

Future research is recommended to use longitudinal or daily diary designs to capture the dynamics of digital work stress. Assessments of innovative work behavior could be complemented by supervisor or peer ratings to reduce common method bias. Subsequent studies could also separate the dimensions of digital work stress into challenge and hindrance stressors (Buzás et al., 2025; Meng & Liu, 2023), compare public and private institutions, and add digital leadership or technology self-efficacy as other resources that may buffer digital pressure (Banks et al., 2022; Erhan et al., 2022; J. Li et al., 2026). The Islamic work ethic or religiosity could also be included as a moderating variable to test the role of Islamic values directly (Abualigah & Koburtay, 2023; Bal & Kökalan, 2021).

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