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Article

The interplay of job demands and resources in Indonesian gig workers' psychological well-being: the moderating role of mindfulness—a mixed-methods study

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Abstract: This study examines how job demands, job resources, and personal resources are associated with the psychological well-being of Indonesian gig workers and tests whether mindfulness changes these relationships. Drawing on the Job Demands–Resources (JD-R) model, the study treats mindfulness as a moderating personal resource rather than as a mediator. An explanatory sequential mixed-methods logic was used: survey data from 190 Indonesian gig workers were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM), followed by qualitative interviews with 15 gig workers representing five application providers. The quantitative results show that job resources ($\beta = 0.197$, $p = 0.018$) and personal resources ($\beta = 0.159$, $p = 0.037$) are positively associated with psychological well-being, whereas the direct effect of job demands is negative but not statistically significant ($\beta = -0.079$, $p = 0.162$). Importantly, the interaction between mindfulness and job demands is significant ($\beta = 0.325$, $p = 0.018$), while the mindfulness × job resources and mindfulness × personal resources interactions are not significant. The qualitative findings complement these results by showing how workers experience unpredictable demands and use everyday practices—such as intentional pauses, breathing, prayer, reflection, acceptance, and social sharing—to regulate emotional responses and maintain psychological balance. The findings suggest that mindfulness is most consequential when workers are dealing with demanding work conditions, whereas the benefits of job and personal resources do not necessarily depend on mindfulness. The study contributes to JD-R research by positioning mindfulness as a condition-sensitive self-regulatory resource that changes how demands are translated into well-being.

Keywords: job demands; job resources; personal resources; psychological well-being; mindfulness; gig workers

1. Introduction

The gig economy has become an increasingly visible part of Indonesia's labor market, particularly in platform-mediated transportation, delivery, logistics, and other digitally enabled services. Gig work can offer flexibility in working time and location, which may be attractive to workers who value autonomy or need to adjust their work to changing economic circumstances (Najiha & Herman, 2024; Nugroho et al., 2023). At the same time, this flexibility is accompanied by uncertainty. Income may fluctuate, working hours can be extended when demand is high or earnings are low, and workers often operate without the employment benefits and organizational protections commonly available in conventional employment.

These conditions make psychological well-being an important issue in gig

work. Previous research has highlighted the need for stronger legal and social protection for gig workers because their employment status may leave them exposed to economic and psychosocial risks (Fadhlulloh & Azhari, 2023; Ahmad et al., 2024). Social support is also important because gig workers may lack the stable interpersonal structures available in conventional workplaces. Support from peers, family, and wider social networks can help workers manage stress and maintain work–life balance (Yusof et al., 2024).

The Job Demands–Resources (JD-R) model provides a useful framework for understanding these conditions. Job demands are aspects of work that require sustained physical or psychological effort and may generate strain, whereas job resources help workers achieve work goals, reduce the costs associated with demands, and support learning and development (Bakker & Demerouti, 2014, 2017). Personal resources, such as self-efficacy, resilience, optimism, and related psychological capacities, can further shape how individuals respond to demanding work conditions (Grover et al., 2018; Xanthopoulou et al., 2007).

The present study extends this logic by examining mindfulness as a moderator. The key theoretical argument is not simply that mindful workers have better well-being. Rather, mindfulness may alter the process through which a work demand is appraised and responded to. Mindful awareness can create a short psychological distance between an external event and an immediate reaction, supporting emotion regulation, acceptance, and cognitive flexibility (Hülsheger et al., 2013; Ibrahim et al., 2021). Consequently, the same level of job demand may be experienced differently depending on a worker's capacity to remain aware of the present situation without reacting automatically.

This distinction is important for three reasons. First, job demands and resources operate through different processes in JD-R theory: demands are primarily associated with health impairment, whereas resources have motivational and protective functions. Second, mindfulness may therefore be expected to be especially relevant when demands are high, because it can influence the worker's response to strain. Third, the effect of mindfulness on resource-based relationships is less obvious. When job or personal resources are already available, their benefits may occur directly and may not require additional reinforcement from mindfulness. This reasoning leads to a model in which mindfulness is expected to condition the demand–well-being relationship more strongly than the resource–well-being relationships.

Accordingly, this study addresses the following research question: under what conditions do job demands and resources relate to the psychological well-being of Indonesian gig workers, and what role does mindfulness play in these relationships? The study contributes by combining Partial Least Squares Structural Equation Modeling (PLS-SEM) evidence with qualitative accounts of gig workers' everyday experiences, allowing the statistical moderation pattern to be interpreted in its work context.

The psychological well-being of gig workers in Indonesia is believed to be significantly influenced by the interplay of job demands, job resources, and personal resources, with mindfulness serving as a pivotal moderator. The JD-R model provides a theoretical framework for understanding how these factors impact workers' psychological health. According to the JD-R model, job demands are aspects of work that require effort and can lead to stress and burnout, while job resources are elements that help mitigate these demands and promote engagement and well-being (Kotzé, 2018; Grover et al., 2018). Personal resources, such as psychological capital, contribute to resilience and overall well-being, enhancing the ability to cope with job-related challenges (Grover et al., 2018; Malekitabar et al., 2016).

Recent studies indicate that gig workers often face high job demands due to the nature of their work, which can lead to feelings of isolation and stress due to infrequent face-to-face interactions (Woon et al., 2022). These factors are particularly pertinent in Indonesia, where the gig economy is rapidly expanding. Job resources, including social support and autonomy, play a crucial role in buffering the negative effects of job demands. For instance, autonomy in decision-making and flexible work arrangements can enhance job satisfaction and psychological well-being, especially for gig workers who thrive in less rigid environments (Yang & Zhao, 2018; Tara & Iqbal, 2023). As noted by Souček et al. (2024), new working methods can enhance job resources, leading to improved psychological outcomes by providing more control over the work environment.

Mindfulness, defined as the practice of maintaining a moment-to-moment awareness of one's thoughts, feelings, and surroundings, represents a vital moderating factor in this intricate relationship. Research indicates that mindfulness can significantly enhance emotional regulation and resilience, allowing individuals to better manage their stress levels and enhance overall well-being (Su & Shum, 2019; Lasyena et al., 2024). Mindfulness training may equip gig workers with tools necessary for dealing with the volatility and uncertainty often associated with gig employment, ultimately fostering greater psychological stability (Fazli & Ghahari, 2017; Wojujutari et al., 2018). As individuals become more adept at mindfulness, they are likely to experience improved coping mechanisms when faced with high job demands.

Emerging literature underscores the importance of integrating mindfulness practices into the work routines of gig workers. Such practices not only promote personal resource building but also heighten awareness of job resources and demands, thereby creating a positive feedback loop that enhances psychological well-being (Su & Shum, 2019; Lasyena et al., 2024). By embracing mindfulness, gig workers can cultivate increased positive emotions and better psychological health, thereby navigating the challenges of gig work more effectively (Wojujutari et al., 2018).

The proposed quantitative model is presented in **Figure 1**. The qualitative phase was designed to provide contextual insight into the relationships specified in the model and to explain how gig workers experience demands, resources, and mindfulness in their everyday work.

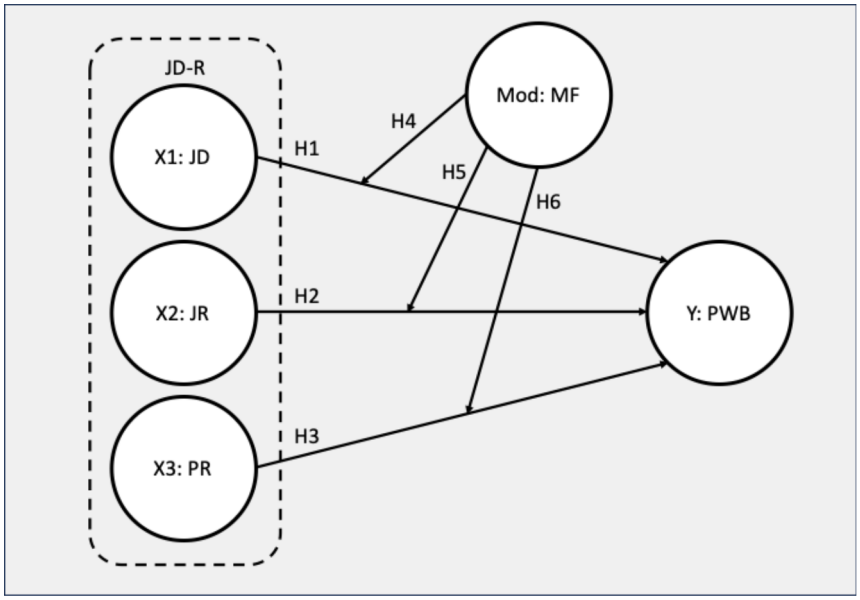


Figure 1. Quantitative research model.

Examining the relationships among job demands, job resources, personal

resources, mindfulness, and psychological well-being may help identify the conditions associated with better well-being among Indonesian gig workers. The present study focuses on the relationships tested in the research model; the findings should not be interpreted as evidence that any particular intervention will necessarily improve mental health.

1.1. Job demands and psychological well-being

Within JD-R theory, job demands are not inherently harmful simply because they require effort; their consequences depend on their intensity, duration, and the resources available to deal with them. High workload, time pressure, emotional strain, physical demands, and uncertainty can consume energy and increase the risk of stress and burnout. Research has shown that high demands are particularly problematic when workers have limited opportunities for recovery or insufficient resources to manage them (Nasharudin et al., 2020; Pelfrene et al., 2002).

The gig-work context makes this relationship particularly relevant. Platform workers may experience fluctuating order volumes, income uncertainty, traffic and weather exposure, difficult customer interactions, and pressure to remain available. At the same time, some workers accept demanding conditions because flexibility and autonomy are valuable to them (Wood et al., 2019). This means that the direct association between job demands and well-being may not always be strong: the same demand can be appraised as manageable, unavoidable, or even acceptable depending on the worker's circumstances.

Job demands have been widely examined in the Job Demands–Resources (JD-R) literature. They require sustained effort and may consume physical and psychological energy, potentially contributing to strain and poorer health outcomes. By contrast, job resources can support goal attainment and motivation and may help workers cope with demanding conditions. The extent to which demands are associated with well-being may therefore depend on their intensity, duration, and the resources available to workers.

Nasharudin et al. (2020) explore the role of psychological detachment in mitigating the psychological effects of job demands, concluding that the interplay between demands and resources is crucial in understanding workers' mental health. Similarly, Shimazu et al. (2013) highlight the significance of appropriate working conditions and job resources in alleviating psychological distress relating to job demands, reinforcing the necessity of a balanced work environment to promote psychological well-being.

Research applying the JD-R model has also identified collaboration and teamwork as relevant job resources in healthcare settings (Kaiser et al., 2020). Kim et al. (2019) similarly highlight the relevance of job resources to occupational stress and depression. Although these studies concern different occupational contexts, they support the broader proposition that work demands and resources should be considered together when examining employee well-being.

A supportive psychosocial environment may help reduce the strain associated with job demands. Previous research has linked stress to the combination of high demands and insufficient resources (Pelfrene et al., 2002; Javaid et al., 2018). This is consistent with the JD-R premise that workers facing high demands without adequate resources may be more vulnerable to adverse health outcomes.

The differentiation of job demands into hindrances and challenges offers nuanced insights into how these dimensions interact with well-being. Research has indicated that challenging demands can motivate employees and may have positive implications for health, unlike hindering demands which are often detrimental unless effectively managed using available resources (Sarwat et al., 2021; Kim & Beehr, 2018). This complexity is evident in studies examining

nurses who reported increased burnout correlating with elevated job demands yet also indicated that adequate resources were linked to fewer instances of negative health outcomes (Thapa et al., 2022).

Nevertheless, the health-impairment pathway in JD-R theory suggests that, on average, greater demands should be associated with poorer psychological well-being. Therefore:

H1. Job demands negatively influence psychological well-being.

1.2. Job resources and psychological well-being

Job resources include aspects of work that help workers achieve their goals, reduce the costs of job demands, and support growth and development. Autonomy, social support, feedback, and opportunities for development are examples of resources that can support motivation and well-being (Bakker & Demerouti, 2017; Kotzé, 2018). Evidence also indicates that job resources can reduce the adverse consequences of stressful working conditions and contribute to more positive work experiences (Li et al., 2021; Tims et al., 2013).

Job resources—including social support, autonomy, and opportunities for development—may reduce job-related stress and support well-being (Fu et al., 2025; Hong et al., 2022; Kotzé, 2018). Research also indicates that job resources can reduce the effects of high demands on stress and burnout (Li et al., 2021; Novaes et al., 2018; Tims et al., 2013). For example, Fu et al. (2025) identify social support as a job resource associated with occupational well-being among nurses, partly through its relationship with job stress.

Empirical evidence supports the notion that job resources not only alleviate stress but also proactively foster a motivational work environment, leading to greater engagement and well-being among employees. Tims et al. found that increased job resources mediate the positive effects of job crafting on employee well-being, showcasing how intentional adjustments of job characteristics can lead to enhanced resource availability and psychological outcomes (Tims et al., 2013). Similarly, Souček et al. highlighted that innovative work arrangements, which can be classified as job resources, help promote employee autonomy and thereby augment psychological well-being (Souček et al., 2024).

Job crafting, a concept closely related to job resources, further underscores this relationship. This approach permits employees to customize their roles to enhance job resources, which, according to Han, can lead to significant improvements in well-being by tailoring job environments to individual needs (Han, 2023). In the context of nursing, for instance, the ability to engage in job crafting allows nurses to navigate job demands more skillfully, providing them with a sense of control and supporting their psychological health (Han, 2023).

Research also indicates that psychological capital—comprising attributes such as optimism, resilience, and self-efficacy—interacts with job resources to influence well-being positively. For instance, the work of Grover et al. noted that employees with higher psychological capital are better able to leverage job resources for maintaining positive well-being amidst high job demands (Grover et al., 2018). This finding aligns with the broader JD-R framework, which posits that personal resources interact with job resources to bolster resilience against adverse workplace conditions (Zulhasmi et al., 2021).

For gig workers, resources may take forms that differ from those found in conventional organizations. Support from fellow workers, useful platform features, transparent communication, constructive customer feedback, and perceived control over work schedules may all function as resources. Such resources can provide workers with practical assistance and a greater sense of control, making it easier to manage uncertainty. Thus:

H2. Job resources positively influence psychological well-being.

1.3. Personal resources and psychological well-being

Personal resources refer to positive self-evaluations and psychological capacities that help individuals cope with work demands and mobilize available resources. Psychological capital, including hope, efficacy, resilience, and optimism, is a prominent example within the JD-R literature (Grover et al., 2018; Luthans et al., 2007). Personal resources can strengthen coping capacity and may help workers maintain positive functioning when external conditions are uncertain.

Vincent et al. (2023) identify adaptability as a personal resource associated with engagement and psychological well-being among expatriate teachers. Buruck et al. (2016) similarly show that emotion-regulation skills can function as personal resources associated with well-being at work. These studies suggest that individual psychological capacities may support adaptive functioning, although their relevance should be considered in the specific occupational context under investigation.

Okros and Vîrgă (2022) add another dimension, exploring how thriving at work—a personal resource—mediates the relationship between workplace safety and well-being. They argue that conducive environments that promote personal resources can lead to higher job satisfaction and reduced health complaints, reinforcing the role of personal resources within the JD-R framework. Research by Jiménez and Dunkl (2017) also supports the idea that high workplace resources can buffer against burnout, particularly in high-demand contexts, demonstrating that personal resources can transform challenges into opportunities for personal accomplishment.

Bakker and Demerouti (2014) discuss the roles of personal and job resources in the JD-R framework. Personal resources may reduce vulnerability to stress and burnout and may influence how workers use the resources available to them. Related research also links resources with employee engagement and well-being (Lee et al., 2019; Güler & Çetin, 2019).

Tremblay and Messervey (2011) provide further evidence concerning the buffering role of personal resources in the JD-R model. Taken together, this literature supports examining personal resources as potential correlates of well-being and as capacities that may shape responses to work conditions.

For gig workers, personal resources may be especially important because the platform often provides less direct supervision, career structure, and organizational support than a conventional employer. Workers therefore need to make many day-to-day decisions themselves. Previous research links adaptability, emotion regulation, and other personal resources with stronger engagement and well-being (Buruck et al., 2016; Vincent et al., 2023). Accordingly:

H3. Personal resources positively influence psychological well-being.

1.4. Mindfulness as a moderator

Mindfulness is conceptualized here as a capacity for present-moment awareness and non-reactive attention to thoughts, emotions, and experiences. This conceptualization is important because the study does not assume that mindfulness directly creates job resources or mediates the effect of job characteristics. Instead, mindfulness is expected to change the strength or direction of an existing relationship.

The strongest theoretical case concerns job demands. Under high demands, workers may experience frustration, anxiety, anger, or helplessness. Mindful awareness may interrupt automatic reactions by helping workers notice their emotional state before responding. This can facilitate emotion regulation, cognitive reappraisal, and acceptance, which may reduce the extent to which demanding work conditions translate into impaired well-being (Hülsheger et al., 2013; Ibrahim et al., 2021). In JD-R terms, mindfulness can therefore

function as a self-regulatory resource that becomes particularly relevant when the health-impairment process is activated.

Within the Job Demands–Resources (JD-R) framework, job demands and job resources influence employee well-being through different psychological processes. Job demands require sustained physical or psychological effort and may therefore generate strain, whereas job resources facilitate goal attainment, reduce the costs associated with job demands, and stimulate motivation and personal growth (Bakker & Demerouti, 2017). Personal resources further influence how individuals perceive and respond to their work environment (Xanthopoulou et al., 2007; Grover et al., 2018). However, the effects of these work characteristics may not be uniform across individuals. Therefore, this study conceptualizes mindfulness as a personal regulatory resource that may alter how gig workers perceive, appraise, and respond to job demands and resources.

Mindfulness refers to present-moment awareness characterized by a relatively non-reactive and non-judgmental orientation. From a theoretical perspective, mindfulness may influence the JD-R process because it affects how individuals attend to, interpret, and respond to work-related experiences. Rather than eliminating job demands or creating additional job resources, mindfulness may change the individual's psychological response to those conditions. Greater mindfulness may facilitate emotional regulation, reduce rumination, and support more deliberate coping responses (Hülsheger et al., 2013; Tang et al., 2019). Consequently, mindfulness may function not only as an individual characteristic associated with psychological well-being but also as a boundary condition that changes the strength of the relationships between job characteristics and psychological well-being.

H4. Mindfulness weakens the negative relationship between job demands and psychological well-being.

Job resources such as autonomy, social support, feedback, and opportunities for development are expected to enhance psychological well-being because they help workers accomplish their goals, reduce the psychological costs of work, and provide opportunities for motivation and personal growth (Bakker & Demerouti, 2017). For gig workers, resources may include flexibility, supportive relationships with fellow workers, platform-related support, customer feedback, and access to work-related information. Thus, job resources provide conditions that can directly contribute to positive psychological functioning.

Nevertheless, the availability of a resource does not necessarily guarantee that the individual will fully benefit from it. The theoretical role of mindfulness in this relationship lies in its potential to increase workers' awareness of available resources and their capacity to respond to those resources deliberately rather than automatically. Mindfulness may enhance attentional awareness, allowing workers to recognize supportive interactions, available assistance, opportunities for autonomy, and constructive feedback. It may also reduce automatic negative reactions that could prevent workers from effectively utilizing these resources.

Thus, mindfulness may strengthen the motivational pathway proposed by the JD-R model. When workers are more mindful, they may be better able to notice and utilize job resources, translate those resources into adaptive coping and goal-directed behavior, and consequently derive greater psychological benefits from them. In this sense, mindfulness functions as an enabling personal resource that facilitates the activation and effective utilization of job resources. Therefore, the positive relationship between job resources and psychological well-being is expected to be stronger among gig workers with higher levels of mindfulness

The theoretical logic for job resources is different. Job resources already provide instrumental or motivational support. Autonomy, social support, and

useful feedback can benefit well-being directly. Mindfulness may help workers recognize and use these resources, but the incremental benefit may be limited when resources are already sufficient. Thus, a moderation effect is possible but should be weaker than the demand-side effect.

H5. Mindfulness strengthens the positive relationship between job resources and psychological well-being.

A similar argument applies to personal resources. Psychological capital and related capacities already help individuals regulate themselves, remain hopeful, and persist in the face of difficulty. Because mindfulness and personal resources may overlap in their self-regulatory functions, the incremental interaction between them may be small. Nevertheless, if mindfulness helps workers access or apply their personal resources more effectively, a positive moderation effect could emerge.

Personal resources, including psychological capital, self-efficacy, resilience, optimism, and related positive self-evaluations, represent internal capacities that help individuals cope with demanding circumstances and influence how they perceive and respond to their work environment (Xanthopoulou et al., 2007; Grover et al., 2018). In the JD-R framework, these resources can contribute directly to well-being and may also help individuals utilize job resources more effectively.

Consequently, mindfulness may operate as a regulatory mechanism through which existing personal resources are more effectively converted into psychological well-being. Rather than replacing personal resources, mindfulness may facilitate their activation by helping individuals recognize their internal strengths, maintain attention on the present situation, and avoid excessive rumination about past failures or future uncertainty. This suggests that the positive association between personal resources and psychological well-being should be stronger when mindfulness is high.

H6. Mindfulness strengthens the positive relationship between personal resources and psychological well-being.

2. Materials and methods

2.1. Research design

The study adopted a quantitatively led, explanatory sequential mixed-methods design. In the first phase, a questionnaire survey was administered to Indonesian gig workers, and the hypothesized relationships were examined using partial least squares structural equation modeling (PLS-SEM). In the second phase, semi-structured interviews were conducted with gig workers affiliated with five application providers. The qualitative phase was intended to elaborate the quantitative findings, particularly the significant mindfulness × job demands interaction and the non-significant moderation effects involving job resources and personal resources.

This design allows the two strands of evidence to serve different but complementary purposes. The quantitative phase establishes the statistical pattern of relationships, while the qualitative phase provides contextual explanations of how workers experience demands, resources, and mindfulness in everyday gig work. The qualitative findings are therefore not treated as a second statistical test of moderation; rather, they are used to interpret and contextualize the quantitative results.

The study examined the relationships among job demands (JD), job resources (JR), personal resources (PR), mindfulness (MF), and psychological well-being (PWB). In the structural model, JD, JR, and PR were specified as predictor constructs, PWB as the outcome construct, and MF as a moderator. The moderating role of mindfulness was assessed through three interaction terms: JD

× MF, JR × MF, and PR × MF.

The quantitative phase used a structured questionnaire completed by 190 gig workers in Indonesia. Respondents' answers were measured on a five-point Likert scale. The analysis examined the direct relationships between job demands, job resources, personal resources, and psychological well-being, as well as the moderating role of mindfulness.

PLS-SEM was used to estimate the measurement and structural models. This variance-based approach can be used to examine models involving multiple latent constructs and interaction terms. The analysis was conducted using SmartPLS 4. The choice of PLS-SEM should be justified in the final report in relation to the study's analytical objective and model characteristics; sample size alone is not a sufficient justification. The measurement and structural model assessments are described in Section 2.4.

2.2. Quantitative sample and sampling

The quantitative phase included 190 respondents recruited through purposive, non-probability sampling. Participants were Indonesian workers engaged in platform-mediated gig work. The sample characteristics are summarized in **Table 1**, including gender, age group, education, platform affiliation, number of dependents, and weekly working hours. The manuscript does not provide a documented minimum duration of platform work or other additional eligibility thresholds; therefore, no such criteria are specified here.

Cochran's formula was cited as a reference for considering the minimum sample size. The commonly used expression is $n_0 = Z^2p(1 - p)/e^2$, where Z denotes the selected confidence level, p the estimated population proportion, and e the tolerated margin of error. The parameter values used in the calculation are not reported in the available study record and must be supplied if the authors intend to retain this justification. Because the sample was recruited purposively, the achieved sample of 190 should not be described as statistically representative of all Indonesian gig workers.

Table 1. Quantitative sample characteristic (n = 190).

Characteristic	Categories to report	n (%)
Gender	Male; Female; Other/Prefer not to say	Male (68%); Female (32%)
Age	Mean (SD) and/or age groups	18-29 y.o (57%); 30-39 y.o (27%); 40-49 y.o (16%)
Education	Secondary; Diploma; Bachelor; Postgraduate; Other	Bachelor (12%); Other (88%)
Platform affiliation	Grab; Gojek; inDrive; Maxim; Shopee; Other	Gojek (61%); Grab (30%); Maxim (7%); Other (2%)
Number of dependents	No dependents; 1 children; 2 childrens; other	1 children (43%); 2 Childrens (20%); 3 Childrens (17%); no dependents (20%)
Working hours	< 20; 20–39; ≥ 40 hours/week	> 40 hrs / week (63%); 20-39 hrs/ week (37%)

2.3. Measures and operationalization

The questionnaire measured five latent constructs: job demands (JD), job resources (JR), personal resources (PR), mindfulness (MF), and psychological well-being (PWB). The measurement model shown in the supplied SmartPLS output contains 3 JD indicators, 4 JR indicators, 2 PR indicators, 4 MF indicators, and 8 PWB indicators. All five constructs were specified reflectively in the reported model.

In **Table 2,** the available manuscript provides the Bahasa Indonesia questionnaire statements and their English renderings, but it does not identify the original published scale source for each construct or document the translation and

adaptation procedure. The authors should verify these details against the original questionnaire and research records. The final version should cite the source of each scale, explain any item adaptation, and describe translation and back-translation or other language-validation procedures where applicable.

Table 2. Measurement scales and operationalization.

Construct	Indicators	Original questionnaire items (Bahasa Indonesia)	English translation
Job demands (JD)	JD1–JD3 (3 items)	Saya merasa bekerja terlalu keras selama menjadi Driver Online karena harus bekerja dengan durasi waktu yang lama setiap harinya; Saya merasa kelelahan secara fisik selama menjadi Driver Online karena harus mengambil banyak orderan; Saya merasa tertekan karena harus mengambil banyak orderan dalam satu hari agar bisa mendapatkan penghasilan yang banyak	I feel I work too hard as an online driver because I have to work long hours every day; I feel physically exhausted as an online driver because I have to accept a large number of orders; I feel pressured because I have to take on many orders in a single day to earn a substantial income.
Job resources (JR)	JR1–JR4 (4 items)	Saya merasa senang menjadi driver online dengan metode kerja yang fleksibel; Saya dari awal tertarik untuk menjadi driver online karena jam kerja yang saya bisa tentukan sendiri; Saya mendapatkan dukungan dari keluarga saya untuk bekerja sebagai driver online; Saya merasa nyaman berada di lingkungan sesama driver online	I enjoy being an online driver because of the flexible work arrangement; I was interested in becoming an online driver from the start because I can set my own working hours; I have my family's support in working as an online driver; and I feel comfortable in the company of fellow online drivers.
Personal resources (PR)	PR1–PR2 (2 items)	Saya merasa semakin saya bekerja keras maka kehidupan saya akan semakin Sejahtera; Saya merasa sanggup untuk mengatasi berbagai macam permasalahan kerja yang saya hadapi selama bekerja sebagai driver online	I feel that the harder I work, the more prosperous my life will become; I feel capable of handling the various work-related challenges I face as an online driver.
Mindfulness (MF)	MF1–MF4 (4 items)	Saya mampu untuk sadar diri tidak terbawa emosi; Saya mampu untuk sabar menghadapi komplain pelanggan; Saya mampu bertindak dengan tenang; Saya mampu mengamati pikiran dan emosi saya secara konsisten	I am able to remain self-aware and not get carried away by emotions; I am able to handle customer complaints patiently; I am able to act calmly; I am able to consistently observe my thoughts and emotions.
Psychological well-being (PWB)	PWB1–PWB8 (8 items)	Saya menjalani kehidupan yang memiliki tujuan dan memiliki makna; Hubungan sosial saya memberikan dukungan dan manfaat yang berarti; Saya merasa terlibat dalam kehidupan sehari-hari saya; Saya secara aktif memiliki kontribusi dalam kebahagiaan dan kesejahteraan orang lain seperti keluarga maupun teman-teman saya; Saya memiliki kemampuan dalam setiap aktivitas yang penting bagi saya; Saya adalah seorang yang baik dan menjalani kehidupan yang juga baik; Saya merasa optimis dengan masa depan saya; Saya merasa orang lain menghormati saya	I lead a life with purpose and meaning; my social relationships provide meaningful support and benefits; I feel engaged in my daily life; I actively contribute to the happiness and well-being of others, such as my family and friends; I am capable in the activities that matter to me; I am a good person and lead a good life; I feel optimistic about my future; I feel respected by others.

2.4. PLS-SEM Procedure

PLS-SEM was used to assess the measurement model and the structural model in SmartPLS 4. The measurement-model assessment considered indicator loadings, internal-consistency reliability, convergent validity, and discriminant validity. The structural-model assessment considered path coefficients, bootstrapped significance tests, effect sizes (f^2), explained variance (R^2), and predictive relevance (Q^2predict).

For reproducibility, the final report should state the exact bootstrapping settings, including the number of subsamples, test type, confidence-interval method, and any relevant sign-change option. Collinearity statistics (VIF) should also be reported. These details are not available in the supplied proof and must be retrieved from the original SmartPLS project or output rather than estimated.

The moderation hypotheses were tested using interaction terms between mindfulness and each focal predictor. H4 was evaluated from the sign and statistical

significance of the JD × MF interaction. A simple-slope analysis or interaction plot would help communicate the form of this interaction; however, conditional slopes and their confidence intervals must be calculated from the original data or SmartPLS output and should not be inferred from the interaction coefficient alone.

3. Results and discussion

3.1. Measurement model

The measurement model was assessed using indicator loadings, as shown in **Table 3,** internal-consistency reliability, and convergent and discriminant validity evidence. The reported results indicate that several psychological well-being (PWB) indicators have loadings below 0.60, the reported AVE for PWB is below the commonly used 0.50 benchmark, and Cronbach's alpha for personal resources is relatively low. These findings raise concerns about the precision with which the affected constructs are measured. The structural results involving personal resources and psychological well-being should therefore be interpreted cautiously. Reliability and validity should be evaluated using the complete SmartPLS output, rather than relying on any single statistic.

The indicator loadings visible in the supplied structural-model figure suggest that the PWB construct may have limited convergent validity. The approximate AVE value of 0.361, reconstructed from rounded loadings, is presented only as an internal diagnostic and must not be reported as the final SmartPLS statistic. Before publication, replace any reconstructed values with the exact output and provide a complete measurement-model table containing, at minimum, indicator loadings, Cronbach's alpha, rho_A, composite reliability, and AVE for each construct.

Table 3. Measurement-model results.

	Discriminant Validity - Cross Loading				
	JD	**JR**	**MF**	**PR**	**PWB**
PWB8	-0.143	0.507	0.391	0.371	**0.619**
PWB7	-0.087	0.246	0.367	0.302	**0.586**
PWB6	-0.133	0.342	0.465	0.396	**0.560**
PWB5	-0.137	0.350	0.447	0.395	**0.582**
PWB4	-0.101	0.369	0.459	0.420	**0.593**
PWB3	-0.099	0.332	0.478	0.329	**0.639**
PWB2	-0.189	0.494	0.492	0.426	**0.685**
PWB1	-0.085	0.272	0.446	0.323	**0.527**
PR2	-0.105	0.495	0.422	**0.759**	0.474
PR1	-0.164	0.327	0.483	**0.736**	0.456
MF4	-0.085	0.309	**0.679**	0.349	0.414
MF3	-0.221	0.443	**0.763**	0.442	0.613
MF2	-0.098	0.450	**0.653**	0.499	0.542
MF1	-0.132	0.400	**0.746**	0.413	0.508
MF x PR	0.165	-0.648	-0.669	-0.758	**-0.660**
MF x JR	0.175	-0.658	-0.734	-0.754	**-0.696**
MF x JD	-0.037	0.499	0.769	0.551	**0.742**
JR4	-0.168	**0.742**	0.440	0.393	0.495
JR3	-0.133	**0.704**	0.465	0.450	0.447
JR2	-0.163	**0.700**	0.281	0.349	0.402
JR1	-0.152	**0.710**	0.436	0.382	0.407
JD3	**0.875**	-0.133	-0.170	-0.174	-0.208
JD2	**0.871**	-0.259	-0.187	-0.138	-0.178

Continued table:

	JD	JR	MF	PR	PWB
JD1	**0.828**	-0.172	-0.143	-0.147	-0.131

The cross-loading results show that each substantive indicator has its largest reported loading on its intended construct. This provides preliminary evidence of indicator-level distinction, but cross-loadings alone are not sufficient to establish discriminant validity. The relatively high associations involving interaction terms should not be treated as evidence of discriminant validity. If available in the SmartPLS output, the heterotrait–monotrait ratio (HTMT), together with its relevant inference results, should be reported. Indicator loadings and also the path coefficients as the result from this research also shown in **Figure 2.**

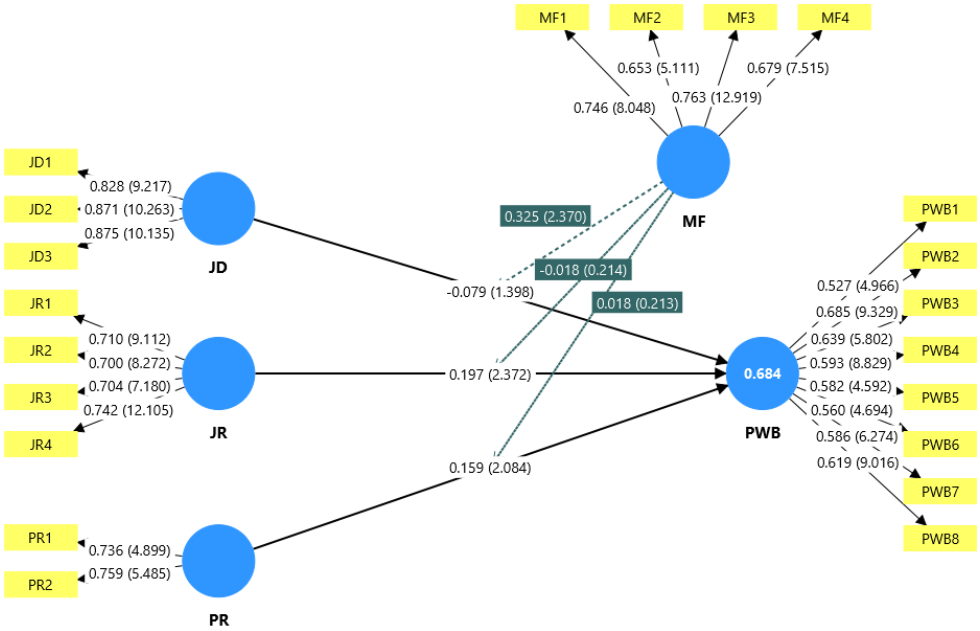


Figure 2. Structural model with reported indicator loadings and path coefficients.

Table 4 describing that H1 was not supported: the coefficient for job demands was negative, as hypothesized, but was not statistically significant. H2 and H3 were supported, indicating positive associations of job resources and personal resources with psychological well-being. H4 was supported because the mindfulness × job demands interaction was positive and statistically significant. H5 and H6 were not supported.

Table 4. Hypothesis-testing results.

Hypothesis	Path	β	t-value	p-value	f^2	Decision
H1	JD → PWB	−0.079	1.398	0.162	0.018	Not supported
H2	JR → PWB	0.197	2.372	0.018	0.066	Supported
H3	PR → PWB	0.159	2.084	0.037	0.032	Supported
H4	MF × JD → PWB	0.325	2.370	0.018	0.160	Supported
H5	MF × JR → PWB	−0.018	0.214	0.831	0.000	Not supported
H6	MF × PR → PWB	0.018	0.213	0.831	0.001	Not supported

Source: Significance criterion: α = 0.05. SmartPLS 4 (2025), as reported in the supplied manuscript.

The f^2 values also indicate that statistical significance should not be interpreted as evidence of equally large substantive effects. The effect sizes for H2 and H3 are

small, whereas the H4 interaction has the largest f^2 among the tested relationships. This pattern reinforces the importance of distinguishing whether a relationship is statistically detectable from how much it contributes to the structural model.

3.2. Explained variance and predictive relevance

The **Table 5** above, shown that R^2 value of 0.684 indicates that the predictors included in the structural model jointly account for 68.4% of the variance in psychological well-being in this sample. This should be interpreted as explained variance within the estimated model, not as evidence that the model captures all determinants of gig workers' well-being.

Table 5. R^2 values.

Endogenous construct	R^2	Adjusted R^2
Psychological well-being	0.684	0.672

The positive Q^2 predict value (0.563) in **Table 6** indicates predictive relevance for psychological well-being under the reported procedure. However, Q^2 predict should not be interpreted as meaning that 56.3% of the variance in new observations will necessarily be predicted, nor does it establish generalizability beyond the study sample. The RMSE and MAE should be considered alongside Q^2 predict when evaluating out-of-sample predictive performance.

Table 6. Q^2 predict results.

Endogenous construct	Q^2predict	RMSE	MAE
Psychological well-being	0.563	0.710	0.452

The most notable moderation result is the positive interaction between job demands and mindfulness ($\beta = 0.325$, $t = 2.370$, $p = 0.018$, $f^2 = 0.160$). A positive interaction coefficient indicates that the slope relating job demands to psychological well-being becomes more positive as mindfulness increases. Given the negative but non-significant direct coefficient for job demands, this pattern is consistent with an attenuation of the negative demand–well-being association at higher levels of mindfulness. It does not indicate that mindfulness removes work demands. Rather, mindfulness may influence how workers appraise and respond to demanding situations. The interaction is statistically significant, but the conditional slopes and their confidence intervals cannot be derived from this coefficient alone. These should be reported only after being calculated from the original data or SmartPLS output.

This finding provides a theoretical extension of the JD-R perspective. The JD-R model traditionally emphasizes that job demands initiate a health-impairment process, whereas resources can protect workers from strain and promote motivation. The present finding suggests that this health-impairment process may also be contingent upon an individual's self-regulatory capacity. Mindfulness therefore appears to function as a boundary condition that influences the extent to which job demands are translated into reduced psychological well-being. This interpretation is consistent with Hülsheger et al. (2013), who demonstrated the importance of mindfulness for emotional regulation and emotional exhaustion, and with Donald et al. (2019), who conceptualized mindfulness as a personal resource associated with adaptive psychological functioning.

In contrast, mindfulness did not significantly moderate the relationships between job resources and psychological well-being ($\beta = -0.018$; $p = 0.831$)

or between personal resources and psychological well-being ($\beta = 0.018$; $p = 0.831$). These findings suggest that the moderating function of mindfulness may be more specific to the health-impairment process associated with job demands rather than representing a universal mechanism that strengthens all resource-related relationships. Although mindfulness was theoretically expected to facilitate the recognition and utilization of available job and personal resources, the non-significant interaction effects indicate that these resources may contribute to psychological well-being through their own motivational and protective functions without requiring additional reinforcement from mindfulness. Thus, mindfulness may be better understood as a selective regulatory resource that becomes particularly relevant when workers need to manage demanding or stressful work experiences.

3.3. Qualitative findings

The qualitative phase involved 15 gig workers from five application providers: Grab, Gojek, inDrive, Maxim, and Shopee. The interviews were transcribed, and the resulting data were deposited in the Qualitative Data Repository (Pratomo, 2025). The qualitative material was used to contextualize how workers experience demands and use mindfulness-related practices in everyday work.

The interview material was analyzed thematically. The transcripts were read repeatedly to develop familiarity with participants' accounts. Relevant segments were then coded for recurring experiences related to job demands, mindfulness-related responses, and the use of personal or social resources. Codes with similar meanings were compared and grouped into broader categories, which were then organized into the three themes reported in **Table 7**. The themes were checked against the interview accounts to assess their coherence and distinctiveness. Representative quotations are included to illustrate the connection between the interpretations and participants' descriptions. The authors should verify that this summary accurately reflects the procedures actually followed and report, where applicable, the number of coders, how coding disagreements were resolved, and whether software was used.

The word cloud is included as a supplementary visualization and is not treated as the analytical method. The thematic findings are organized into three themes: (1) unpredictable and intensive demands; (2) mindfulness as emotional regulation and cognitive space; and (3) resources, acceptance, and community coping. These themes connect participants' accounts with the quantitative findings while maintaining a distinction between reported experiences and statistical associations.

Table 7. Qualitative themes and integration points.

Theme	Subthemes	Evidence in the supplied qualitative material	Illustrative quotation
1. Unpredictable and intensive demands	Long or irregular working hours; weather and traffic; low/uncertain orders; difficult customers; physical strain	Participants described gig work as highly demanding, competitive, and stressful, with both economic and physical uncertainty.	"The most stressful experience is when passengers rush you to pick them up, but once you arrive at the pickup point, they're not there" "When I get an order and it starts raining, I still have to complete it. Also, traffic jams are stressful" "One of the most stressful experiences is getting a customer whose pickup location is far away—around 3 to 4 kilometers—and they want to be picked up quickly" "The most stressful experience is when my account suddenly stops receiving orders—even when I'm in a busy area shown on the heatmap"

Continued table:

Theme	Subthemes	Evidence in the supplied qualitative material	Illustrative quotation
2. Mindfulness as emotional regulation and cognitive space	Breathing; intentional pauses; prayer/istighfar; reflection; reframing unfair ratings or negative events	Mindfulness-related practices were described as ways to pause, regulate emotional reactions, and interpret negative experiences as temporary rather than as personal failure.	"As a religious person, I often reflect and pray in places of worship. I ask God for guidance and strength, because I see my work as a form of worship" "I usually practice istighfar (seeking forgiveness) and turn to spiritual reflection. It helps me stay calm and grounded." "I usually just let it go and keep working. I don't dwell on it—I focus on earning money instead." "To manage emotional stress, I usually look for a quiet place to calm down. I take a break from driving, go home, and spend time with family."
3. Resources, acceptance, and community coping	Peer support; app features; self-care; acceptance; humor; social sharing; seeking help	Workers described drawing on community networks and personal coping strategies, while mindfulness supported acceptance, self-awareness, and constructive use of available resources.	"The community is very helpful, especially when taking long-distance orders or if there's vehicle trouble" "Driver communities nowadays tend to side more with the app provider than with the drivers. When drivers raise concerns, there's rarely a solution" "The driver community is very helpful. It builds camaraderie and allows us to monitor each other's safety. For example, if someone gets an order to a remote area, they can post in the group for others to keep an eye out." "If something happens, the community responds quickly. For example, if someone gets attacked in Pasir Impun, we report it in the WhatsApp group and help arrives fast. It's a strong form of solidarity." "The driver community offers strong solidarity. If something unexpected happens—like an incident involving a fellow driver—they're more supportive than the app provider."

The integration of quantitative and qualitative findings provides a broader account of psychological well-being among Indonesian gig workers, as shown in word cloud in **Figure 3**. The quantitative analysis identified significant positive associations between job resources and psychological well-being and between personal resources and psychological well-being. The qualitative findings provide contextual illustrations of how community support, platform-related features, resilience, self-care, and other coping resources are experienced in everyday work. These accounts are consistent with the positive quantitative associations, although they do not independently establish causal effects.



Figure 3. Conversation word cloud.

The quantitative analysis found a negative but non-significant association between job demands and psychological well-being ($\beta = -0.079$, $p = 0.162$). The

interviews nevertheless revealed that participants experienced substantial demands, including uncertain orders, long working hours, adverse weather, traffic, difficult customers, and physical strain. This is not necessarily a contradiction: the qualitative accounts show that demands are experienced as stressful, while the survey model did not identify a statistically significant average direct association with well-being. Participants' coping practices may help contextualize this pattern, but the qualitative evidence cannot establish why the quantitative coefficient was non-significant.

The strongest point of integration concerns mindfulness and job demands. The quantitative analysis identified a significant mindfulness × job demands interaction ($\beta = 0.325, p = 0.018$). Participants described practices such as breathing, istighfar, prayer, temporary pauses, reflection, and cognitive reframing when faced with stressful situations. These accounts offer contextual insight into how workers may regulate emotional reactions and create psychological distance from difficult events. They are consistent with the proposed self-regulatory interpretation of the interaction, but they do not prove the causal mechanism.

The moderation effects involving job resources and personal resources were not statistically significant. Qualitative accounts described community support and platform-related resources, as well as self-care and resilience-related practices, as useful in their own right. This evidence is compatible with the possibility that such resources support well-being without requiring mindfulness to amplify their associations. The interviews should be interpreted as contextual evidence rather than a direct test of the non-significant interaction effects.

Taken together, the mixed-method findings suggest that mindfulness may function as a selective regulatory resource rather than as a universal amplifier of all resources. Its distinctive role in this study appears in the relationship between job demands and psychological well-being. The qualitative findings provide plausible context for this pattern by illustrating how workers pause, reflect, and regulate their responses during demanding experiences.

4. Discussion

4.1. Job and personal resources as positive correlates of well-being

The positive effects of job resources and personal resources are consistent with the motivational and resource pathways proposed by JD-R theory. Job resources provide workers with practical and psychological support, while personal resources help them cope with uncertainty and maintain a sense of efficacy and resilience (Bakker & Demerouti, 2017; Grover et al., 2018). In the gig-work context, these resources may be especially valuable because workers have fewer formal organizational structures to rely on.

The qualitative findings help make this result more concrete. Workers referred to community solidarity, platform features, self-care, prayer, reflection, acceptance, and social sharing as resources for managing difficult situations. These accounts complement the quantitative finding that resources are associated with better well-being. At the same time, the relatively small f^2 values for H2 and H3 suggest that these relationships, although statistically significant, should not be overstated.

4.2. Why was the direct effect of job demands not significant?

The non-significant direct effect of job demands is one of the study's more informative findings. The coefficient is negative, but the evidence is insufficient to conclude that job demands independently reduce psychological well-being in the sample. One possible explanation is that gig workers may normalize demanding conditions because flexibility and autonomy are part of the exchange they make for platform work (Wood et al., 2019). Another possibility is that the effect of demands is conditional rather than uniform: demands may become psychologically harmful under some personal conditions but not others.

The qualitative findings support the second interpretation more strongly than the first. Participants clearly described demands as stressful, but they also described ways of pausing, regulating emotions, reframing events, and accepting what they could not control. The qualitative evidence therefore complements the quantitative result by suggesting that the absence of a significant main effect does not mean that demands are psychologically irrelevant. Instead, the impact of demands may depend on how workers respond to them.

4.3. Why does mindfulness moderate job demands but not job or personal resources?

The significant MF × JD interaction provides the clearest theoretical contribution of the study. Mindfulness appears to matter most where the worker has to regulate a potentially stressful demand. This is consistent with the idea that mindful awareness changes the appraisal and response process rather than simply adding another source of well-being. When a customer is difficult, orders are unpredictable, or physical conditions are uncomfortable, a mindful pause may create room for emotional regulation and more deliberate action. The qualitative accounts of breathing, prayer, reflection, and reframing are consistent with this mechanism.

By contrast, the non-significant MF × JR interaction suggests that mindfulness does not necessarily make external resources more beneficial. If social support, autonomy, or useful platform features are already available, these resources may improve well-being directly. There may therefore be limited incremental variance for mindfulness to explain. In JD-R terms, the resource itself is already performing its motivational or protective function.

The non-significant MF × PR interaction can be interpreted in a similar way, but with an additional theoretical consideration: mindfulness and personal resources may partly overlap in their self-regulatory functions. Psychological capital, resilience, acceptance, and mindfulness can all support adaptive responses. Their effects may therefore be additive rather than multiplicative, or the sample may not have sufficient variability to detect a small interaction.

These interpretations should be treated cautiously. The quantitative results establish that H4 is statistically supported and H5–H6 are not; they do not by themselves prove the psychological mechanisms proposed above. The qualitative findings provide contextual support for the interpretation, but they should not be used to claim causal mechanisms that were not directly tested.

4.4. Mixed-methods integration

Based on the integration between quantitative and qualitative findings in **Table 8,** theoretically, this study contributes to the JD-R literature by positioning mindfulness as a selective personal regulatory resource rather than a universal amplifier of the effects of job resources and personal resources. The significant interaction between job demands and mindfulness indicates that the health-impairment process proposed by the JD-R model may depend partly on the individual's capacity to regulate attention and emotional responses to demanding work experiences. In this context, mindfulness does not remove the demands faced by gig workers; rather, it may reduce the extent to which those demands are translated into psychological strain and poorer well-being. At the same time, the absence of significant moderation for job resources and personal resources suggests that the role of mindfulness is not uniform across the JD-R pathways. This finding refines the theoretical understanding of mindfulness by suggesting that its primary contribution may lie in regulating responses to adverse work conditions rather than automatically enhancing the benefits of existing resources.

Table 8. Integration of quantitative and qualitative findings.

Quantitative result	Qualitative evidence	Integrated interpretation
H1 not supported: JD → PWB is negative but non-significant.	Workers nevertheless described unpredictable orders, weather, traffic, customer difficulties, and physical strain as stressful.	Demands are experienced as stressful, but their direct association with well-being appears conditional rather than uniform.
H2 supported: JR → PWB positive.	Community solidarity, app features, customer feedback, and interpersonal support appeared as useful resources.	Qualitative accounts reinforce the role of resources as practical and psychosocial supports.
H3 supported: PR → PWB positive.	Prayer, reflection, acceptance, self-care, humor, and social sharing were described as coping resources.	Personal resources help workers manage uncertainty and preserve psychological balance.
H4 supported: MF × JD significant.	Breathing, pausing, prayer, reflection, and reframing were described as ways of regulating reactions to difficult situations.	Qualitative evidence helps explain why mindfulness may matter particularly when demands are high.
H5 and H6 not supported.	Workers described job and personal resources as useful in their own right.	The benefits of resources may occur directly, without requiring mindfulness as an amplifier.

5. Conclusion

This study examined the relationships among job demands, job resources, personal resources, mindfulness, and psychological well-being among Indonesian gig workers. The findings indicate that job resources and personal resources are positively associated with psychological well-being, while the direct negative relationship between job demands and well-being is not statistically significant. More importantly, mindfulness significantly changes the relationship between job demands and psychological well-being, whereas it does not significantly moderate the effects of job or personal resources.

The qualitative findings add an important layer of explanation. Gig workers encounter demanding and uncertain conditions, but they also develop everyday ways of regulating their responses. Practices such as intentional pauses, breathing, prayer, reflection, acceptance, and social sharing can create psychological space when work becomes difficult. The mixed-method evidence therefore supports a view of mindfulness as a context-sensitive self-regulatory resource rather than a universal solution to poor well-being.

The study contributes to JD-R research by showing that mindfulness may be more consequential in the health-impairment pathway than in the motivational resource pathway. At the same time, the measurement limitations, incomplete reporting of sample characteristics and PLS-SEM settings, and the need for more systematic qualitative evidence mean that the findings should be interpreted as context-specific rather than universally generalizable.

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