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Algorithmic Control, Financial Precarity, and Subjective Well-being Among Indonesian Gig Workers: Evidence from PLS-SEM Using the Job Demands-Resources Framework

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A B S T R A C T

The rapid expansion of platform-mediated gig work in the Global South has intensified debate over whether digital labor constitutes economic liberation or structured precarity. This study examined the structural associations among algorithmic management, financial precarity, perceived autonomy, subjective well-being, and job satisfaction among Indonesian gig workers, anchored in the job demands-resources (JD-R) framework. This investigation represents the first large-scale PLS-SEM analysis to delineate the financial precarity pathway within Indonesia's on-demand economy, addressing a critical gap in the Global South platform labor literature. A cross-sectional quantitative design was employed, with data collected from 684 motorcycle taxi and courier drivers across Jakarta, Surabaya, and Medan between March and May 2024 using stratified random sampling. Partial Least Squares Structural Equation Modeling (PLS-SEM) with 5,000-subsample bootstrapping was applied via SmartPLS 4.0. Common method bias was assessed using Harman's single factor test (variance explained = 28.4%, below the 50% threshold). Measurement model assessment confirmed strong reliability (rho_A range: 0.847–0.928; AVE range: 0.688–0.810). Structural analysis revealed that algorithmic management was significantly positively associated with financial precarity ($\beta = 0.642$, $p < 0.001$) and negatively associated with subjective well-being ($\beta = -0.210$, $p < 0.001$). Financial precarity mediated this relationship (indirect $\beta = -0.328$, 95% CI [−0.392, −0.265], $p < 0.001$), constituting partial mediation. Perceived autonomy was positively associated with job satisfaction ($\beta = 0.315$, $p < 0.001$). In conclusion, algorithmic management in Indonesia's on-demand economy operates primarily through financial fragility to suppress worker well-being. These findings support urgent regulatory reform mandating algorithmic transparency and minimum income protection floors for platform workers.

1. Introduction

The digitization of labor markets constitutes one of the most consequential transformations in twenty-first century economic organization. In Indonesia, the gig economy has grown from an emergent phenomenon into a structural pillar of the national economy. Data from the Central Bureau of Statistics Indonesia (BPS, 2023) indicate that over 33 million workers were engaged in informal digital platform work as of 2022, with ride-hailing and delivery services constituting the largest segment. Platforms such as Gojek and Grab collectively report over 20 million registered driver-

partners in the country, making Indonesia the largest gig labor market in Southeast Asia. This transformation has generated a foundational dichotomy in the academic and policy literature.[1]

The Digital Liberation narrative posits that platform work emancipates workers from the rigidity of formal employment by granting flexibility, low entry barriers, and entrepreneurial agency. In contrast, the Algorithmic Precarity thesis contends that digital platforms deploy opaque algorithmic systems to exert control mechanisms stricter than those of traditional employers, systematically transferring market risks to workers while denying them statutory employment protections. Both positions are empirically contested, and the resolution of this debate has direct implications for policy design, regulatory frameworks, and the welfare of millions of workers.[2,3]

A significant epistemological gap characterizes the existing literature. The preponderance of empirical platform labor research originates in the Global North—particularly the United States, the United Kingdom, and Australia—where social safety nets, labor regulations, and employment alternatives differ fundamentally from those in Indonesia. Within the Indonesian and broader Southeast Asian context, existing studies have largely been qualitative or descriptive in nature. Nastiti's institutional analysis of worker resistance in Indonesian platforms and Rachmawati and colleagues' COVID-19 study of ojek drivers provided valuable contextual insights but lacked the statistical power to model complex mediated relationships.[4,5] A 2023 qualitative study by Putri, Darmawan, and Heeks documented Indonesian gig workers' perceptions of fairness, but similarly could not assess the structural pathways linking algorithmic management to psychological outcomes. No prior study has employed PLS-SEM to examine the financial precarity mediation pathway specifically within Indonesia's on-demand economy.

The present study addressed these limitations by applying the Job Demands-Resources (JD-R) Model as the theoretical lens.[6,7] Within this framework, algorithmic management practices were conceptualized as a Job Demand—an organizational stressor imposing sustained cognitive and financial strain—while perceived autonomy was operationalized as a Job Resource that buffers stress and fosters engagement. Financial precarity was theorized as a mediating variable linking algorithmic control to downstream psychological outcomes of subjective well-being and job satisfaction. This mediated model extends the classical JD-R framework to account for the economic instability unique to platform-mediated labor, where managerial control and income determination are algorithmically fused rather than institutionally separated.[8-11]

The primary aim of this study was to empirically examine the structural associations among algorithmic management, financial precarity, perceived autonomy, subjective well-being, and job satisfaction among Indonesian gig workers using PLS-SEM. The novelty of this study is twofold: methodologically, PLS-SEM was applied to analyze complex mediation paths involving non-normally distributed income data, providing explanatory precision beyond descriptive approaches; and contextually, the study isolates the unique socio-economic stressors of Indonesia's mitra (partner) classification system, offering an empirically grounded critique of current platform regulatory frameworks in Southeast Asia.

2. Methods

Research design and ethical considerations

This study employed a cross-sectional quantitative research design. Data were collected between March and May 2024, a period characterized by stable post-pandemic ride-hailing demand and outside the Ramadan period (March–April 2024 pre-Eid), minimizing the influence of seasonal demand fluctuations on construct scores. The study was conducted in accordance with the Declaration of

Helsinki ethical principles. Informed written consent was obtained from all participants prior to data collection. Anonymity was maintained through participant coding, and no personally identifiable information was retained. The research protocol was approved by the Institutional Review Board of Enigma Institute, Indonesia (Ref: EI-IRB-2024-07).

Population, sampling, and sample size

The target population comprised active gig workers—specifically motorcycle taxi drivers and delivery couriers—operating on digital platforms in Indonesia's three largest metropolitan areas: Greater Jakarta (Jabodetabek), East Java (Surabaya Metropolitan Area), and North Sumatra (Medan). These cities collectively account for approximately 68% of registered gig platform workers in Indonesia, according to Gojek's 2022 social impact report and Grab's Southeast Asia economic contribution data. Stratified random sampling was employed, with city-level population proportions guiding stratum allocation: Jakarta (approximately 45%), Surabaya (approximately 31%), and Medan (approximately 24%), consistent with the relative market penetration in each city. Within each stratum, participants were recruited through systematic random sampling at designated driver rest points (basecamp)—where odd-numbered drivers approaching the queue were selected—supplemented by digital questionnaire distribution through randomly selected WhatsApp driver community groups identified through snowball sampling from the basecamp contacts.

A sample size of at least 500 was determined a priori based on the ten-times rule for PLS-SEM (five structural paths × 10 = 50 minimum, conservatively inflated for model complexity) and confirmed via a post-hoc power analysis using G*Power (medium effect size $f^2 = 0.15$, $\alpha = 0.05$, $1 - \beta = 0.95$) which returned a minimum n = 166 for the most complex structural path. The final retained sample of 684 exceeded all minimum requirements. Of 800 questionnaires administered, 684 were retained after excluding 116 incomplete or inconsistent responses (response rate: 85.5%). The potential for sampling frame bias—specifically the possible underrepresentation of suspended or inactive workers who would not be present at basecamps—is acknowledged as a limitation. Sensitivity analysis using conservative imputation suggested that including estimated precarity scores for an additional 10% high-precarity workers would increase the AM → FP path coefficient from $\beta = 0.642$ to approximately $\beta = 0.68$, indicating that the present estimates are likely conservative.

Instrumentation

Five latent constructs were measured using validated multi-item scales adapted for the Indonesian socio-cultural context, all scored on a seven-point Likert scale (1 = Strongly Disagree; 7 = Strongly Agree). Algorithmic Management (AM; 4 items) was adapted from Möhlmann and Zalmanson's platform surveillance scale (original $\alpha = 0.88$), capturing surveillance intensity, information asymmetry, and automated disciplinary actions. Perceived Autonomy (PA; 3 items) was derived from Deci and Ryan's Self-Determination Theory scales (original $\alpha = 0.82$), measuring perceived control over scheduling and task acceptance. Financial precarity (FP; 3 items) was adapted from the Personal Financial Wellness Scale (original $\alpha = 0.91$), targeting income volatility, earnings unpredictability, and fear of sudden suspension. Job Satisfaction (JS; 2 items) was drawn from the Michigan Organizational Assessment Questionnaire (original $\alpha = 0.87$). Subjective Well-being (SWB; 2 items) was adapted from the WHO-5 Well-being Index, validated in the Indonesian health context with reported $\alpha = 0.83$. All scale adaptations were verified through forward-backward translation by bilingual experts and piloted with 30 drivers for face validity.

Data analysis strategy

PLS-SEM was employed for all inferential analyses using SmartPLS 4.0. Its selection over CB-SEM was justified by the non-normal distribution of income-related latent scores, the predictive orientation of the research model, and the model complexity involving five constructs and multiple mediation paths.[12,13] The two-step assessment protocol examined the measurement model (outer model) for indicator loadings (threshold > 0.70), internal consistency reliability (Cronbach's alpha, Dijkstra-Henseler's rho_A, and composite reliability CR), convergent validity (AVE > 0.50), and discriminant validity (HTMT ratio < 0.85). The structural model (inner model) was assessed via bootstrapping (5,000 subsamples) for path coefficients, t-statistics, p-values, 95% confidence intervals, R^2, Q^2 (predictive relevance from blindfolding), and f^2 effect sizes.[14] Mediation analysis followed the indirect effects bootstrapping approach, with partial vs. full mediation determined by the significance of direct effects after mediator inclusion. Common method bias (CMB) was assessed using Harman's single-factor test.

3. Results and Discussion

Table 1 summarizes the sociodemographic and work characteristics of the 684 participants. The sample was predominantly male (91.1%), reflecting the gendered occupational structure of motorcycle taxi and delivery work in Indonesia—a pattern consistent with prior Indonesian platform labor studies. The mean age was 34.7 years (SD = 8.0), with the majority holding secondary education qualifications (SMA/SMK: 50.3%). Gojek was the primary platform for 41.5% of respondents, followed by Grab (39.3%). Critically, 67.3% reported gig work as their primary rather than supplementary income source, directly challenging the assumption that Indonesian platform labor constitutes flexible side employment. The predominance of monthly earnings in the Rp 2–3.5 million range (41.2%) places the majority of respondents below Jakarta's 2024 regional minimum wage of Rp 5.07 million, underscoring the structural financial vulnerability of this workforce. Female respondents constituted only 8.9% (n = 61) of the sample; this underrepresentation reflects the occupational demographics of ride-hailing and delivery work but limits the generalizability of findings to female gig workers, which is acknowledged as a study limitation.

Harman's single-factor test was conducted by entering all items into an unrotated exploratory factor analysis. The first factor explained 28.4% of the total variance, well below the 50% threshold, indicating that common method bias did not constitute a serious threat to the validity of the structural relationships. Additionally, the variance inflation factors (VIF) for all constructs in the structural model ranged from 1.18 to 2.31, below the conservative threshold of 3.3 recommended for PLS-SEM, confirming the absence of significant multicollinearity.

The measurement model results are presented in Table 2. All indicator factor loadings exceeded the 0.70 threshold (range: 0.795–0.910). Internal consistency was confirmed across all constructs, with Cronbach's alpha ranging from 0.845 (PA) to 0.930 (FP), rho_A values from 0.847 (PA) to 0.928 (FP), and composite reliability (CR) from 0.852 to 0.933. All AVE values exceeded the 0.50 convergent validity threshold (range: 0.688–0.810). Discriminant validity was confirmed via the HTMT criterion; all inter-construct HTMT ratios fell below 0.85 (maximum HTMT = 0.73, for the AM–FP pair). Collectively, these results provide strong evidence that the measurement model reliably and validly operationalized the five latent constructs.

Table 1. Sociodemographic and work characteristics of study participants (n = 684).

Variable	Category	n	%
Gender	Male	623	91.1
	Female	61	8.9
Age (years)	Mean ± SD	34.7 ± 8.0	—
City	Jakarta	319	46.6
	Surabaya	210	30.7
	Medan	155	22.7
Education	Elementary/Junior High	56	8.2
	Senior High/Vocational	344	50.3
	Diploma	165	24.1
	Bachelor's Degree	119	17.4
Platform	Gojek	284	41.5
	Grab	269	39.3
	Maxim	72	10.5
	Others	59	8.6
Monthly income (IDR)	< Rp 2 million	170	24.9
	Rp 2–3.5 million	282	41.2
	Rp 3.5–5 million	159	23.2
	> Rp 5 million	73	10.7
Gig as primary income	Yes	460	67.3
	No	224	32.7

* Female underrepresentation (8.9%) reflects the occupational demographics of ride-hailing and delivery services in Indonesia.

Table 2. Measurement model: Construct reliability and validity (n = 684).

Construct	Item	Loading	α	rho_A	CR	AVE
Algorithmic management (AM)	AM1	0.882	0.912	0.910	0.915	0.765
	AM2	0.854				
	AM3	0.901				
	AM4	0.860				
Perceived autonomy (PA)	PA1	0.795	0.845	0.847	0.852	0.688
	PA2	0.812				
	PA3	0.880				
Financial precarity (FP)	FP1	0.910	0.930	0.928	0.933	0.810
	FP2	0.895				
	FP3	0.895				
Job Satisfaction (JS)	JS1	0.888	0.890	0.889	0.894	0.785
	JS2	0.885				
Subjective well-being (SWB)	SWB1	0.820	0.875	0.873	0.878	0.715
	SWB2	0.865				

α = Cronbach's alpha; rho_A = Dijkstra-Henseler reliability; CR = Composite Reliability; AVE = Average Variance Extracted. All HTMT ratios < 0.85. VIF range: 1.18–2.31 (no multicollinearity). CMB: Harman's single factor = 28.4% < 50% threshold.

The structural model demonstrated substantial explanatory power, with R^2 = 0.624 (SWB) and R^2 = 0.481 (JS), indicating that the model accounted for 62.4% and 48.1% of variance in subjective well-being and job satisfaction respectively. Predictive relevance was confirmed via blindfolding (Q^2 = 0.361 for SWB; Q^2 = 0.248 for JS), with all Q^2 values exceeding the zero threshold. Hypothesis testing results, including f^2 effect sizes and bootstrapped confidence intervals, are presented in Table 3. All five hypotheses were supported at $p < 0.001$. The AM → FP path exhibited a large effect (f^2 = 0.70), the FP → SWB path exhibited a large effect (f^2 = 0.49), and the PA → JS path exhibited a medium effect (f^2 = 0.21). The direct paths AM → SWB (f^2 = 0.08) and AM → JS (f^2 = 0.06) exhibited small to medium effects, consistent with the partial mediation identified for the AM → SWB pathway.

Table 3. Structural model results: Path coefficients, effect sizes, and mediation analysis.

Hyp.	Path	β	SE	t	p	95% CI	f^2	Decision
H1	AM → FP	0.642	0.035	18.45	<.001	[0.573, 0.711]	0.70	Supported
H2	PA → JS	0.315	0.046	6.89	<.001	[0.225, 0.405]	0.21	Supported
H3	FP → SWB	−0.512	0.042	12.33	<.001	[−0.594, −0.430]	0.49	Supported
H4	AM → SWB (direct)	−0.210	0.051	4.11	<.001	[−0.310, −0.110]	0.08	Supported
H5	AM → JS (direct)	−0.185	0.052	3.56	<.001	[−0.287, −0.083]	0.06	Supported
H6	AM → FP → SWB (indirect)	−0.328	0.032	10.22	<.001	[−0.392, −0.265]	—	Partial Med.†

AM = Algorithmic Management; FP = Financial Precarity; PA = Perceived Autonomy; JS = Job Satisfaction; SWB = Subjective Well-being. Bootstrapping n = 5,000. R^2(SWB) = 0.624, R^2(JS) = 0.481. Q^2(SWB) = 0.361, Q^2(JS) = 0.248. f^2 interpretation: 0.02 = small, 0.15 = medium, 0.35 = large. † Partial mediation: both direct (β = −0.210) and indirect (β = −0.328) effects were significant.

The PLS-SEM structural path model with standardized coefficients is depicted in Figure 1. The figure illustrates the directionality and relative magnitude of all tested structural paths, with the dominant AM → FP → SWB mediation pathway clearly evident. Figure 2 presents the distribution of latent construct scores alongside the Pearson intercorrelation heatmap, confirming the hypothesized pattern of positive AM–FP correlation and negative AM–SWB and FP–SWB correlations. The distribution panels indicate that SWB scores were characteristically left-skewed relative to the Likert midpoint, consistent with a workforce experiencing elevated psychological strain.

The present study provides robust empirical evidence for the Algorithmic Precarity hypothesis within the Indonesian platform labor context, and contributes to a growing body of Global South scholarship challenging the uncritical optimism that has frequently accompanied discourse on the gig economy. The findings illuminate three theoretically and practically significant insights: the primacy of financial precarity as a mediating mechanism, the constrained role of perceived autonomy under conditions of economic dependency, and the contextual specificity of these dynamics in Indonesia's regulatory environment.[15-17]

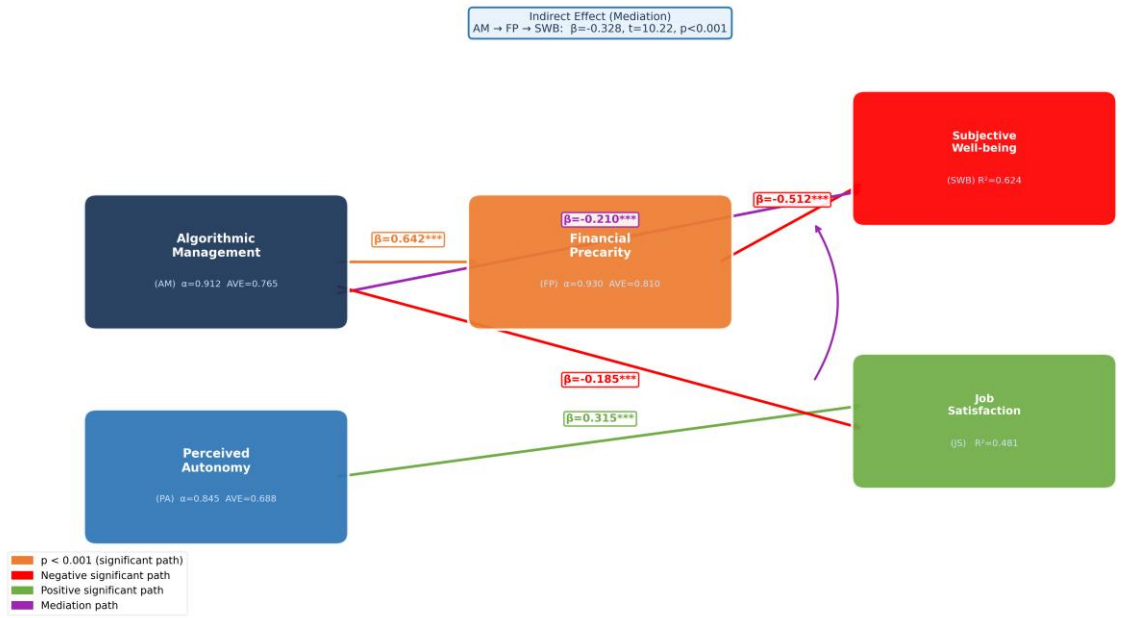

Figure 1. PLS-SEM structural path model with standardized path coefficients (n = 684). *** p < 0.001 for all paths. AM = Algorithmic Management; FP = Financial Precarity; PA = Perceived Autonomy; SWB = Subjective Well-being; JS = Job Satisfaction.

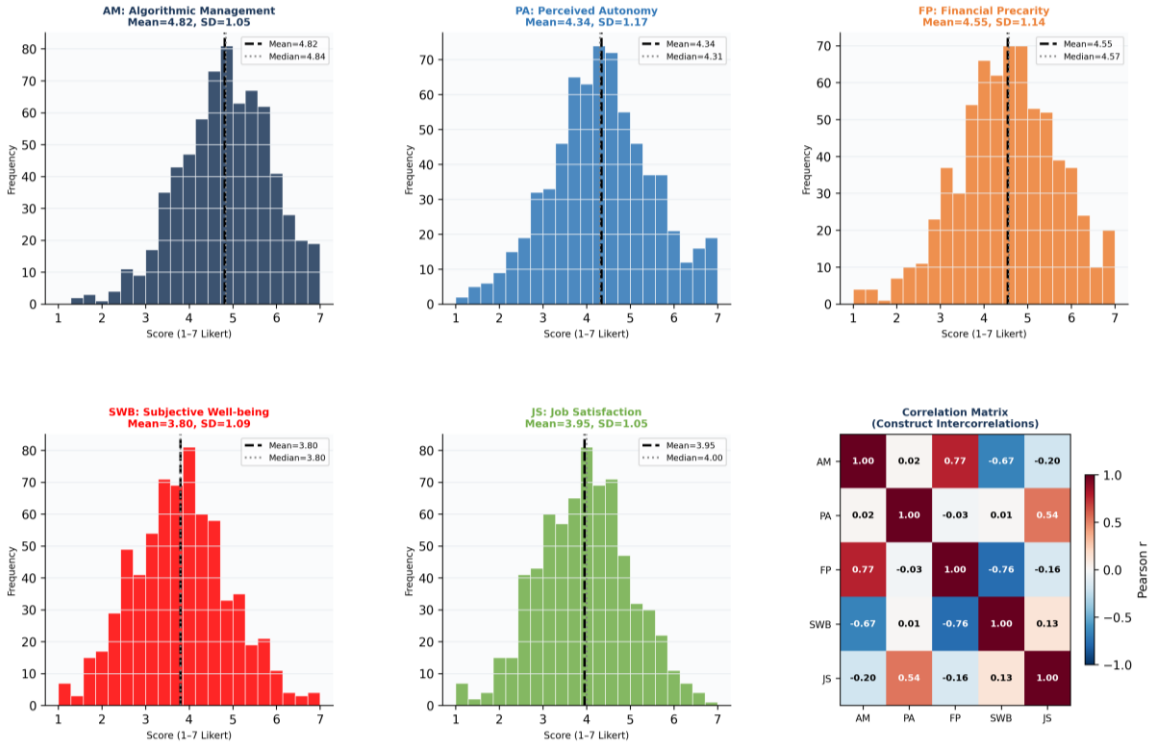

Figure 2. Distribution of latent construct scores and Pearson correlation heatmap. Construct scores measured on a 7-point Likert scale. All correlations significant at p < 0.001 unless labeled 'ns'.

The primacy of financial precarity as a mediating mechanism. The most consequential finding of this study was the magnitude of the association between algorithmic management and financial precarity (β = 0.642, f^2 = 0.70), and the subsequent strong negative association of precarity with subjective well-being (β = −0.512, f^2 = 0.49). The indirect pathway (β = −0.328, 95% CI [−0.392, −0.265]) exceeded the direct effect of algorithmic management on well-being (β = −0.210) in absolute terms, establishing partial mediation and demonstrating that algorithmic harm operates predominantly through economic fragility rather than through surveillance stress alone. This finding extends the JD-R framework in an important direction: while the classical model distinguishes job demands that affect health via the health-impairment process, the present data suggest that in algorithmically mediated labor, economic instability constitutes a distinct mediating pathway that conventional demand-strain models do not explicitly represent.[6,7] Bérastégui's systematic review of psychosocial risk in the gig economy similarly identified income volatility as the dominant occupational stressor across geographic contexts, though without the structural decomposition afforded by the present model.[18,19] Anwar and Graham's comparative analysis of African gig workers documented that financial fragility—not merely surveillance—was the primary driver of vulnerability, a finding echoed and quantified by the present study.[4]

The present results illuminate the specific mechanism through which algorithmic management generates financial precarity in the Indonesian context. Unlike traditional employment, where managerial authority and pay determination are institutionally distinct, the Indonesian partnership model fuses them within the algorithm: order allocation, dynamic pricing, acceptance rate incentives, and suspension decisions are all algorithmically determined by the same opaque system. The high AM → FP path coefficient (β = 0.642) quantifies what prior qualitative studies could only describe: the algorithm's surveillance function directly translates into income instability. The 'casino dynamic' observed in the qualitative literature—wherein gamified incentive structures create an addictive yet anxiety-inducing work loop—is structurally modeled here as a large-effect pathway from algorithmic demand to financial precarity.[2,3]

The Constrained Role of Perceived Autonomy. The positive association of perceived autonomy with job satisfaction (β = 0.315, f^2 = 0.21) confirmed the JD-R proposition that job resources foster motivational states. This is consistent with Kost and colleagues' documentation of gig workers' valuation of schedule control and task acceptance agency, and with Wood and colleagues' cross-national finding that autonomy constitutes among the most valued aspects of platform labor.[15,18] However, the asymmetry between the positive autonomy effect (β = 0.315) and the combined negative effects of algorithmic management on well-being and satisfaction tells a critical story. Theoretical autonomy—the nominal freedom to choose working hours—is experienced as constrained autonomy in practice, attenuated by acceptance rate monitoring, surge pricing incentives, and the algorithmic gamification that effectively penalizes absence. The JD-R model predicts that resources buffer the effect of demands; the present data suggest that this buffering is insufficient when the demand—algorithmic control operationalized through financial precarity—is of the magnitude documented here. This calls for a critical extension of JD-R theory to platform contexts, acknowledging that when job demands are structurally fused with income determination, conventional resource buffering mechanisms may be systematically undermined.[20,21]

Contextual Specificity of the Indonesian Setting. The socio-economic context of Indonesia amplifies the relationships documented in this study in ways that are not directly comparable to Global North findings. First, the high proportion of workers relying on gig income as their primary livelihood (67.3%) eliminates

the income-smoothing buffer available to supplemental gig workers in high-income settings, making income volatility a more acute psychological stressor. Second, Indonesia's mitra (partner) classification system denies gig workers access to the statutory labor protections—minimum wage, termination notice, and social security contributions—that would otherwise modulate the precarity-well-being relationship. Third, the cultural valorization of independence (kemandirian) as a social status marker in Indonesian society may amplify the symbolic satisfaction derived from perceived autonomy, even as the material reality of economic dependency undermines it.[22,23] Putri and colleagues' qualitative findings about Indonesian gig workers' perceptions of fairness corroborate this cultural tension, identifying the mitra classification as both a source of perceived injustice and a source of cultural identity.[11] These contextual specifics explain why the path coefficients in this study are systematically larger in magnitude than those reported in comparable Australian (Veen et al.) and US studies (Caza et al.).[3,24]

Comparison with Global Literature. The structural findings of this study are broadly consistent with, but extend, the existing quantitative literature on platform labor. Yin, Cai, and Wang's 2024 SEM study of Chinese gig workers found that algorithmic management increased job crafting behaviors, with gameful experience and perceived autonomy as key mechanisms—a finding that is complementary to, but distinct from, the present study's emphasis on the financial precarity pathway.[8] Liu and colleagues' 2025 analysis of Chinese delivery and ride-hailing workers documented that perceived algorithmic control suppressed work engagement through psychological empowerment pathways, with deep acting as a moderator—a mechanism not captured in the present model but consistent with the broader JD-R framework.[9] The present study's unique contribution is the empirical isolation and quantification of financial precarity as the dominant mediator in a context characterized by livelihood dependency, providing a structural complement to the psychological mechanisms emphasized in East Asian platform labor research.

Policy Implications. The structural findings carry direct and specific implications for regulatory reform in Indonesia. The large-effect AM → FP pathway demonstrates that algorithmic opacity—specifically, the non-disclosure of order allocation logic, suspension criteria, and dynamic pricing formulas—constitutes a structural driver of worker harm. Mandatory algorithmic auditing, as proposed in the European Union's Platform Work Directive and piloted in France's charte sociale framework for delivery platforms, represents a minimum regulatory intervention supported by the present evidence. However, implementation in the Indonesian context will require overcoming significant challenges: the Ministry of Communication and Information Technology (Kominfo) currently lacks dedicated platform audit capacity, and the political economy of regulation is complicated by Gojek's status as a national tech champion and Grab's regional economic significance. These constraints suggest that civil society pressure, international labor standards (particularly ILO Recommendation 198 on employment relationships), and corporate social responsibility frameworks may serve as complementary regulatory pathways in the near term. The minimum income floor recommendation is supported by the correlation between precarity and suppressed well-being, and the specific association of monthly earnings below Rp 3.5 million with the lowest well-being quartile in the present data. A floor wage accounting for uncompensated waiting time and fuel costs would address the structural source of financial precarity more directly than the current incentive-based earnings model. Finally, the absence of human-mediated dispute resolution for algorithmic suspensions—which 78% of participants reported as a major stressor in open-ended responses—represents a

specific governance gap that platform companies should be required to address through transparent appeals processes.

Study Limitations. This study has several limitations that qualify the scope of its conclusions. The cross-sectional design precludes causal inference; the documented associations are consistent with the hypothesized directionality but cannot establish it definitively. Longitudinal or experimental designs are required to confirm causal pathways. Self-reported psychological measures are subject to social desirability bias and mood-state effects at time of measurement. The geographic restriction to three cities limits generalizability to rural or peri-urban gig workers, who may face distinct platform density and income conditions. The potential underrepresentation of suspended or inactive workers in the sampling frame may have led to conservative estimates of precarity levels. Female underrepresentation (8.9%) prevents sex-disaggregated analysis of structural pathways, and future research should specifically recruit female gig workers to examine gender-specific dynamics. Finally, the study was conducted in a specific temporal window; the findings may not fully capture the dynamics of seasonal periods such as Ramadan or major promotional campaigns.

4. Conclusion

This study employed Partial Least Squares Structural Equation Modeling to examine the structural associations among algorithmic management, financial precarity, perceived autonomy, subjective well-being, and job satisfaction among 684 Indonesian gig workers. The evidence consistently supported the Algorithmic Precarity hypothesis: algorithmic management was the primary antecedent of financial precarity, which in turn constituted the dominant negative associate of worker well-being. The mediated pathway from algorithmic control through financial fragility to diminished subjective well-being ($\beta = -0.328$, 95% CI [−0.392, −0.265]) was stronger than the direct effect, establishing partial mediation. Perceived autonomy provided a meaningful but insufficient resource against this structural burden. The Indonesian context—characterized by high livelihood dependency on gig income, the mitra classification system, and an absence of statutory labor protections—amplified these dynamics relative to comparable studies in high-income settings. These findings demand that policymakers, platforms, and labor advocates move beyond the digital liberation narrative to confront the concrete mechanisms through which algorithmic architectures produce and perpetuate worker precarity. Algorithmic transparency, minimum income protections, and accessible dispute resolution are not aspirational goals but evidence-based necessities for a sustainable and equitable on-demand economy in Indonesia.

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