J-naker
Jurnal Ketenagakerjaan

Jurnal Ketenagakerjaan
Volume 20 No.1, 2025
Online ISSN: 2722-8770
Print ISSN: 1907-6096

Technological Support, Hybrid Work, and National Employment Policies: Catalysts for Worker Productivity and SDG 8 Achievement in Indonesia's Gig Economy

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Abstract

The rapid advancement of digital technologies has reshaped Indonesia's labor market, with the gig economy emerging as a significant component. This study aims to analyze how technological support, hybrid work models, and national employment policies influence gig workers' productivity and engagement, and how these factors contribute to achieving Sustainable Development Goal (SDG) 8 in Indonesia. Using a cross-sectional quantitative approach, structured questionnaires were distributed to 218 gig workers across various sectors. The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) to identify the strength and direction of relationships among key variables: technological support, hybrid working, national employment policy, productivity, engagement, and SDG 8 outcomes. The results show that technological support significantly improves both productivity and engagement, particularly through the availability of digital platforms and real-time work coordination tools. Hybrid work models emerged as the strongest factor influencing worker outcomes, combining flexibility with structured task management. While national employment policies had a positive impact, their effectiveness remains limited due to gaps in legal protection and social inclusion for gig workers. Importantly, the analysis reveals that engagement has a greater impact than productivity in contributing to SDG 8, emphasizing the need to foster a sense of involvement and motivation among gig workers. These findings underline the practical importance of enhancing platform responsibility, promoting digital inclusion, and redesigning employment policies to ensure fair and sustainable working conditions. This study provides actionable insights for policymakers and platform providers to better support the evolving nature of gig work in Indonesia.

Keywords: gig worker, hybrid work, national employment policy, sdg 8, technology support

DOI: 10.47198/naker.v20i1.440 Received: 4-17-2025 Revised: 4-21-2024 Accepted: 6-30-2025

1. Introduction

The development of technology has become a major catalyst in transforming the global economic system. The digital revolution, automation, and artificial intelligence (AI) have changed how businesses operate, accelerated production, and improved global efficiency. A paradigm shift toward data-driven economies and renewable energy also signals a global orientation toward sustainability. As economies become more interconnected, market access and innovation accelerate. However, in developing countries, this transformation presents complex challenges. Automation and AI, for example, risk reducing employment in traditional sectors such as manufacturing (Dobrosotskiy et al., 2021). These countries must adapt by upskilling the workforce, developing their tech sector, and ensuring inclusive participation in the digital economy to avoid lagging in global competition.

The gig economy, driven by technological advances and the demand for flexibility, is reshaping the labor market through short-term, platform-based work (Batmunkh et al., 2022; Muhyiddin et al., 2024). Globally, gig work is expanding rapidly, with over 70 million workers and an annual growth rate of 26% (Kässi & Lehdonvirta, 2018). In Indonesia, the sector has grown significantly since 2014. By 2023, approximately 32 million workers (21.8% of the workforce) were part of the gig economy, rising from 19.2% in 2019 (Z News, 2024). These workers range from highly skilled professionals to low-skilled service providers (Sudirman & Disemadi, 2023). Despite offering income opportunities and flexibility, the gig economy poses serious concerns related to income instability and weak social protection mechanisms. Indonesia currently ranks fifth globally, contributing 3.2% of the world's freelance workforce (Universitas Airlangga, 2024).

Gig workers face a range of challenges, including job insecurity, absence of traditional employment benefits, and high stress levels (Kuhn, 2023). While flexibility and autonomy can improve job satisfaction and work-life balance (Low et al., 2024), the precarious nature of gig work undermines long-term well-being (Kurian & Bindu Madhavi, 2024). Worker performance is positively associated with autonomy, enjoyment, and flexibility (Zwick, 2018), while job satisfaction depends on compensation, freedom, skill development, and social interaction (Montgomery & Baglioni, 2021). A major issue is the lack of adequate training, which tends to prioritize economic over interpersonal competencies (Zhang, 2024). To remain competitive, gig workers need ongoing skill development and better support structures (Abdullah et al., 2024). Digital platforms offer earning potential and autonomy but also shift risks from organizations to individuals (Keith et al., 2020).

Gig work is closely linked to Sustainable Development Goal (SDG) 8, which promotes inclusive economic growth and decent work (Singla et al., 2023). However, the absence of labor protection and the dominance of opaque algorithmic practices hinder the realization of decent work standards(Chigbu & Nekhwevha, 2023; Moen et al., 2020). In Indonesia, the Omnibus Law and PP No. 35 of 2021 attempt to regulate gig work, but worker protections remain limited (CNN Indonesia, 2024). The hybrid work model—integrating online and offline modes—is also becoming more common, requiring better communication systems and adaptive policies (Gleim

et al., 2019). Some companies now integrate gig workers into hybrid teams for enhanced efficiency and expertise.

Although numerous studies have examined the motivation, well-being, and performance of gig workers, there remains a significant research gap regarding the role of technological infrastructure, hybrid work models, and national labor policies in enhancing gig worker productivity in Indonesia. Existing literature focuses mainly on individual-level issues like insecurity and flexibility, with limited attention to how institutional and technological enablers contribute to SDG 8. In addition, little is known about how hybrid work arrangements impact productivity in the gig economy context. Current research also lacks a thorough investigation into policy frameworks that could support long-term sustainability and protection for gig workers.

This study fills that gap by analyzing how technological support, hybrid work arrangements, and national labor policies can enhance gig worker productivity in Indonesia. It aims to explore how these elements contribute to achieving SDG 8—decent work and economic growth—in the evolving landscape of the Indonesian gig economy.

2. Research Method

This study employs a cross-sectional quantitative design to examine the influence of technological support, hybrid work models, and national labor policies—aligned with Sustainable Development Goal (SDG) 8 on decent work and economic growth—on the productivity of gig workers across various sectors in Indonesia. The research model variables are derived from prior studies and operationalized through a standardized questionnaire distributed to gig workers active on various digital economy platforms in Indonesia.

Respondents were selected based on specific criteria, namely individuals who had earned income from gig economy activities—either on a full-time or part-time basis—within the 12 months preceding the survey. The study utilized purposive and snowball sampling methods to ensure that the initial selection met the established criteria. Subsequently, additional participants were recruited through referrals provided by the initial respondents. To maintain control over the questionnaire distribution, the researcher designated a number of initial respondents who were instructed to distribute the questionnaires to a predetermined number of additional participants. For instance, in the first phase, five social media marketers were selected to complete the questionnaire. In the subsequent phase, three of them were each asked to distribute the questionnaire to ten other individuals engaged in similar gig-based occupations. This approach was implemented to ensure adequate representation across the ten identified categories of gig workers in Indonesia.

The minimum sample size was determined using GPower analysis to ensure statistical validity. The study applied a significance level (α) of 0.05, a minimum statistical power of 0.80, and a

medium effect size ($f^2 = 0.15$). As illustrated in Figure 2, the GPower analysis indicated a minimum required sample size of 77 respondents.

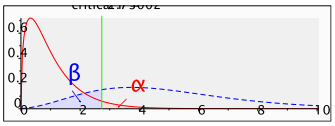

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Figure 1. Visualization of G*Power Analysis Graph
Source: G*Power Analysis Results (2024)

This study proposes six research variables derived from prior empirical literature. The Technology Support variable is operationalized through ten items that capture various dimensions of technological support for gig workers (Hsieh et al., 2023; Taylor et al., 2024). The National Employment Policy variable consists of ten items representing key aspects of national labor regulations relevant to gig economy contexts (Kässi & Lehdonvirta, 2018; Webster & Zhang, 2025). Hybrid Working is measured using five items emphasizing work flexibility and the integration of remote and in-person work arrangements (Bakas & Salman, 2024; Bögenhold et al., 2017). The Worker Productivity variable comprises seven items that reflect the measurable output of gig workers (Tariq et al., 2024; Utami et al., 2023). Work Engagement is assessed through six items that evaluate the degree of workers' emotional and cognitive engagement in their tasks (Lang et al., 2023; Yang et al., 2019). Finally, the variable of Sustainable Development Goal (SDG) Achievement, specifically Goal 8 (Decent Work and Economic Growth), is measured using eight items that reflect the extent to which gig work contributes to sustainable economic development (Fuster Morell et al., 2020; Sfetcu, 2024).

The selection of measurement items from established empirical studies contributes to the content validity of the instrument, ensuring that the constructs are conceptually well-represented. Since the items have been previously validated in relevant contexts, the internal validity of the measurement model is preserved. However, as the present study applies these constructs in a specific context—namely, gig workers in Indonesia—it remains necessary to evaluate external validity (construct validity in the new context). This was achieved through the assessment of convergent and discriminant validity during measurement model testing using PLS-SEM. All items are measured using a five-point Likert scale, where 1 represents "Strongly Disagree," 2 "Disagree," 3 "Neutral," 4 "Agree," and 5 "Strongly Agree." This scale is employed to capture the respondents' level of agreement with the statements representing each construct. The six variables are interconnected through eight hypothesized paths that model the causal relationships within the conceptual framework of the study.

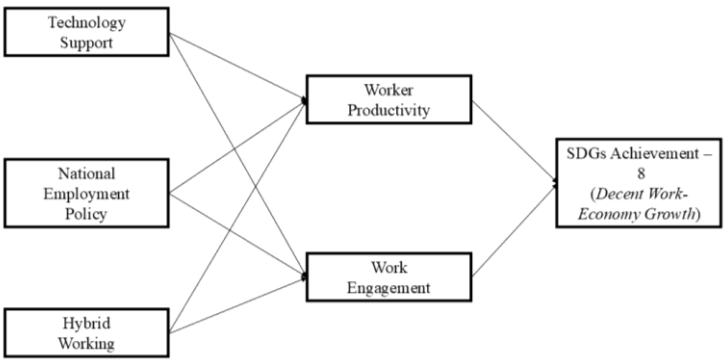

Figure 2. Research Model

Hypothesis Statements:
H1: Technology support has a significant positive effect on worker productivity.
H2: Technology support has a significant positive effect on worker engagement.
H3: National employment policy has a significant positive effect on worker productivity.
H4: National employment policy has a significant positive effect on worker engagement.
H5: Hybrid working has a significant positive effect on worker productivity.
H6: Hybrid working has a significant positive effect on worker engagement.
H7: Worker productivity has a significant positive effect on SDGs Achievement – Goal 8.
H8: Worker engagement has a significant positive effect on SDGs Achievement – Goal 8.

Data collection was conducted online using Google Forms to enable efficient distribution of questionnaires and reach respondents located in various regions. The data collection period spanned from November to December 2024. To recruit participants, the questionnaire link was disseminated through multiple social media platforms, including Instagram, Facebook, and WhatsApp. Additionally, the researcher utilized personal and professional networks to target respondents engaged in the gig economy.

To uphold ethical standards throughout the data collection process, potential participants were provided with comprehensive information regarding the objectives of the study, the potential benefits, and their rights as respondents. These rights included assurances of data confidentiality and the freedom to refuse or withdraw from participation at any point without any negative consequences. Informed consent was explicitly obtained prior to questionnaire completion. The researcher emphasized that participation was entirely voluntary, with no element of coercion, and that all collected data would be used solely for academic research purposes. Upon completion of the data collection process, responses from a total of 218 gig economy workers with diverse demographic and occupational characteristics were obtained, as presented in Table 1.

Table 1. Respondent Characteristics

	Total	Percentage
Gender		
Laki-Laki	62	28%
Perempuan	156	72%
Age		
< 25 Years	103	47%
25-34 Years	71	33%
35-44 Years	30	14%
>45 Years	14	6%
Regional Demographics		
Sumatera	58	27%
Jawa	95	43%
Bali-Nusa Tenggara	39	18%
Kalimantan	8	4%
Sulawesi	12	5%
Maluku-Papua	6	3%
Gig Job Type		
Writing (Copywriter, Content Writer, Freelance Journalist, Research Assistant, etc.)	40	18%
Creative (Content Creator, Graphic Designer, Social Media Manager, etc.)	19	9%
Information Technology (Data Scientist, Network Analyst, Game Engineer, UI/UX Designer)	62	28%
Administration (Virtual Assistant, Project Manager Assistant, Customer Service Representative)	71	33%
Services (Food Delivery, Online Driver, Online House Cleaning Services, Pet Sitter, etc.)	26	12%
Income		
<Rp. 1.000.000	22	10%
Rp. 1.000.001 – Rp. 3.000.000	59	27%
Rp. 3.000.001 – Rp.5.000.000	95	43%
Rp. 5.000.001 – Rp. 7.000.000	10	5%
Rp. 7.000.001 – Rp. 10.000.000	19	9%
>Rp. 10.000.001	13	6%

To test the hypothesized relationships, this study employs the Partial Least Squares Structural Equation Modeling (PLS-SEM) method. PLS-SEM is widely recognized for its effectiveness in social science and business management research due to its capacity to handle complex models involving multiple independent and dependent variables. This method was selected over covariance-based SEM (CB-SEM) due to several advantages. Unlike CB-SEM, which requires large sample sizes and assumes multivariate normality, PLS-SEM is more suitable for exploratory research, works well with smaller sample sizes, and does not require strict distributional assumptions. Furthermore, PLS-SEM minimizes bias from measurement errors and is particularly effective in evaluating latent constructs, making it ideal for testing the relationships

between the constructs selected in this study (Legate, Hair Jr et al., 2023). The analysis was conducted using SmartPLS software version 4.0.9.5. The process involved assessing the measurement model to ensure the reliability and validity of the constructs, followed by hypothesis testing through the evaluation of path coefficients within the structural model.

3. Results and Discussion

3.1. Validity and Reliability Testing

In PLS-SEM, the evaluation of the Measurement Outer Model aims to ensure the validity and reliability of the constructs through the analysis of their indicators. Based on the validity and reliability testing results in Table 2, all variables have Outer Loadings that meet the >0.7 criterion (Hair et al., 2017), indicating good convergent validity. The Average Variance Extracted (AVE) for all variables also exceeds the minimum value of 0.5, indicating that each construct explains more than 50% of the variance in the indicators (Hair et al., 2021). Furthermore, the Cronbach's Alpha (CA) and Composite Reliability (CR) values for all variables are above the 0.7 threshold (Guenther et al., 2023), confirming adequate internal reliability. For example, the Technology Support variable has a CA value of 0.848 and a CR value of 0.884. In contrast, the Worker Productivity variable shows a CA value of 0.915 and a CR value of 0.935, reflecting excellent consistency. Overall, the measurement model meets all validity and reliability criteria. This indicates that the constructs in this study are measured accurately and consistently, supporting the validity of the PLS-SEM analysis that will be conducted in the next stage.

Table 2. Validity and Reliability Test Results

Variable	Outer Loadings	AVE	CA	CR
Technology Support				
I feel that the algorithmic control on the platform where I work helps me stay engaged despite the high workload	0.778	0.592	0.848	0.884
Social features on digital platforms (such as badges or social networks) increase my motivation at work	0.758			
Real-time digital monitoring helps me work more efficiently and feel safer	0.795			
The flexibility provided by the technology platform helps me reduce stress related to technology	0.781			
Feedback provided through the technology platform helps me improve my psychological well-being	0.768			

Variable	Outer Loadings	AVE	CA	CR
The technology I use at work significantly enhances my motivation and engagement	0.786			
I feel that technology supports me in maintaining social connections during work	0.787			
The use of technology such as augmented reality or hands-free devices improves my productivity and reduces unproductive time	0.800			
National Employment Policy				
I feel that the current government regulations are adequate to protect the rights of gig workers	0.750	0.505	0.861	0.891
I support policies that improve working conditions for gig workers, such as social security, fair wages, and job stability	0.792			
I believe that gig work can be an effective solution to reduce unemployment, especially among youth	0.789			
I feel that gig workers need policy support to overcome the economic difficulties they face during crises, such as pandemics	0.778			
I feel that a balanced policy between gig work flexibility and traditional job stability can enhance worker satisfaction and performance	0.736			
The government has focused on policies that provide social protection to gig workers without reducing their flexibility	0.718			
I feel it is important for government policies to support social sustainability in the gig economy to reduce economic inequality	0.722			
Government policies place more emphasis on aligning gig workers' rights with sustainable development goals, such as decent work and economic growth	0.791			
Hybrid Working				
I feel I have enough freedom to determine my work tasks and schedule in the hybrid working system	0.774	0.513	0.861	0.892

Variable	Outer Loadings	AVE	CA	CR
I enjoy the flexibility offered by hybrid working in choosing work time and location	0.738			
Hybrid working helps me achieve a balance between work responsibilities and personal life	0.769			
I feel that a better work-life balance improves my overall well-being	0.792			
I am satisfied with the quality of my work in the hybrid working system	0.787			
I am motivated by the combination of flexibility and autonomy offered by hybrid working	0.815			
I can manage work stress better through strategies like active planning and seeking social support in hybrid working	0.798			
I feel that the available work resources in hybrid working are sufficient to reduce stress and improve my performance	0.792			
Worker Productivity				
I feel that my current workload is manageable enough to maintain productivity	0.792	0.707	0.915	0.935
Flexible and regular working hours help me work more productively	0.767			
Providing appropriate financial incentives motivates me to increase my work productivity	0.887			
Faster payment frequency motivates me to complete tasks with better quality	0.861			
Transparent algorithm-based management helps me improve my productivity	0.915			
I use self-tracking to manage performance and improve productivity	0.898			
Work Engagement				
I have full control over my tasks and work schedule, which makes me more engaged in my work	0.836	0.600	0.864	0.899
The compensation I receive corresponds to the effort I put in, thus increasing my engagement in work	0.839			

Variable	Outer Loadings	AVE	CA	CR
I feel I have the opportunity to interact and build social relationships in my work environment	0.860			
Flexibility in work schedules helps me maintain a balance between personal life and work, thus enhancing my engagement	0.743			
The support I receive from the organization motivates me to contribute positively to the team	0.774			
I feel that this job provides me with the opportunity to use my skills and creativity, making me more engaged	0.874			
SDGs Achievement 8				
My work contributes to sustainable economic growth and creates better job opportunities	0.776	0.630	0.852	0.895
I feel this job provides inclusive opportunities to participate productively in the labor market	0.797			
I have access to social protection and a safe work environment in this job	0.814			
Supporting digital infrastructure, such as internet access and digital training, has increased my productivity and flexibility at work	0.824			
This job offers equal opportunities for all individuals regardless of gender or other background	0.850			

3.2. Hypothesis Testing and R-Square

In PLS-SEM, hypothesis testing in the Inner Structural Model aims to evaluate the relationships between constructs and the overall strength of the model (Becker et al., 2023). The significance level for hypothesis acceptance is determined by the p-value (<0.05) or t-statistics (>1.96 for 5% significance) (Hair et al., 2017). Additionally, R-Square (R^2) is used to measure the extent to which the model can explain the variance of dependent variables. The R^2 value can be categorized as low (0.25), moderate (0.50), or high (0.75), reflecting the predictive power of the model (Sarstedt et al., 2019).

The results of hypothesis testing in Table 3 show positive and significant relationships among the variables analyzed. Technology support significantly affects worker productivity (β =

0.283, p = 0.000) and work engagement (β = 0.155, p = 0.007). National employment policy also has a significant effect on worker productivity (β = 0.180, p = 0.000) and work engagement (β = 0.101, p = 0.043). Meanwhile, the hybrid working system has the strongest effect on worker productivity (β = 0.744, p = 0.000) and work engagement (β = 0.647, p = 0.000). Worker productivity and work engagement significantly contribute to the achievement of SDG 8, with β values of 0.213 (p = 0.041) and 0.868 (p = 0.000), respectively.

The R-Square test results in the same table indicate that the model has strong predictive capability. The Technology Support variable has fairly high predictive power for Worker Productivity and Work Engagement, with R-Square values showing that the construct can explain more than 68% of the variance in these two variables. Similarly, the National Employment Policy and Hybrid Working each have an equivalent R-Square, indicating a significant contribution to Worker Productivity and Work Engagement. This suggests that national policies and the hybrid working system play a crucial role in enhancing worker productivity and engagement. Furthermore, the relationship between Worker Productivity and Work Engagement in relation to SDG Achievement 8 shows very high R-squared values, indicating that these variables have a strong influence in explaining the contribution to sustainable development goals.

Table 3. Hypothesis Testing and R-Square Results

Hipotesis	Path Coefficient	t-test	p-value	Decision	R-Square
Technology Support → Worker Productivity	0.283	4.348	0.000	Accepted	0.684
Technology Support → Work Engagement	0.155	2.712	0.007	Accepted	0.682
National Employment Policy → Worker Productivity	0.180	3.795	0.000	Accepted	0.684
National Employment Policy → Work Engagement	0.101	1.979	0.043	Accepted	0.682
Hybrid Working → Worker Productivity	0.744	11.939	0.000	Accepted	0.684
Hybrid Working → Work Engagement	0.647	13.895	0.000	Accepted	0.682
Worker Productivity → SDGs Achievement 8	0.213	1.987	0.041	Accepted	0.779
Worker Engagement → SDGs Achievement 8	0.868	8.093	0.000	Accepted	

3.3. The Impact of Technology Support on Productivity and Work Engagement of Gig Workers in Indonesia

The hypothesis testing results confirm that technology support significantly influences both productivity (H1) and work engagement (H2) among gig workers in Indonesia. These findings are consistent with prior studies emphasizing the role of technological tools in enhancing performance and engagement (Muduli & Choudhury, 2024; Choudhury et al., 2021). However, beyond affirming these positive effects, it is important to critically examine how these dynamics unfold within the specific socio-cultural and economic context of Indonesia's gig economy.

In terms of productivity, access to technology—such as collaboration tools, task management applications, and AI-assisted platforms—helps reduce traditional work barriers by enabling faster task completion, minimizing errors, and improving quality. In Indonesia, where many gig workers operate within informal or semi-formal digital ecosystems (e.g., Gojek, Tokopedia, Shopee), such technologies are especially impactful in bringing structure to otherwise unstructured workflows. Yet, while these tools enhance efficiency, they can also contribute to gig fatigue and technostress, particularly when performance is closely monitored through algorithmic evaluation systems. The pressure to remain constantly available and responsive—exacerbated by a lack of clear labor protections—can result in burnout, especially for urban gig workers who often juggle multiple platforms to secure sufficient income.

Furthermore, work engagement is positively affected by technology-supported systems that offer feedback, skills training, and virtual community interactions. The implementation of gamification, real-time ratings, and goal-based reward systems can foster a sense of accomplishment and intrinsic motivation. However, these same systems may lead to unintended consequences such as algorithmic bias and depersonalized evaluation, where workers are judged primarily by metrics rather than holistic performance. While tools like ChatGPT and other AI assistants may facilitate faster, more accurate work, their integration often occurs without adequate support for digital literacy—an issue still prevalent in parts of Indonesia. This creates a risk of marginalization for workers lacking the skills or access to navigate increasingly complex digital environments.

A more nuanced understanding of technology's dual role is thus essential. Rather than viewing technology as an automatically positive force, policymakers and platform developers should consider ethical system designs that prioritize worker well-being. This includes transparent algorithmic decision-making, flexible opt-in features for monitoring, and access to mental health support. Additionally, the government and platform companies should collaborate to improve digital literacy through targeted education initiatives, especially in secondary cities and among lower-income groups.

In summary, while technology undeniably enhances gig workers' productivity and engagement, its impact is not uniformly beneficial. A critical, context-sensitive approach is

needed to ensure that technological integration in Indonesia's digital economy promotes sustainable, equitable labor outcomes.

3.4. The Impact of National Employment Policies on the Productivity and Work Engagement of Gig Workers in Indonesia

The hypothesis testing confirms that National Employment Policies have a significant influence on both the productivity and work engagement of gig workers in Indonesia. This supports previous findings by Chiemeke et al. (2024) and Knapińska & Woźniak-Jasińska (2024), which demonstrate that inclusive labor policies and clear regulations enhance efficiency, motivation, and engagement. However, while these findings emphasize the strategic role of labor policies, a critical review reveals that the alignment between regulatory frameworks and the practical needs of gig workers in Indonesia remains limited.

Indonesia's labor regulations—primarily Law No. 13 of 2003 and its revisions through the Omnibus Law (Law No. 6 of 2023)—have emphasized labor market flexibility, especially through provisions for fixed-term employment (PKWT). In theory, such flexibility boosts productivity by allowing firms to adapt quickly to changing economic demands. However, this flexibility is often skewed in favor of employers and lacks corresponding safeguards for workers, particularly those in the gig sector who operate outside formal employment frameworks.

While flexible arrangements may enhance work engagement through greater autonomy and potential for higher earnings, many gig workers in Indonesia remain excluded from formal protections such as health insurance, social security, and legal recourse. For example, although the national health and employment insurance scheme (BPJS Ketenagakerjaan) exists, gig workers are often left out due to ambiguous employment status and the voluntary nature of enrollment. This regulatory gap creates a contradiction: while policy encourages flexible work models, it does not ensure the basic protections necessary for sustainable productivity and engagement—an issue directly related to the goals of SDG 8 (Decent Work and Economic Growth).

Furthermore, national policy tends to be normative rather than responsive to the realities of informal labor. The emphasis on minimum wage setting and formal job training programs, though beneficial in traditional employment, often fails to address the diverse and project-based nature of gig work. The assumption that skills development and wage regulations alone can drive productivity ignores the precarious work conditions and economic insecurity gig workers face.

Looking globally, California's Assembly Bill 5 (AB5) offers an instructive comparison. AB5 reclassified many gig workers as employees, entitling them to benefits such as health insurance and paid leave. While not without controversy, such policy interventions show that governments can take bold steps toward rebalancing flexibility with social protection. Indonesia could learn from these approaches by exploring hybrid employment models or mandatory social protection mechanisms for non-standard workers.

To move forward, national employment policies must address structural imbalances through inclusive policy innovations. This includes extending mandatory BPJS participation to gig workers, subsidizing contributions for low-income freelancers, and implementing platform-level accountability for social protections. Moreover, integrated training initiatives tailored for gig workers—delivered via digital platforms—can ensure continuous upskilling without disrupting work patterns.

In conclusion, while national employment policies in Indonesia contribute to productivity and engagement, they must evolve beyond a one-size-fits-all model. The real challenge lies in designing policies that not only promote labor market flexibility but also uphold fairness and protection for all forms of work. Without this balance, the benefits of digital labor innovation risk being undermined by growing social inequalities.

3.5. The Role of Hybrid Working in Enhancing Productivity and Work Engagement of Gig Workers in Indonesia

The results of hypothesis testing indicate that hybrid working significantly impacts both productivity and work engagement among gig workers in Indonesia. These findings are in line with existing literature (Naqshbandi et al., 2024; Zapata et al., 2024), which shows that hybrid models—combining remote and in-person work—can enhance efficiency and engagement, particularly when supported by clear communication and strong managerial systems. However, the effectiveness of hybrid working varies considerably depending on the nature of the gig work and access to enabling resources.

Hybrid work offers flexibility in scheduling and location, allowing gig workers to balance professional and personal responsibilities, which contributes to higher job satisfaction and increased focus. According to Self-Determination Theory (Deci & Ryan, 2000), such autonomy and competence are critical for fostering intrinsic motivation and engagement. For digital gig workers such as content creators, designers, or freelance developers, hybrid models support this by offering both independence and opportunities for collaboration via virtual platforms.

Yet, this benefit is not equitably distributed. A major limitation of hybrid work is its inherent bias toward white-collar gig occupations that are already digitally enabled. Blue-collar gig workers—such as drivers, couriers, or warehouse freelancers—are often excluded from the hybrid model due to the physical nature of their tasks. This creates a structural divide where only a subset of gig workers can access the benefits of flexibility, autonomy, and work-life balance. The digital divide—especially in rural or underdeveloped regions of Indonesia—further compounds this disparity, as inadequate internet access, device availability, and digital literacy remain pressing challenges.

Moreover, cultural norms around informal work, such as the lack of written contracts and weak organizational affiliation, limit the capacity of hybrid systems to function effectively in the Indonesian gig economy. Many gig platforms operating in Indonesia have yet to provide the necessary structural support—such as consistent virtual communication channels, access to

collaborative tools, or managerial feedback loops—to make hybrid work genuinely viable. This raises concerns about whether the push for hybrid working is more aspirational than actionable for most gig workers.

To foster engagement in this environment, hybrid models must be designed with attention to inclusivity. Virtual teams and team-based feedback mechanisms can enhance connectedness and engagement, but only if accompanied by training in digital tools and reliable infrastructure. The use of gamified collaboration, asynchronous feedback, and clear goal-setting can further enhance both motivation and performance. However, without proactive support from platforms—such as subsidies for internet access, co-working hubs for blue-collar gig workers, and transparent algorithmic task distribution—the benefits of hybrid working will remain inaccessible for the majority.

In conclusion, while hybrid working presents significant opportunities for boosting productivity and engagement among certain segments of gig workers, it also exposes deeper inequalities within the labor market. A more inclusive and context-sensitive approach is needed—one that bridges the divide between different gig sectors, improves digital infrastructure, and ensures that hybrid work is not just an elite privilege, but a viable model across the diverse landscape of Indonesia's gig economy.

3.6. The Impact of Worker Productivity on the Achievement of Sustainable Development Goal 8

The hypothesis analysis confirms that gig worker productivity in Indonesia significantly contributes to the achievement of Sustainable Development Goal (SDG) 8, which emphasizes inclusive and sustainable economic growth, full and productive employment, and decent work for all. This aligns with studies by Chaha & Rani (2024) and Ngowtanasuwan (2024), which suggest that flexible and part-time labor—including gig work—can support economic expansion and broaden access to employment. However, the connection between individual productivity and macroeconomic growth requires a more nuanced explanation.

Gig workers represent a growing share of the Indonesian labor force, particularly in urban centers where digital platforms such as Gojek, Grab, and Tokopedia facilitate labor matching and task fulfillment. Their productivity—defined not only in terms of output volume but also quality, efficiency, and task completion rates—has measurable implications at the macroeconomic level. For instance, improved individual productivity among gig workers can increase aggregate labor output, especially in service sectors such as logistics, food delivery, and digital content creation. These sectors contribute to the national Gross Domestic Product (GDP), particularly through value-added services and increased consumption flows.

Moreover, the gig economy indirectly influences labor force participation rates. By lowering entry barriers to income generation—especially for youth, women, and those in rural or peri-urban areas—gig platforms help expand the economically active population, which is a key input in economic growth models. Higher productivity per worker, when scaled across millions of gig

workers, can result in gains in national output (Y), particularly when combined with capital investment in technology and digital infrastructure (as per the Solow growth model).

Nonetheless, the informal and unregulated nature of most gig work in Indonesia presents a barrier to translating these gains into sustained macroeconomic development. Without formal labor protections, social security, or skill development pathways, gig worker productivity is vulnerable to stagnation due to burnout, lack of career progression, and income insecurity. These issues also impede the realization of "decent work" as outlined in SDG 8.

To formalize and sustain their contribution to economic growth, policy frameworks must begin to institutionalize the productivity of gig workers. One avenue is through the use of digital labor data collected by platforms, which can be leveraged by the government to monitor productivity trends, assess income stability, and identify workers eligible for social benefits. This integration of digital records into labor market analytics can improve the design of macroeconomic policies, enabling more targeted interventions such as training programs, digital credit schemes, and universal social protection systems like BPJS.

Furthermore, enhancing gig workers' productivity contributes to structural economic transformation. As gig work becomes more knowledge-intensive—especially in digital services, content creation, and data management—its alignment with high value-added sectors increases. This transition supports Indonesia's ambition to move up the global value chain and diversify its economy beyond extractive industries and low-skill manufacturing.

In conclusion, gig worker productivity contributes to SDG 8 not only by expanding employment opportunities but also by enhancing national output, labor participation, and service sector dynamism. However, the long-term sustainability of this contribution hinges on integrating gig workers into national development strategies through formalization, regulation, and inclusive policy innovation. By addressing gaps in social protection and labor rights, Indonesia can ensure that gig workers are not just peripheral contributors but central agents in achieving inclusive and sustained economic growth.

3.7. Work Engagement as a Determining Factor in Achieving Sustainable Development Goal 8

The hypothesis testing results reveal that work engagement among gig workers in Indonesia significantly contributes to the achievement of Sustainable Development Goal (SDG) 8, which emphasizes inclusive economic growth, productive employment, and decent work for all. Work engagement, particularly when combined with high levels of productivity, forms a mutually reinforcing mechanism that enhances individual performance and, when scaled, drives broader economic progress. As engagement increases, workers become more motivated, efficient, and committed—qualities that directly translate into improved productivity. In the context of the gig economy, this dynamic supports SDG 8 by expanding employment opportunities and enhancing labor force participation, especially among demographics that face barriers to traditional employment, such as youth, women, and individuals in urban informal sectors (Chaha & Rani, 2024; Ngowtanasuwan, 2024).

However, this potential contribution is limited by structural weaknesses in the gig economy, particularly in Indonesia. Many gig workers remain outside the scope of formal labor protections and often operate in conditions that fail to meet the "decent work" standards outlined by SDG 8. Issues such as algorithmic opacity, wage volatility, and lack of social protection contribute to disengagement and job dissatisfaction, which in turn reduce productivity and weaken their long-term contribution to economic development. This challenge is exacerbated by the lack of integrated national labor statistics that capture the actual scope, profile, and engagement levels of gig workers, leading to a gap between policy formulation and on-the-ground realities.

To address these systemic challenges, a more adaptive and data-driven approach is necessary. First, national labor statistics must be modernized to include metrics on gig worker engagement and productivity. Collaboration with digital labor platforms could enable real-time data collection and provide a more accurate representation of gig worker conditions, which are currently underreported in Indonesia's employment datasets. Second, platform-level interventions that promote fair and transparent algorithmic management, equitable pay structures, and worker autonomy are essential to sustaining high engagement levels. For example, incorporating feedback mechanisms, performance-based incentives, and digital upskilling programs can help reinforce a sense of competence and belonging among gig workers—key components of self-determination theory that are directly linked to engagement. Third, social protection schemes such as BPJS Ketenagakerjaan should be extended to cover gig workers through platform-based integration, allowing for more inclusive protection without forcing traditional employment status. This aligns with international best practices, including experiments in portable benefits and contributory social insurance tailored to flexible workforces.

Achieving SDG 8 requires an integrated understanding of the interplay between work engagement and productivity in the gig economy. When both factors are present and supported by inclusive policy frameworks, gig workers can contribute significantly to sustainable economic growth and the expansion of decent work. However, for this potential to be fully realized, Indonesia must overcome current policy blind spots by investing in adaptive labor data systems, platform-based protections, and innovative forms of social security. Only through such comprehensive measures can the gig workforce be effectively recognized as a legitimate and sustainable component of the national labor ecosystem.

4. Conclusion and Recommendations

This study finds that technology support, national labor policies, and hybrid work models significantly shape the productivity and work engagement of gig workers in Indonesia. The most critical finding is that productivity and engagement are mutually reinforcing and serve as key mechanisms through which gig workers contribute to the achievement of Sustainable Development Goal (SDG) 8—particularly in fostering inclusive economic growth and decent work.

Technology—particularly collaborative apps, algorithm-based task management, and digital training—enhances efficiency and emotional engagement. National labor policies, especially those under the Omnibus Law, enable recruitment flexibility and skills development but remain insufficient in providing legal protection. The hybrid work model offers autonomy and work-life balance but reveals inequality in access among gig worker segments. These findings highlight the need for integrated, inclusive policies that address structural gaps in protection, access, and digital equity.

Strategic Recommendations:

1. For the Government
    a. Develop adaptive labor statistics that include gig workers to support evidence-based policymaking.
    b. Mandate platform-based integration with national social security (e.g., BPJS) for inclusive coverage.
    c. Refine PKWT regulations to explicitly include protections for gig workers, ensuring fair wages and access to upskilling.
2. For Digital Platforms and Technology Companies
    a. Design algorithmic systems that incorporate fairness, transparency, and feedback loops to sustain engagement.
    b. Provide built-in well-being features (e.g., break reminders, gamification) in apps to mitigate burnout.
    c. Facilitate virtual team-building and skill-sharing platforms to support professional development and connectivity.
3. For Academic Researchers
    a. Expand research on gig work dynamics using mixed-method and longitudinal approaches to capture long-term trends.
    b. Explore the implications of emerging technologies such as generative AI and blockchain on gig worker productivity and welfare.
    c. Conduct cross-country comparative studies to contextualize findings and inform global labor policy discourse.
4. For Gig Workers Themselves
    a. Increase digital literacy and actively participate in platform-based feedback or learning tools.
    b. Form communities or cooperatives to share resources, mitigate risk, and amplify collective voice in shaping platform policies.

This study contributes to the growing literature on digital labor by empirically integrating technology, labor policy, and work models to explain how gig workers can meaningfully contribute to SDG 8 in a Global South context. The study is limited by its cross-sectional design and focus on Indonesia, reducing its generalizability. It does not capture individual preferences

(e.g., digital skill gaps, work model choices) or the long-term psychological impacts of platform-based work. Future research should adopt longitudinal methods, explore mental health outcomes, and examine the differential impact of technology across gig work segments (e.g., logistics vs. creative work).

References

Abdullah, N., Kunhibava, S., Yusof, N. F. M., Mahdzir, N., & Ghadas, Z. A. A. (2024). *The Gig Economy Enigma: Uncovering the True Nature of Workers* (pp. 21–30). https://doi.org/10.1007/978-3-031-67444-0_3

Bakas, F., & Salman, D. (2024). 'You ensure your own safety': gender, fear and tourism labour in the gig economy in Turkiye. *Gender, Place and Culture*, *31*(8), 1072–1094. https://doi.org/10.1080/0966369X.2024.2327999

Batmunkh, A., Fekete-Farkas, M., & Lakner, Z. (2022). Bibliometric Analysis of Gig Economy. *Administrative Sciences*, *12*(2). https://doi.org/10.3390/admsci12020051

Becker, J.-M., Cheah, J.-H., Gholamzade, R., Ringle, C. M., & Sarstedt, M. (2023). PLS-SEM's most wanted guidance. *International Journal of Contemporary Hospitality Management*, *35*(1), 321–346. https://doi.org/10.1108/IJCHM-04-2022-0474

Bögenhold, D., Klinglmair, R., & Kandutsch, F. (2017). Solo-self-employment, human capital and hybrid labour in the gig economy. *Foresight and STI Governance*, *11*(4), 23–32. https://doi.org/10.17323/2500-2597.2017.4.23.32

Chigbu, B. I., & Nekhwevha, F. (2023). Exploring the concepts of decent work through the lens of SDG 8: addressing challenges and inadequacies. *Frontiers in Sociology*, *8*. https://doi.org/10.3389/fsoc.2023.1266141

CNN Indonesia. (2024). *Ekonom Sebut UU Cipta Kerja Buatan Jokowi Bisa Perparah Gig Economy*. https://www.cnnindonesia.com/ekonomi/20240920104607-532-1146347/ekonom-sebut-uu-cipta-kerja-buatan-jokowi-bisa-perparah-gig-economy

Dobrosotskiy, V. I., Semenova, G. N., & Kripakova, L. A. (2021). The culture of digital society and the economy of pleasure: A new paradigm of socio-economic progress of developing countries in industry 4.0. *International Journal of Trade and Global Markets*, *14*(4–5), 432–440. https://doi.org/10.1504/IJTGM.2021.116738

Fuster Morell, M., Espelt, R., & Renau Cano, M. (2020). Sustainable Platform Economy: Connections with the Sustainable Development Goals. *Sustainability*, *12*(18), 7640. https://doi.org/10.3390/su12187640

Gleim, M. R., Johnson, C. M., & Lawson, S. J. (2019). Sharers and sellers: A multi-group examination of gig economy workers' perceptions. *Journal of Business Research*, *98*, 142–152. https://doi.org/10.1016/j.jbusres.2019.01.041

Guenther, P., Guenther, M., Ringle, C. M., Zaefarian, G., & Cartwright, S. (2023). Improving PLS-SEM use for business marketing research. *Industrial Marketing Management*, *111*, 127–142. https://doi.org/10.1016/j.indmarman.2023.03.010

Hair, J. F., Astrachan, C. B., Moisescu, O. I., Radomir, L., Sarstedt, M., Vaithilingam, S., & Ringle, C. M. (2021). Executing and interpreting applications of PLS-SEM: Updates for family business researchers. *Journal of Family Business Strategy*, *12*(3). https://doi.org/10.1016/j.jfbs.2020.100392

Hair, J. F., Matthews, L., Matthews, R. L., & Sarstedt, M. (2017). PLS-SEM or CB-SEM: updated guidelines on which method to use. *International Journal of Multivariate Data Analysis*, *1*(2), 107–123. https://doi.org/10.1504/IJMDA.2017.087624

Hsieh, J., Adisa, O., Bafna, S., & Zhu, H. (2023). Designing Individualized Policy and Technology Interventions to Improve Gig Work Conditions. *ACM International Conference Proceeding Series*. https://doi.org/10.1145/3596671.3598576

Kässi, O., & Lehdonvirta, V. (2018). Online labour index: Measuring the online gig economy for policy and research. *Technological Forecasting and Social Change*, *137*, 241–248. https://doi.org/10.1016/j.techfore.2018.07.056

Keith, M. G., Harms, P. D., & Long, A. C. (2020). WORKER HEALTH AND WELL-BEING IN THE GIG ECONOMY: A PROPOSED FRAMEWORK AND RESEARCH AGENDA. *Research in Occupational Stress and Well Being*, *18*, 1–33. https://doi.org/10.1108/S1479-355520200000018002

Kuhn, K. M. (2023). MAKING A GO OF IT IN THE GIG ECONOMY: Understanding Risk in Platform-Based Work. *Tackling Precarious Work: Toward Sustainable Livelihoods*, 280–301. https://doi.org/10.4324/9781003440444-15/MAKING-GO-GIG-ECONOMY-KRISTINE-KUHN

Kurian, J. S., & Bindu Madhavi, N. (2024). Navigating the gig economy: exploring challenges and motivations for the wellbeing of Gen Y and Gen Z gig workers. *Cogent Psychology*, *11*(1), 2357458. https://doi.org/10.1080/23311908.2024.2357458

Lang, J. J., Yang, L. F., Cheng, C., Cheng, X. Y., & Chen, F. Y. (2023). Are algorithmically controlled gig workers deeply burned out? An empirical study on employee work engagement. *BMC Psychology*, *11*(1). https://doi.org/10.1186/s40359-023-01402-0

Legate, A. E., Hair Jr, J. F., Chretien, J. L., & Risher, J. J. (2023). PLS-SEM: Prediction-oriented solutions for HRD researchers. *Human Resource Development Quarterly*, *34*(1), 91–109. https://doi.org/https://doi.org/10.1002/hrdq.21466

Low, M. P., Seah, C. Sen, Khin, A. A., & Har, W. M. (2024). Unveiling the upsides of low-skilled physical gig work: insights from the gig workers' perspective in Malaysia. *Labour and Industry*, *34*(2), 197–225. https://doi.org/10.1080/10301763.2024.2357896

Moen, B. E., Nyarubeli, I. P., Tungu, A. M., Ngowi, A. V, Kumie, A., Deressa, W., & Mamuya, S. H. D. (2020). The Challenge of Obtaining a Decent Work Environment in Sub-Saharan Africa. In *Sustainable Development Goals Series: Vol. Part F2651* (pp. 155–164). https://doi.org/10.1007/978-3-030-14857-7_15

Montgomery, T., & Baglioni, S. (2021). Defining the gig economy: platform capitalism and the reinvention of precarious work. *International Journal of Sociology and Social Policy*, *41*(9–10), 1012–1025. https://doi.org/10.1108/IJSSP-08-2020-0400

Muhyiddin, M., Annazah, N. S., Henriko Tobing, H., Habibi, N., Fauziyah, F., & Harsiwie, R. I. P. (2024). The Ambiguity of Employment Relationship in Indonesia's Gig Economy: A Study

of Online Motorcycle Taxi Drivers. *Jurnal Ketenagakerjaan*, *19*(3), 262–280. https://doi.org/10.47198/jnaker.v19i3.416

Sarstedt, M., Ringle, C. M., Cheah, J.-H., Ting, H., Moisescu, O. I., & Radomir, L. (2019). Structural model robustness checks in PLS-SEM. *Tourism Economics*, *26*(4), 531–554. https://doi.org/10.1177/1354816618823921

Sfetcu, L. (2024). Strategies for Sustainable Growth and Decent Work in the Platform Economy. *Technium Social Sciences Journal*, *66*, 347–353.

Singla, N., Sood, K., Grima, S., & Yadav, U. S. (2023). Target 8.8: Protect labor rights and promote a safe working environment. In *The Impact of Climate Change and Sustainability Standards on the Insurance Market* (pp. 373–392). https://www.scopus.com/inward/record.uri?eid=2-s2.0-85168564677&partnerID=40&md5=94d88aa4e4c3fe08ec7726c7faf08713

Sudirman, L., & Disemadi, H. S. (2023). Gig Economy: Unleashing the Potential of Digital Banking in Indonesia's Employment Regulations. *Lentera Hukum*, *10*(2), 301–330. https://doi.org/10.19184/ejlh.v10i2.39688

Tariq, A., Sumbal, M. S. U. K., Dabić, M., Raziq, M. M., & Torkkeli, M. (2024). Interlinking networking capabilities, knowledge worker productivity, and digital innovation: a critical nexus for sustainable performance in small and medium enterprises. *Journal of Knowledge Management*, *28*(11), 179–198. https://doi.org/10.1108/JKM-09-2023-0788

Taylor, J., Joshi, K. D., Saldanha, T., & Sahaym, A. (2024). Procuring services through IT crowdsourcing: The role of IT administration and IT flexibility. *Journal of Information Technology*, *39*(2), 288–316. https://doi.org/10.1177/02683962231225469

Universitas Airlangga. (2024). *Kuliah Umum UNAIR-Kemnaker, Kenalkan Fenomena Gig Economy - Universitas Airlangga Official Website*. https://unair.ac.id/kuliah-umum-unair-kemnaker-kenalkan-fenomena-gig-economy/

Utami, M. C., Rosyada, D., Suryani, E., Hakiem, N., & Saepudin, D. (2023). The SEM-PLS Analysis for Testing Questionnaire: Software Developer Productivity Based on Religiosity and Work Behavior. *2023 11th International Conference on Cyber and IT Service Management, CITSM 2023*. https://doi.org/10.1109/CITSM60085.2023.10455692

Webster, N. A., & Zhang, Q. (2025). Strategic silences for normative work: Inclusions and exclusions of migrant labour in policy foregrounding of the Swedish gig economy. *Geoforum*, *158*, 104157. https://doi.org/10.1016/j.geoforum.2024.104157

Yang, K., Zhou, L., Wang, Z., Lin, C., & Luo, Z. (2019). Humble leadership and innovative behaviour among Chinese nurses: The mediating role of work engagement. *Journal of Nursing Management*, *27*(8), 1801–1808. https://doi.org/10.1111/jonm.12879

Z News. (2024). *Menghadapi Ledakan Pekerja Sektor Informal di Era Ekonomi Gig - ZNEWS*. https://znews.id/menghadapi-ledakan-pekerja-sektor-informal-di-era-ekonomi-gig/

Zhang, P. (2024). Training for gig workers: a systematic review and research agenda. *Learning Organization*, *ahead-of-print*(ahead-of-print). https://doi.org/10.1108/TLO-10-2022-0124/FULL/XML