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The Impact of Gig Economy Growth and Islamic Bank Financing on Youth Unemployment Rates in Indonesia

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ABSTRACT

Introduction: High youth unemployment in Indonesia reflects a mismatch between labor force growth and the availability of formal employment. At the same time, the expansion of the digital platform–based gig economy offers flexible job opportunities for young people, while Islamic bank financing holds potential to stimulate productive economic activities through profit-sharing schemes. However, empirical evidence on the effectiveness of these sectors in reducing youth unemployment remains limited. This study examines the impact of gig economy growth and Islamic bank financing on youth unemployment in Indonesia.

Methods: A quantitative approach was applied using panel data from 34 provinces during 2019–2023. Panel regression analysis was employed, with model selection through Chow and Hausman tests, which identified the Fixed Effect Model as the most appropriate. Robust Standard Errors were used to correct heteroscedasticity.

Results: Gig economy growth shows a negative and significant effect on youth unemployment, indicating its role in absorbing young workers. In contrast, Islamic bank financing has a positive and significant effect, suggesting that financing has not been optimally directed toward labor-intensive sectors or young productive entrepreneurs. Jointly, both variables significantly influence youth unemployment, with an explanatory power of 87.4%.

Conclusion and Suggestion: The gig economy functions as an effective short-term employment channel, whereas Islamic financing requires policy reorientation toward youth-driven productive sectors. It is also necessary to enhance Islamic financial literacy and strengthen integration with the digital gig ecosystem to maximize its impact on reducing youth unemployment.

Practical Implications: The findings provide important insights for policymakers, financial institutions, and digital platform providers in designing strategies to reduce youth unemployment. Strengthening collaboration between Islamic banks and gig platforms, improving access to financing for young entrepreneurs, and promoting inclusive digital ecosystems can enhance employment opportunities and economic participation among youth.

Originality/Value: This study contributes to the literature by integrating the roles of the gig economy and Islamic bank financing in a single empirical model using panel data across Indonesian provinces. It offers a novel perspective on how digital labor markets and Sharia-compliant financial systems jointly influence youth employment in a developing country context.

Keyword: *Gig Economy, Islamic Bank Financing, Youth Unemployment, Digital Labor Market.*

Paper type: *Research paper*

A. INTRODUCTION

The issue of youth unemployment remains a critical challenge in Indonesia, particularly in the context of its demographic bonus (Imsar, Nurhayati, & Harahap, 2023). Ideally, the large proportion of productive-age population should drive economic growth; however, it risks becoming a structural burden when job creation fails to keep pace (Sakinah & Kasri, 2022). Data from the Central Statistics Agency (BPS) indicate that the open unemployment rate (TPT) reached 4.82% in 2024 (BPS, 2025). with a significant proportion contributed by young people (Sankararaman, Rengaraju, Rengarajan, Vembu, & Indhumathi, 2024). This condition reflects deeper structural problems, including limited job availability, skill mismatch, low investment in labor-intensive sectors, and the misalignment between education outcomes and labor market demands (Jusoh & Author, 2024). Consequently, youth unemployment in Indonesia is not merely cyclical but rooted in structural and institutional inefficiencies, requiring innovative and integrative policy responses (Kassim et al., 2025).

In response to the high unemployment rate among young people, a new phenomenon has emerged in the labor market dynamics known as the gig economy, a short-term, project-based work system supported by the development of digital technology (Jeyaraj, Chong, Chin, & Foo, 2025). For many young individuals, particularly those excluded from the formal sector, the gig economy offers accessible employment opportunities in sectors such as transportation, digital services, and the creative industry (Hed & Rosli, 2025). However, despite its potential to absorb labor quickly, the gig economy also entails significant risks, including income instability, lack of social protection, and uncertain career progression (Nor et al., 2025). These vulnerabilities raise concerns about whether gig work truly reduces unemployment or merely shifts it into forms of underemployment and precarious work (Casalhay, Guevarra, & Bragas, 2025).

Beyond labor market dynamics, limited access to capital remains a major barrier preventing young people from transitioning into sustainable economic activities (Setiawan, Tripuspitorini, Ruhana, & Yanti, 2024). Many young workers and gig participants face difficulties in scaling their businesses due to financial constraints and limited access to formal financing institutions (Nasution, 2018). In this context, Islamic banking plays a strategic role through its financing mechanisms that emphasize productive economic activities and risk-sharing principles (Arif, Rokan, & Kumala, 2023). Instruments such as *mudharabah* (profit-sharing) and *musyarakah* (partnership financing) are particularly relevant for young entrepreneurs who often lack collateral but possess business potential (Ishak, Nor, & Mohamad, 2025). Nevertheless, the utilization of Islamic financing remains suboptimal due to low financial literacy and limited accessibility among the younger population (Pida & Imsar, 2022).

From a theoretical perspective, this study is grounded in three main frameworks (Martias, 2022). First, labor market theory explains how structural changes, such as digitalization and the rise of non-standard employment, influence employment opportunities and unemployment rates (Sun, 2023). Second, financial intermediation theory highlights the role of financial institutions, particularly banks, in channeling funds from surplus units to deficit units to support productive activities (Dayu et al., 2023). Third, Islamic economic principles emphasize justice (*adl*), risk-sharing, and the prohibition of *riba* and *gharar*, positioning Islamic financing as a more equitable alternative in supporting inclusive economic development (Ikhsan Harahap & Nurbaiti, Sari Purba, 2023). These theoretical foundations provide a comprehensive framework for analyzing the interaction between gig economy dynamics, financial access, and youth unemployment (Arum, Arum, Andrini, & Info, 2025).

Empirically, previous studies have examined the gig economy primarily from the perspective of labor flexibility and digital transformation (Joshi, Jain, & Gupta, 2024);

(Pamungkas, Lepetit, & Rugemintwari, 2025); (Pande, 2024) and (Singh, 2024). While these studies acknowledge the gig economy's role in job creation, they often overlook its long-term implications for employment quality and unemployment reduction. On the other hand, the literature on Islamic financing has predominantly focused on MSME development, poverty alleviation, and financial inclusion (Indri Supriani, Bayu Arie Fianto, Najim Nur Fauziah, 2021); (Ledhem & Mekidiche, 2026) and (Latifah, Rodoni, & Aziz, 2025), with limited attention to its role in supporting digital-based informal sectors such as the gig economy. Moreover, existing studies tend to analyze these two dimensions separately, without integrating labor market innovation and financial support mechanisms within a unified analytical framework.

This limitation highlights a clear research gap. There is still a lack of empirical studies that simultaneously examine the interaction between the gig economy and Islamic financing in explaining youth unemployment, particularly in the context of developing countries like Indonesia. Most existing research fails to capture the complementary relationship between flexible employment opportunities and access to productive capital, which together may determine whether gig work can evolve into sustainable entrepreneurship.

Therefore, this study offers a novel contribution by integrating the gig economy and Islamic bank financing into a single analytical model to explain youth unemployment dynamics. Unlike prior studies that treat these variables independently, this research emphasizes their interdependence: the gig economy provides initial access to employment, while Islamic financing supports the sustainability and scalability of income-generating activities. This integrative approach provides a new perspective in both labor economics and Islamic finance literature.

Based on this gap, the objectives of this study are: (1) to analyze the effect of gig economy growth on youth unemployment in Indonesia; (2) to examine the role of Islamic bank financing in reducing youth unemployment; and (3) to investigate the simultaneous and complementary relationship between gig economy participation and Islamic financing in shaping youth employment outcomes.

Conceptually, the relationship among variables can be explained as follows: the expansion of the gig economy increases short-term employment opportunities for young workers who are excluded from the formal sector. However, without access to capital, these opportunities remain temporary and vulnerable. Islamic financing acts as a supporting mechanism by providing productive capital that enables gig workers to transform into sustainable entrepreneurs. Thus, the interaction between gig economy growth and Islamic financing creates a pathway from informal, unstable work toward stable and productive economic activities, ultimately contributing to the reduction of youth unemployment.

In conclusion, this study is important in the context of Indonesia's economic development, as it offers policy-relevant insights into how labor market innovation and inclusive financial systems can be synergized. The findings are expected to contribute to the formulation of more adaptive employment policies and the strengthening of Islamic financial inclusion, particularly in addressing youth unemployment in the digital economy era.

B. THEORETICAL STUDY

Youth Unemployment Rate

Youth unemployment refers to the condition of individuals aged 15–24 who are actively seeking employment but are unable to obtain jobs. This phenomenon reflects not only labor market inefficiency but also structural imbalances between labor supply and job availability (Ayu Lestari Siregar, Bela Harti Pratiwi, Reny Dian Aprilla & Dewi, 2024), In developing countries such as Indonesia, youth unemployment tends to be higher due to

limited work experience, weak professional networks, and a mismatch between educational outcomes and labor market needs (Hazizah & P*adl*i Nasution, 2022).

From a causal perspective, youth unemployment is driven by several interrelated factors. First, skill mismatch occurs when the competencies possessed by young workers do not align with industry demands, particularly in the digital era where technological skills and adaptability are essential (Kiha, Seran, & Lau, 2021). Second, limited access to job networks and training reduces the ability of youth to enter the labor market efficiently (Indayani & Hartono, 2020). Third, structural economic conditions, such as low investment and slow job creation, constrain labor absorption capacity (Manalu, Siahaan, & Suharianto, 2025). These factors collectively increase the likelihood of unemployment among young individuals.

The economic impact of youth unemployment is significant. High youth unemployment leads to underutilization of human capital, reduces aggregate productivity, and increases the risk of long-term economic dependency. Moreover, prolonged unemployment at a young age can result in scarring effects, lowering future income potential and employability.

From an Islamic perspective, productive work is strongly encouraged as part of human responsibility, as stated in QS. Al-Jumu'ah:10 This principle implies that unemployment should not be viewed merely as an economic issue, but also as a condition that requires proactive effort and empowerment.

فَاِذَا قُضِيَتِ الصَّلٰوةُ فَانْتَشِرُوْا فِى الْاَرْضِ وَابْتَغُوْا مِنْ فَضْلِ اللّٰهِ وَاذْكُرُوا اللّٰهَ كَثِيْرًا لَّعَلَّكُمْ تُفْلِحُوْنَ ۝١٠

Meaning: "*When the prayer has been performed, then scatter on the face of the earth; seek Allah's grace and remember Allah often so that you will be successful*." (QS. Al-Jumu'ah: 10)

From an Islamic perspective, working and seeking sustenance are strongly encouraged. QS. Al-Jumu'ah:10 emphasizes that after worship, humans should spread across the earth and seek Allah's bounty, which reflects the importance of productivity and initiative. This value is relevant for youth facing unemployment, as they are encouraged to develop skills, utilize digital opportunities, and strive independently rather than waiting for formal employment.

Analytically, the persistence of youth unemployment indicates the need for alternative employment mechanisms and supporting financial systems. In this context, the emergence of the gig economy provides flexible job opportunities that can absorb young workers, while Islamic bank financing offers the potential to support sustainable productive activities. Therefore, youth unemployment becomes a dependent variable that is theoretically influenced by both labor market innovation (gig economy) and financial intermediation (Islamic financing).

Growth of the Gig Economy

The gig economy refers to a labor market system characterized by short-term, flexible, and platform-based work arrangements (Purbasari, Jamil, Novel, & Kostini, 2020). Unlike traditional employment, the gig economy reduces entry barriers by allowing individuals to participate in income-generating activities without long-term contracts or formal qualifications (Celestin & Vanitha, 2021).

From a theoretical standpoint, the gig economy affects employment through labor market flexibility mechanisms (Jaiswal, 2023). Lower entry barriers enable faster absorption of labor, particularly for young individuals who lack experience (Banik & Padalkar, 2021). This creates a negative relationship between gig economy growth and unemployment, where an increase in gig-based opportunities leads to a reduction in open unemployment (Widiastuti & Kosasih, 2021).

Causally, the expansion of the gig economy is driven by digitalization, increased internet penetration, and the growth of platform-based services (Ariani & Nurcahyo, 2020). These factors create new forms of work in sectors such as transportation, freelance services, and digital content creation (Wardani & Riyadi, 2022). As a result, young workers who are unable to enter the formal sector can still access income opportunities.

However, this relationship is not without limitations. While the gig economy reduces unemployment quantitatively, it may also generate income instability and underemployment (Adha, Nahar, & Fathurrahman, 2025). This indicates that the gig economy primarily functions as a short-term absorption mechanism, rather than a long-term employment solution.

From an Islamic perspective, productive effort is emphasized (QS. At-Taubah:105), supporting the legitimacy of gig-based work as a form of lawful economic activity. Thus, the gig economy aligns with Islamic values of productivity and independence.

وَقُلِ اعْمَلُوْا فَسَيَرَى اللّٰهُ عَمَلَكُمْ وَرَسُوْلُهٗ وَالْمُؤْمِنُوْنَۗ وَسَتُرَدُّوْنَ اِلٰى عٰلِمِ الْغَيْبِ وَالشَّهَادَةِ فَيُنَبِّئُكُمْ بِمَا كُنْتُمْ تَعْمَلُوْنَ ۝١٠٥

Meaning: "*And say, 'Work!' Allah will see your work, and so will His Messenger and the believers. And you will be returned to the Knower of the unseen and the seen, and He will inform you of what you used to do*." (QS. At-Taubah: 105)

In Islamic values, productive work is encouraged, as stated in QS. At-Taubah:105, which stresses that every effort will be accounted for. Thus, gig-based work can be viewed as a form of productive endeavor that supports economic independence. The expansion of digital platform workers and internet penetration indicates gig economy growth, which may influence youth employment levels.

Islamic Bank Financing

Islamic bank financing refers to fund distribution based on Sharia principles that prohibit *riba*, emphasize contract clarity, and link transactions to real economic activities. These principles promote fairness, transparency, and risk-sharing (Lestari, Hanafi, & Wardhana, 2025). This principle is in line with the word of Allah in QS. Al-Baqarah verse 275:

اَلَّذِيْنَ يَأْكُلُوْنَ الرِّبٰوا لَا يَقُوْمُوْنَ اِلَّا كَمَا يَقُوْمُ الَّذِيْ يَتَخَبَّطُهُ الشَّيْطٰنُ مِنَ الْمَسِّۗ ذٰلِكَ بِاَنَّهُمْ قَالُوْٓا اِنَّمَا الْبَيْعُ مِثْلُ الرِّبٰواۘ وَاَحَلَّ اللّٰهُ الْبَيْعَ وَحَرَّمَ الرِّبٰواۗ فَمَنْ جَاۤءَهٗ مَوْعِظَةٌ مِّنْ رَّبِّهٖ فَانْتَهٰى فَلَهٗ مَا سَلَفَۗ وَاَمْرُهٗٓ اِلَى اللّٰهِۗ وَمَنْ عَادَ فَاُولٰۤىِٕكَ اَصْحٰبُ النَّارِۚ هُمْ فِيْهَا خٰلِدُوْنَ ۝٢٧٥

Meaning: "*Those who consume (transact in) usury cannot stand, except as one who staggers because of a devil. That is because they say that buying and selling is the same as usury. But Allah has permitted buying and selling and forbidden usury. Whoever receives a reminder from his Lord (regarding usury), then he desists until what he had previously acquired becomes his own and his affair is with Allah. Whoever repeats (usury transactions), those are the inmates of the Fire, they will abide therein forever*." (QS. Al-Baqarah: 275)

From a causal perspective, Islamic financing influences employment through several mechanisms. First, financing increases capital availability for businesses, enabling expansion and job creation (Junaidi, 2026). Second, profit-sharing schemes such as *mudharabah* and *musharakah* encourage entrepreneurship, particularly among individuals with limited collateral (Boukhatem & Moussa, 2018). Third, financing supports MSME development,

which is a key driver of labor absorption in developing economies (Daulay & Harahap, 2023).

However, the effectiveness of Islamic financing in reducing unemployment depends on allocation efficiency. If financing is directed toward non-productive or capital-intensive sectors, its impact on employment becomes limited. This creates the possibility of a positive relationship between financing and unemployment, particularly when funds do not reach labor-intensive or youth-driven sectors.

In the context of youth employment, Islamic financing plays a strategic role in transforming young individuals from job seekers into job creators. By providing access to capital, Islamic banks can support the development of small businesses and digital entrepreneurship, especially within the gig economy ecosystem.

Conceptual Relationship Between Variables

The relationship between gig economy growth, Islamic bank financing, and youth unemployment is inherently interconnected. The gig economy functions as a labor market entry point, providing immediate job opportunities for young workers. However, due to its unstable nature, gig work alone is insufficient to ensure long-term economic sustainability (Jauhari, Syahira, Yusoff, & Kassim, 2025).

In contrast, Islamic bank financing acts as a supporting financial mechanism that enables business development and income stability. When integrated effectively, financing can transform gig workers into entrepreneurs by providing the necessary capital for scaling their activities (Nur, Muhyi, Omar, & Adnan, 2023).

This indicates a complementary relationship between the two independent variables:

1. The gig economy reduces unemployment in the short term (job access)
2. Islamic financing enhances sustainability in the long term (business development)

Therefore, youth unemployment is influenced not only by job availability but also by access to productive capital. The interaction between these variables suggests that a combined approach is more effective than relying on a single mechanism.

The conceptual framework illustrates the relationship between gig economy growth, Islamic bank financing, and youth unemployment in Indonesia. Gig economy growth is expected to reduce unemployment by providing flexible job opportunities, while Islamic bank financing influences employment depending on its allocation. The relationship among these variables is presented in Figure 1:

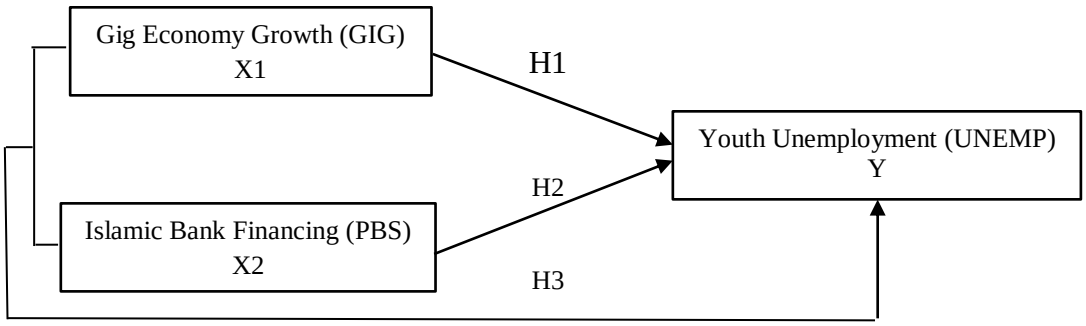


Figure 1. Conceptual Framework

The research hypothesis in this study is:

H1: Gig economy growth has a negative and significant effect on youth unemployment.
H2: Islamic bank financing has a significant effect on youth unemployment.
H3: Gig economy growth and Islamic bank financing simultaneously have a significant effect on youth unemployment.

C. METHODOLOGY

This study employs a quantitative approach with a causal associative design to analyze the effect of gig economy growth and Islamic bank financing on youth unemployment in Indonesia (Balaka, 2022). The causal framework is used to identify the direction and magnitude of relationships between independent and dependent variables. The data utilized are secondary data in the form of panel data, combining cross-sectional data from 34 provinces and time series data over the period 2019–2023. The use of panel data is intended to capture both inter-regional variation and time dynamics, thereby improving estimation accuracy and controlling for unobserved heterogeneity. All data are consistently obtained from official sources, namely the Central Statistics Agency (BPS) and the Financial Services Authority (OJK).

The study consists of one dependent variable and two independent variables. Youth unemployment (UNEMP) is measured using the Open Unemployment Rate (TPT) for individuals aged 15–24 years, expressed in percentage (%). Gig economy growth (GIG) is proxied by the proportion of informal workers to the total workforce in each province, also measured in percentage (%). This proxy is used due to the absence of direct statistical indicators of gig economy activities, where most gig workers are classified within the informal sector. Meanwhile, Islamic bank financing (PBS) is measured by the total financing distributed by Islamic Rural Banks (BPRS) in each province, expressed in billion rupiah (Ramdhan, 2021).

To address the presence of zero values and improve data distribution, the Islamic financing variable is transformed using a logarithmic function in the form of ln (PBS + 1). The addition of a constant (+1) aims to avoid undefined values in logarithmic transformation and to maintain all observations in the dataset. This transformation also contributes to stabilizing variance and improving the robustness of the regression model (Nur Ahmadi Bi Rahmani, 2016).

The empirical model in this study is specified as follows:

$$UNEMP_{it} = \alpha + \beta_1 GIG_{it} + \beta_2 \ln(PBS_{it}) + \mu_i + \epsilon_{it}$$

Information:

$UNEMP_{it}$ = Youth unemployment rate of province *i* in year *t*
GIG_{it} = Gig economy growth (informal workers per province)
PBS_{it} = Islamic bank financing (BPRS, in billions of rupiah)
μ_i = fixed effects (province)
ϵ_{it} = error term

Data analysis is conducted using EViews 13 through several stages. First, a stationarity test (unit root test) is performed to ensure data stability. Second, panel model selection is conducted using the Chow Test and Hausman Test, which indicate that the Fixed Effect Model (FEM) is the most appropriate due to significant cross-sectional differences and correlation between individual effects and explanatory variables. Third, classical assumption tests, including normality, multicollinearity, and heteroskedasticity tests, are performed to ensure model validity. Since heteroskedasticity is detected, the estimation is corrected using robust standard errors to produce consistent parameter estimates. Finally, statistical tests including the t-test, F-test, and coefficient of determination (R^2) are employed to evaluate the significance and explanatory power of the model.

The conceptual framework illustrates the relationship between gig economy growth, Islamic bank financing, and youth unemployment in Indonesia. Gig economy growth is expected to reduce unemployment by providing flexible job opportunities, while Islamic bank financing influences employment depending on its allocation. The relationship among these variables is presented in Figure 1:

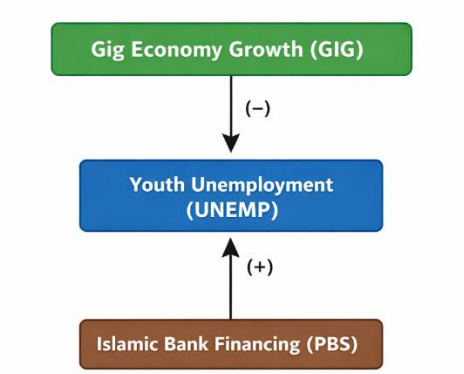


Figure 1. Conceptual Framework

To clarify the operationalization of variables used in this study, the following table presents the variables, indicators, and measurement approaches based on secondary data obtained from official institutions.

Table 1. Operational Variables

Variable	Type	Indicator	Measurement	Description
Youth Unemployment (UNEMP)	Dependent	Open Unemployment Rate (Age 15–24)	Percentage (%)	Measures the proportion of unemployed youth to total youth labor force
Gig Economy Growth (GIG)	Independent	Informal Workers Ratio	Percentage (%)	Proxy for gig economy due to dominance of informal sector workers
Islamic Bank Financing (PBS)	Independent	Total BPRS Financing	Billion Rupiah (ln transformed)	Measured as ln (PBS + 1) to handle zero values and improve distribution

Source: compiled by researchers (2026)

D. RESULT

Stationarity Test (Unit Root Test)

1. Stationarity Test Results for Variable X1

Table 2. Stationarity Test of Variable X1

Method	Statistic	Prob.
ADF – Fisher Chi-square	221.357	0.0000
ADF – Choi Z-stat	-9.09289	0.0000

Source: Data processed using EViews 13

Based on the results of the Panel Unit Root Test on the gig economy growth variable (X1), the probability value obtained from the Augmented Dickey-Fuller (ADF - Fisher Chi-square) method is 0.0000, which is below the significance level of $\alpha = 0.05$. This study shows that the gig economy growth variable (X1) has met the stationarity criteria at the level, so it can be concluded that the data does not contain a unit root. Thus, the fluctuation of the gig economy growth value (X1) is stable over time during the observation period 2019–2023. In addition, these results are also consistent with other testing methods, such as Levin, Lin & Chu (LLC) and Im, Pesaran, and Shin (IPS), which both produce probability values well below 0.05. The consistency of the findings from these various approaches further strengthens the belief that the gig economy growth variable (X1) does not experience non-stationarity problems and can be used directly in panel analysis without the need for further transformation.

2. Stationarity Test Results for Variable X2

Table 3. Stationarity Test of Variable X2

Method	Statistic	Prob.
ADF – Fisher Chi-square	45.5384	0.4915
ADF – Choi Z-stat	0.98707	0.8382

Source: Data processed using EViews 13

Based on the results of the Panel Unit Root Test on the Islamic Bank Financing variable (X2), the probability value obtained from the Augmented Dickey-Fuller (ADF – Fisher Chi-square) method is 0.4915 and the probability value of the ADF – Choi Z-stat is 0.8382. Both probability values are far above the significance level of $\alpha = 0.05$, so that the null hypothesis stating that the Islamic Bank Financing variable (X2) contains a unit root cannot be rejected. In other words, the Islamic Bank Financing variable (X2) is non-stationary at the level, so that its value and variance are unstable throughout the observation period. This condition indicates that Islamic Bank Financing (X2) experiences non-stationarity problems and requires further transformation, such as first difference or retesting at a higher order level, so that the variable can be used appropriately in panel analysis.

3. Results of the Stationarity Test for the First Difference Variable X2

Table 4. Stationarity Test of First Difference Variable X2

Method	Statistic	Prob.
ADF – Fisher Chi-square	116.029	0.0000
ADF – Choi Z-stat	-4.04808	0.0000

Source: Data processed using EViews 13

The results of the first difference stationarity test on the Islamic Bank Financing variable (X2) show that the probability value of the ADF – Fisher Chi-square method is 0.0000 and the probability value of the ADF – Choi Z-stat is also 0.0000. Both probability values are far below the significance level of $\alpha = 0.05$, so the null hypothesis stating that Islamic Bank Financing (X2) contains a unit root can be rejected at the first difference level. Thus, the Islamic Bank Financing variable (X2) is declared stationary after the first differentiation, or in other words, Islamic Bank Financing (X2) is integrated at level 1 (first difference). This study indicates that the differencing process successfully eliminates the problem of non-stationarity in Islamic Bank Financing (X2), so that the variable is suitable for use in further analysis such as panel regression or cointegration testing.

4. Results of the Stationarity Test for Variable Y

Table 5. Stationarity Test of Variable Y

Method	Statistic	Prob.
ADF – Fisher Chi-square	80.4822	0.1429
ADF – Choi Z-stat	-1.74417	0.0406

Source: Data processed using EViews 13

Based on the results of the Panel Unit Root Test on the Youth Unemployment variable (Y), the probability value obtained from the ADF – Fisher Chi-square method is 0.1429, which is above the significance level of $\alpha = 0.05$. This result indicates that according to the Fisher test, the null hypothesis stating that the Youth Unemployment variable (Y) contains a unit root cannot be rejected, so that the Youth Unemployment variable (Y) tends to be non-stationary at the level. However, the ADF – Choi Z-stat method produces a probability value of 0.0406, which is below the 5% significance limit. This finding indicates that according to the Choi test, the Youth Unemployment variable (Y) is stationary at the level. The difference in results between methods indicates that the evidence of the stationarity of the Youth Unemployment variable (Y) at the level is not yet fully consistent, so more

conservatively the Youth Unemployment variable (Y) can be categorized as non-stationary at the level, so a retest is carried out on the first difference to ensure its integration properties.

5. Results of the First Difference Stationarity Test for Variable Y

Table 6. Stationarity Test of First Difference Variable Y

Method	Statistic	Prob.
ADF – Fisher Chi-square	303.895	0.0000
ADF – Choi Z-stat	-11.6948	0.0000

Source: Data processed using EViews 13

The results of the first difference stationarity test on the Youth Unemployment variable (Y) show that the probability value of the ADF – Fisher Chi-square method is 0.0000 and the probability value of the ADF – Choi Z-stat is also 0.0000. Both probability values are far below the significance level of $\alpha = 0.05$, so the null hypothesis stating that the Youth Unemployment variable (Y) contains a unit root can be rejected at the first difference level. Thus, the Youth Unemployment variable (Y) is declared stationary after the first differentiation, or in other words, Youth Unemployment (Y) is integrated at the first difference. This study shows that the differencing process successfully overcomes the problem of non-stationarity in the Youth Unemployment variable (Y), so that this variable has met the requirements for use in advanced panel analysis, including regression estimation and cointegration tests.

Model Selection

1. Chow Test Results

Table 7. Chow Test

Effects Test	Statistic	d.f.	Prob.
Cross-section F	16.679464	(33, 134)	0.0000
Cross-section Chi-square	277.225011	33	0.0000

Source: Data processed using EViews 13

Based on the results of the Chow Test used to determine whether the Fixed Effect model is more appropriate than the Common Effect model, the probability value for the Cross-section F is 0.0000 and for the Cross-section Chi-square is also 0.0000. Both probability values are far below the significance level of $\alpha = 0.05$. Therefore, the null hypothesis stating that the individual effect is insignificant or the Common Effect model is adequate is rejected. Thus, the test results indicate that there are significant differences between cross-section units, so the more appropriate model to use is the Fixed Effect Model.

2. Hausman Test Results

Table 8. Hausman Test

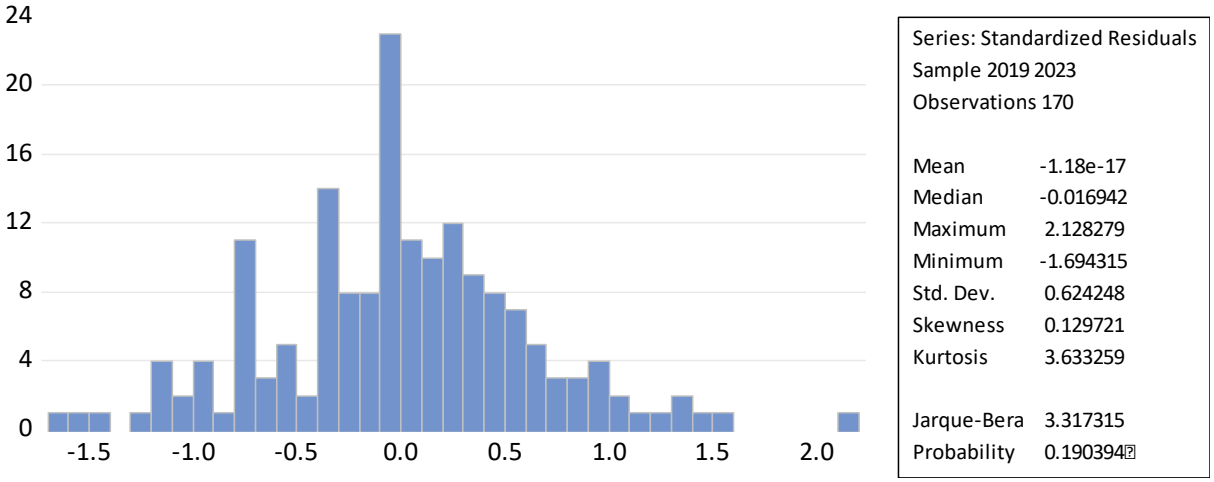
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	71.129700	2	0.0000

Source: Data processed using EViews 13

The Hausman test results show that the Chi-Square Statistic value is 71.129700 with a degree of freedom (df) of 2, resulting in a probability value of 0.0000. This probability value is far below the significance level of $\alpha = 0.05$, so the null hypothesis stating that the Random Effect model is rejected. Thus, the test results strongly indicate that the more appropriate model to use is the Fixed Effect Model. This study shows that there is a correlation between individual effects and independent variables in the model, so the use of the Random Effect model will produce biased estimates. Therefore, the Fixed Effect Model is a more accurate and consistent choice for panel data analysis in this study.

Classical Assumptions

1. Normality Test Results



Source: Data processed using EViews 13

Figure 2. Normality Test

Based on the results of the normality test on the residual model, the Jarque–Bera value is 3.317315 with a probability value of 0.190394, which is above the significance level of α = 0.05. This indicates that the null hypothesis stating that the residuals are normally distributed cannot be rejected. Thus, it can be concluded that the residual model follows a normal distribution. This research is supported by the shape of the histogram which looks symmetrical, does not show excessive skewness, and a skewness value of 0.129721 and kurtosis of 3.633259 which are still within the acceptable range for the assumption of normality. Therefore, the Jarque–Bera Prob. Value = 0.190394 > 0.05, so the residuals are normally distributed and the model is suitable for use.

2. Multicollinearity Test Results

Table 9. Multicollinearity Test

	X1	**X2**
X1	1.000000	-0.197441
X2	-0.197441	1.000000

Source: Data processed using EViews 13

Based on the results of the multicollinearity test shown through the correlation matrix between independent variables, the correlation value of X1–X2 = -0.197441 < 0.8, this value is far below the general limit indicating the presence of multicollinearity, which is 0.80, thus, it can be concluded that there is no multicollinearity problem between variables X1 and X2 in the model. So both are suitable for use simultaneously in panel regression analysis.

3. Heteroscedasticity Test Results

Table 10. Heteroscedasticity Test

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	-0.430424	0.750139	-0.573792	0.5671
X1	0.018858	0.012677	1.487557	0.1392
X2	-0.067603	0.032630	-2.071778	0.0402

Source: Data processed using EViews 13

Based on the results of the heteroscedasticity test, there is an indication of heteroscedasticity in the variable X2, with a p-value of 0.0402 < 0.05. This indicates that the null hypothesis regarding constant residual variance is rejected for the variable X2. Meanwhile, the variable X1 and the constant (C) do not show heteroscedasticity, because

each has a p-value of 0.1392, > 0.05 and 0.5671 > 0.05. Thus, it can be concluded that only the variable X2 indicates heteroscedasticity, so the analysis is continued using Robust Standard Error so that the estimate is valid.

4. Robust Standard Error Test Results

Table 11. Robust Standard Error Test

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	9.814131	0.665862	14.73898	0.0000
X1	-0.085824	0.010485	-8.185236	0.0000
X2	0.112553	0.036971	3.044323	0.0000

Source: Data processed using EViews 13

Based on the results of the Robust Standard Error test, all variables in the model show a significant influence on the dependent variable. The constant coefficient of 9.814 indicates that if X1 and X2 are zero, the value of Y is estimated to be 9.814. Variable X1 has a negative coefficient of -0.0858, which means that every one-unit increase in X1 will significantly decrease Y by 0.0858 units. Conversely, X2 has a positive coefficient of 0.1126, so that every one-unit increase in X2 will significantly increase Y by 0.1126 units. The use of Robust Standard Error corrects the previously detected heteroscedasticity problem, so that the standard error and significance test become more valid, so that the regression model can be relied upon to assess the influence of variables X1 and X2 on Y.

Significance of Coefficient

1. t-Test Results

Table 12. t-test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-4.803754	1.718373	-2.795524	0.0059
X1	0.178743	0.029040	6.155108	0.0000
X2	-0.199058	0.074748	-2.663063	0.0087

Source: Data processed using EViews 13

Based on the results of the t-test with a t-table of 1.974 at a significance level of 5%, all regression coefficients are proven to be statistically significant. The constant (C) has a t-count of -2.796 with a probability of 0.0059, indicating that the constant is significantly different from zero. Variable X1 has a positive coefficient of 0.179 with a t-count of 6.155 and a probability of 0.000, which means that X1 has a positive and significant effect on the dependent variable. Conversely, variable X2 has a negative coefficient of -0.199 with a t-count of -2.663 and a probability of 0.0087, indicating a negative and significant effect on the dependent variable. Thus, all independent variables used in the model significantly influence the dependent variable.

2. F Test Results

Table 13. F Test

Indicator	Scores	Indicator	Scores
R-squared	0.873812	Mean dependent var	5.163588
Adjusted R-squared	0.840853	S.D. dependent var	1.757312
S.E. of regression	0.701049	Akaike info criterion (AIC)	2.313092
Sum squared resid	65.85691	Schwarz criterion (SC)	2.977144
Log likelihood	-160.6129	Hannan-Quinn criterion	2.582557
F-statistic	26.51172	Durbin-Watson stat	1.542736
Prob(F-statistic)	0.000000		

Source: Data processed using EViews 13

Based on the results of simultaneous testing through the F test, the F-calculation value was obtained as 26.51, while the F-table value at a significance level of 0.05 with degrees of freedom ($df_1 = 2$; $df_2 = 167$) was 3.05. Because the F-calculation is greater than the F-table (26.51 > 3.05) and the Prob (F-statistic) value is 0.0000 < 0.05, it can be concluded that the regression model used is simultaneously significant. This means that all independent variables included in the model together have a significant effect on the dependent variable.

3. R^2 / Adjusted R^2 Test Results

Table 14. R^2 Test

Indicator	Scores	Indicator	Scores
R-squared	0.873812	Mean dependent var	5.163588

Source: Data processed using EViews 13

Based on the regression results, the R-squared (R^2) value of 0.874 indicates that approximately 87.4% of the variation in the dependent variable can be explained by the independent variables X1 and X2 in the model. This means that the regression model has a fairly good ability to explain changes in the dependent variable. Meanwhile, the Adjusted R-squared value of 0.841 takes into account the number of independent variables and sample size, thus providing a more accurate estimate of the model's ability. This value still indicates that the model has a high fit and the independent variables together are quite capable of explaining the variability of the dependent variable. Thus, most of the variation in the dependent variable is explained by variables X1 and X2, while the remainder (approximately 12.6%) is influenced by other factors outside the model.

E. DISCUSSION

The regression results based on the Fixed Effect Model (FEM) with robust standard errors indicate that the gig economy and Islamic bank financing have statistically significant effects on youth unemployment in Indonesia. The FEM specification controls for unobserved heterogeneity across provinces, allowing the model to isolate the impact of explanatory variables by accounting for time-invariant regional characteristics such as institutional quality, economic structure, and labor market conditions.

The gig economy variable (GIG) shows a coefficient of -0.0858 with a probability value of 0.0000 ($p < 0.01$), indicating a negative and statistically significant effect on youth unemployment. Quantitatively, this implies that a 1% increase in the proportion of informal workers as a proxy for gig economy growth reduces the youth unemployment rate by approximately 0.0858 percentage points, ceteris paribus. This finding confirms that the expansion of the gig economy serves as an effective mechanism for short-term labor absorption, particularly for young workers who face barriers to entry in the formal sector.

From a theoretical perspective, this result is consistent with labor market flexibility theory, which posits that flexible employment systems can accelerate job absorption due to lower entry requirements. In addition, within the framework of human capital theory, the gig economy provides an initial platform for skill accumulation and work experience, thereby increasing youth employability (Romadhani, Lestari, Herianingrum, & Abdurrahman, 2025). Empirical evidence from previous studies also supports this finding, suggesting that platform-based employment functions as a “shock absorber” in labor markets with limited formal job opportunities (El-galfy & Khiyar, 2012). However, despite its effectiveness in reducing open unemployment, the gig economy has structural limitations, particularly related to job quality, income instability, and lack of social protection (Susanty et al., 2025). This indicates that while the gig economy contributes to employment quantity, it does not necessarily ensure sustainable or decent work in the long term.

In contrast, the Islamic bank financing variable (PBS) shows a coefficient of 0.1126 with a probability value of 0.0000 ($p < 0.01$), indicating a positive and statistically significant effect on youth unemployment. This means that a 1% increase in Islamic financing (in logarithmic form) is associated with an increase of approximately 0.1126 percentage points in youth unemployment. This counterintuitive result suggests that the expansion of Islamic financing has not yet effectively contributed to youth labor absorption.

This finding can be explained through several economic theories. First, the credit misallocation theory suggests that financing does not generate employment if it is concentrated in low-productivity or non-labor-intensive sectors (Arafah et al., 2025). In the context of Islamic banking, financing is often dominated by *murabahah* (trade-based financing), which tends to be consumptive rather than productive. Second, the jobless growth theory explains that economic expansion driven by capital-intensive sectors does not necessarily increase labor demand (Eliya, Fathan, Eliya, Fathan, & Permatasari, 2025). Third, the labor mismatch theory highlights the gap between the skills of young workers and the needs of sectors receiving financing, particularly when financing is directed toward conventional micro and small enterprises rather than digital or youth-oriented sectors (Subagiyo et al., 2025). Previous studies also indicate that while Islamic financing contributes to MSME development and poverty reduction, its direct impact on youth employment remains limited. Thus, the results reflect a gap between the normative role of Islamic finance as a driver of inclusive growth and its empirical implementation.

Simultaneously, the model shows a Prob(F) value of 0.0000, indicating that the independent variables jointly have a statistically significant effect on youth unemployment. The coefficient of determination (R^2) of 0.874 implies that 87.4% of the variation in youth unemployment can be explained by the model, while the remaining 12.6% is influenced by other factors outside the model. These results confirm that youth unemployment is shaped by both structural labor market dynamics, represented by the gig economy, and financial intermediation factors, represented by Islamic bank financing.

The differing directions of influence between the two variables highlight an important structural issue (Jain, 2024). On the one hand, the gig economy acts as a rapid employment absorption mechanism in the digital labor market (Hwang, 2024). On the other hand, Islamic financing has not yet been optimally aligned with labor-intensive and youth-oriented economic activities (Tiziano Dawid, Bielefeld University, 2024). This indicates a lack of integration between digital labor market dynamics and Islamic financial intermediation.

From a policy perspective, these findings imply the need to strengthen the role of Islamic finance in supporting productive and labor-intensive sectors, particularly those involving youth entrepreneurship and the digital economy (Ananda Dwi Cahya, 2022). Policymakers should encourage a shift from consumptive financing (*murabahah*) toward profit-sharing schemes (*mudharabah* and *musyarakah*) that have a greater impact on job creation (Mehta, 2023). Additionally, there is a need to align workforce skills with the sectors receiving financing to reduce labor market mismatch.

This study contributes to the literature by integrating the analysis of digital labor market transformation and Islamic financial intermediation within a panel data framework. It highlights that reducing youth unemployment in Indonesia requires not only the expansion of flexible employment opportunities but also the reorientation of Islamic financing toward inclusive, productive, and youth-centered economic development.

F. CONCLUSION

This study finds that, based on the Fixed Effect Model (FEM) with robust standard errors, the gig economy has a negative and statistically significant effect on youth unemployment, indicating its role in reducing youth unemployment rates. In contrast, Islamic

bank financing shows a positive and statistically significant effect, suggesting that it has not yet effectively contributed to youth labor absorption. Simultaneously, both variables significantly influence youth unemployment, with a high explanatory power of the model (R^2 = 0.874). These findings confirm that while the expansion of flexible digital employment opportunities can help address unemployment in the short term, the current structure of Islamic financing has not optimally supported employment generation among young workers.

The interpretation of these results highlights a structural imbalance between labor market flexibility and financial intermediation effectiveness. The gig economy functions primarily as a short-term labor absorption mechanism, particularly for youth facing barriers to entry into the formal sector; however, its contribution remains limited to the quantity rather than the quality of employment, as reflected in income instability and lack of job security. On the other hand, the positive relationship between Islamic financing and unemployment reflects inefficiencies such as credit misallocation, the dominance of consumptive or non-productive financing, and a mismatch between financing distribution and labor market needs. These findings imply that without structural adjustments, Islamic finance may not fully realize its potential as a driver of inclusive employment.

This study contributes to the literature by integrating digital labor market dynamics with Islamic financial intermediation within a panel data framework, while also revealing important policy implications and limitations. It underscores the need to reorient Islamic financing toward productive, labor-intensive, and youth-oriented sectors, strengthen profit-sharing schemes such as *mudharabah* and *musyarakah*, expand financial access for young entrepreneurs, and align financing policies with the development of the digital economy. At the same time, the study is limited by the use of provincial-level panel data, proxy measurement of the gig economy through informal workers, and the absence of job quality indicators. Therefore, future research should incorporate micro-level data, more precise indicators of platform-based work, and variables related to job quality and financial inclusion. Overall, reducing youth unemployment in the digital era requires an integrated approach that combines the expansion of flexible employment opportunities with the strengthening of Islamic finance as a foundation for inclusive and sustainable economic development.

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