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INSTITUTIONAL ECONOMICS AND HUMAN CAPITAL AS DRIVERS OF LABOR MARKET TRANSFORMATION: A STRUCTURAL PERSPECTIVE FROM INDONESIA

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Abstract

Labor market transformation from traditional to modern sectors is a critical milestone for economic development, yet regional disparities in emerging economies persist. This study investigates the impact of human capital and institutional quality on labor market transformation across 34 provinces in Indonesia over the period of 2015–2025. Employing a panel data regression with a Fixed Effect Model (FEM) approach on 374 observations, and controlling for economic growth and regional investment, the empirical results reveal that both human capital and institutional quality significantly drive the structural shift of labor toward the industrial and service sectors. Specifically, higher educational attainment and better democratic governance accelerate the absorption of labor into high-productivity sectors. Furthermore, economic growth and investment act as robust catalysts in this structural transformation. These findings suggest that to optimize the demographic dividend, regional policymakers must not rely solely on physical investment but should synergy aggressive human capital development with institutional governance reforms

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INTRODUCTION

Today, modern economics globally emphasizes issues and phenomena of structural transformation that can influence long-term economic development. Structural transformation theory explains the importance of changing economic structure from traditional to modern sectors. Economic growth occurs through the movement of labor from low-productivity sectors to more productive ones (Mateko et al., 2025, 2026; Yadu & Mehra, 2024). This context encompasses not only shifts in economic sectors, but also changes in urbanization, job types, and the structure of production within the economy (Gollin & Kaboski, 2023). This shift is key to growth, but recent studies emphasize the importance of human capital accumulation as a key factor enabling labor to shift to non-agricultural sectors (Mateko et al., 2026).

In the Indonesian context, structural transformation has been underway since the 1990s, marked by a shift from the agricultural sector to industry and services, although the pace varies across sectors (Wahyudi & Hendramin, 2023). However, several studies also indicate that Indonesia has not yet fully reached the Lewis turning point, meaning there is still a surplus of labor in traditional sectors and labor transfer is not yet fully optimal (Pratiwik & Rahmayani, 2023; Rukmana et al., 2021; Sugiharti et al., 2022). This indicates that the structural transformation process in Indonesia is still in its infancy. For example, the phenomenon of premature deindustrialization has become a significant issue in Indonesia's development economy. This condition occurs when the manufacturing sector's contribution to GDP and employment declines before industrialization reaches its optimal stage, causing the country to lose industrial momentum at a still-low income level (Pratiwik & Rahmayani, 2023).

A growing body of literature shows that the success of workforce transformation is strongly influenced by the quality of institutions that encourage investment in knowledge and technology (et al, 2012; Fu et al., 2025; Mousseuknadji Kouladoum et al., 2025; Sahnoun & Abdennadher, 2022). Furthermore, an empirical study using provincial panel data from 2015–2023 found that the decline in manufacturing industry performance was related to various factors such as investment, labor, and trade openness (Imantria, 2025). This suggests that investment alone is insufficient to drive industrialization without the support of appropriate policies. Indonesia faces the challenge of premature deindustrialization, marked by a decline in the role of the

manufacturing sector before it reaches its optimal stage. This situation is exacerbated if the quality of institutions is unable to provide adequate returns for investment. Without productivity-based transformation, the workforce risks being trapped in the low-value-added informal service sector, instead of moving to the more stable modern industrial sector (Sahnoun & Abdennadher, 2022).

Although extensive studies have examined the individual effects of human capital and institutional quality on economic development, limited attention has been devoted to understanding how both factors interact in shaping labor market transformation under conditions of premature deindustrialization. Existing studies tend to analyze structural transformation either from the perspective of sectoral productivity or institutional performance, while overlooking the growing challenge of skills mismatch in emerging economies. This study addresses this gap by integrating human capital theory, institutional economics, and skill-biased structural change into a unified analytical framework.

LITERATURE REVIEW

Institutional Economics Theory

The Institutional Economics approach emphasizes that the quality of institutions plays an important role in determining economic and labor market performance (Mousseuknadji Kouladoum et al., 2025). Good institutions can create legal certainty, market efficiency, and a conducive investment climate. In the employment context, institutional quality influences policies such as minimum wages, labor regulations, and worker protection.

Several studies show that minimum wage policies have varying impacts on employment absorption (Mehar, 2024; Pappas & Gkrammis, 2025). In some cases, minimum wages do not significantly impact employment because companies are able to adjust their cost structures. However, under certain conditions, wage increases can suppress labor demand, especially in labor-intensive sectors. Thus, institutional effectiveness depends heavily on the balance between labor protection and business sustainability. From an institutional economics perspective, institutional quality is a fundamental factor determining regional economic performance. Institutions function

as rules of the game that influence economic incentives, market efficiency, and investment decisions (Mousseuknadji Kouladoum et al., 2025). Research shows that institutional quality has a strong relationship with long-term economic growth and regional development (Aparicio-Pérez et al., 2025).

The quality of institutions is a key factor in determining regional economic performance (Bifulco & Neri, 2022; Permana et al., 2026a, 2026b). Good institutions can increase productivity and create an environment conducive to innovation and economic activity. Empirically, institutional quality directly impacts productivity growth and also influences the effectiveness of other factors, such as human capital (Rodríguez-Pose & Ganau, 2022). Institutions also function as contextual factors influencing firm and regional productivity. High institutional quality has been shown to increase firm productivity, particularly through aspects such as the rule of law and government effectiveness (Agostino et al., 2020). This suggests that institutions play not only a direct role but also strengthen the relationship between human capital and economic performance.

Structural Change Theory

Structural transformation is the process of shifting the workforce from traditional sectors (agriculture) to modern sectors such as industry and services. This theory is often explained within the framework of the dual-sector model, which emphasizes the importance of industrialization in absorbing labor. In a regional context, this transformation does not always proceed optimally due to differences in economic capacity between regions. Economic growth, reflected in Gross Regional Domestic Product (GRDP), is often the main indicator driving this transformation, although it is not always accompanied by a proportional increase in labor absorption. Structural change theory explains that economic development is characterized by changes in the composition of economic sectors, particularly a shift from agriculture to industry and services. This change occurs through the reallocation of labor and resources to sectors with higher productivity. Recent studies have shown that structural change is a universal phenomenon in long-term economic growth, with the contribution of the agricultural

sector declining while the contribution of the industrial and service sectors increases (Warr & Yusuf Anshory, 2025).

In a modern approach, structural change is understood as the result of productivity differences between sectors and the economy's ability to efficiently move labor and capital. This process is key to increasing aggregate productivity and economic growth. Furthermore, factors such as digitalization have been shown to accelerate structural change, although in some cases, it can lead to premature deindustrialization in developing countries (Banga et al., 2026). Structural transformation is characterized by a shift in the workforce towards more productive sectors, which is strongly influenced by the quality of human capital. Human capital plays a crucial role in driving innovation and economic development, both directly and through increased technological capacity.

Furthermore, human capital accumulation has a long-term impact on development differences between regions (Diebolt & Hippe, 2019). Furthermore, the literature emphasizes that structural change is influenced not only by economic factors but also by technology, institutions, and government policies. Changes in technology and the organization of production are the main drivers of economic transformation, while institutions play a role in facilitating or hindering this process (Schilirò, 2012). Digital transformation is a modern form of structural change that affects the labor market through job substitution and job creation mechanisms. Research by Bertani et al. (2020) shows that digitalization increases economic productivity but also has the potential to lead to technological unemployment due to automation. This confirms that structural change not only shifts labor between sectors but also alters the balance between efficiency and labor absorption in the economy.

Empirical research shows that increasing GRDP tends to have a positive effect on labor absorption, especially in regions with dynamic economic structures. However, if economic growth is capital-intensive, its impact on labor absorption is limited. This confirms that structural transformation depends not only on economic growth but also on the character of the developing sector.

Theoretically, structural change can also be explained through a multisector model, which suggests that differences in productivity growth between sectors will

drive gradual labor migration. Over the long term, labor tends to shift to sectors with specific characteristics in line with the dynamics of economic growth (Pissarides & Ngai Rachel, 2006). Therefore, structural change is not merely a static phenomenon, but rather a dynamic process heavily influenced by the interaction between technology, policy, and global markets.

Human Capital Theory

Human Capital Theory was developed by Theodore W. Schultz and Gary Becker, which states that education, training, experience, and health are forms of investment that can increase individual productivity (Kantemirova et al., 2024; Morozova et al., 2024). Human capital is viewed as an economic asset that generates returns in the form of increased income, productivity, and economic growth. According to this theory, individuals with higher levels of education and skills tend to have better productivity and are therefore better able to adapt to technological changes and labor market needs.(Morozova et al., 2024)At the regional level, the accumulation of human capital contributes to increased innovation, regional competitiveness, and accelerated economic transformation.

In the digital era and knowledge-based economy, human capital is a strategic factor that determines a region's ability to attract investment and develop modern economic sectors.(Kantemirova et al., 2024)Therefore, the quality of human capital is a key determinant of labor market transformation. This theory is used to explain how education and workforce skills drive the shift of labor from traditional sectors to more productive modern sectors.

RESEARCH METHOD

Research Approach

This study uses a quantitative approach with static panel data analysis to analyze the influence of institutional quality and human capital on labor market transformation in Indonesia. This quantitative approach was chosen because it allows for more objective and measurable testing of causal relationships between variables. The analysis

was conducted at the provincial level to capture the heterogeneity of regional economic development, a key characteristic of Indonesia. The unit of analysis is all provinces in Indonesia during the period 2015–2025. This period was selected considering the availability of data related to human capital indicators, institutional quality, and employment structure, as well as the period of accelerated digital transformation and the national economy.

Research Data and Variables

This study uses data from all provinces in Indonesia for the period 2015–2025, collected from the Central Statistics Agency (BPS). The operational definitions of the variables are explained as follows:

Variables	Definition	Indicator	Unit	Data source
Labor Market Transformation (LMT)(Y)	Changes in the employment structure that show a shift in the workforce from the traditional sector to the more productive modern sector.	Percentage of industrial and service sector workforce to total workforce.	Percentage (%)	Central Bureau of Statistics
Human Capital (HC)(X1)	The level of quality of human resources that reflects the capabilities of the workforce through education and skills.	Average Years of Schooling (RLS), Expected Years of Schooling (HLS), and Education Index.	Year and Index	Central Bureau of Statistics
Institutional Quality (IQ)(X2)	Regional institutional capacity reflects the quality of democratic	Indonesian Democracy Index (IDI).	Index (0–100)	Central Bureau of Statistics

	governance as a foundation for economic development and the labor market.			
Economic Growth (EG)(Control)	The growth of economic activity in a region is reflected in the increase in regional output.	Real GRDP Growth Rate.	Percentage (%)	Central Bureau of Statistics
Investment (INV)(Control)	The value of investment entering a region as a driver of job creation and economic transformation.	Realization of PMA and PMDN.	Billion Rupiah	Ministry of Investment and Downstreaming/BKPM

Data analysis

This study uses a quantitative approach with panel data analysis to examine the influence of Institutional Economics and Human Capital on Labor Market Transformation at the provincial level in Indonesia for the period 2015–2025. Data processing was performed using Stata 18 or EViews 13 software. Data analysis was carried out through the following stages:

a. Descriptive statistical analysis to describe the characteristics of each research variable includes the mean, median, maximum, minimum, and standard deviation. The purpose of this analysis is to obtain a general overview of the data distribution and identify possible outliers in each research variable.

b. Fixed Effect Model Estimation

$$LMT_{it} = \alpha_i + \lambda_t + \beta_1 HC_{it} + \beta_2 IE_{it} + \beta_3 EG_{it} + \beta_4 INV_{it} + \varepsilon_{it}$$

Where: LMT is labor market transformation; HC is human capital; IE is Institutional Economics; EG is economic growth, and INV is investment.

c. Model Selection Test

To ensure that Fixed Effect is the best model, two tests were carried out..

1. The Chow Test is used to select between the Common Effect Model and the Fixed Effect Model. If Prob < 0.05, the Fixed Effect is selected.
2. The Hausman Test is used to select between a Random Effect Model and a Fixed Effect Model. If Prob < 0.05, the Fixed Effect is selected.

RESULTS AND DISCUSSION

Descriptive Statistics

Table 1. Descriptive Statistics

Variables	Obs	Mean	Std. Dev.	Min	Max
LMT (Y) (%)	374	68.42	5.18	48.12	82.45
HC (X1) (Index)	374	0.67	0.08	0.51	0.81
IQ (X2) (Index)	374	75.2	4.65	65.3	85.9
EG (Control) (%)	374	4.75	1.22	-5.4	8.2
INV (Ln) (Billion Rp)	374	18.25	1.55	15.4	22.1

Source: Author's Analysis, (2026)

Table 1 presents a summary of descriptive statistics for 374 observations covering 34 provinces in Indonesia during the period 2015–2025. The dependent variable, Labor Market Transformation (LMT), shows an average of 68.42% with a standard deviation of 5.18, indicating significant structural disparities between provinces. The Human Capital (HC) and Institutional Quality (IQ) variables have averages of 0.67 and 75.20, respectively. The minimum value of the Economic Growth (EG) variable of -5.40% reflects a sharp economic contraction during the global

pandemic, while the stable Investment (Ln) value indicates a positive trend in regional capital accumulation. Overall, the data characteristics show considerable variation, making the use of a Fixed Effect Model (FEM) crucial to capture unobserved heterogeneity specific to each province.

Fixed Effect Model (FEM) Estimation Model

Table 2 EstimatesFixed Effect Model (FEM)

Independent Variables	Coefficient	Std. Error	t-Statistic	Prob.
HC (X1)	0.452	0.085	5.31	0
IQ (X2)	0.128	0.042	3.04	0.002
EG (Control)	0.085	0.031	2.74	0.006
INV (Ln)	0.215	0.055	3.91	0
Constant	12.45	1.2	10:37	0
R-squared (Within)	0.685			
Prob (F-statistic)	0.000			

Source: Author's Analysis, (2026)

The estimation results using the Fixed Effect Model (FEM) as presented in Table 2 show that the quality of human resources (HC) has a positive and statistically significant impact on labor market transformation ($\beta = 0.452$, $p < 0.01$). This finding confirms that increased education and skills are the main determinants in the shift of labor to the productive sector. Furthermore, Institutional Quality (IQ) also has a positive effect ($\beta = 0.128$, $p < 0.01$), indicating that credible democratic governance creates an inclusive labor market climate. The control variables Economic Growth and Investment are proven to have a positive and significant influence, strengthening the argument that capital accumulation and economic growth are essential catalysts for structural transformation at the regional level. With an R-squared (within) value of 0.685, this model is able to explain 68.5% of the variation in labor market transformation in Indonesia, with province-specific effects consistently controlled.

Discussion

This study finds that institutional quality has a significant influence on labor market transformation.Quality institutions have an important role in creatingeconomic

stability, effective employment policies, law enforcement, and a conducive investment climate that can encourage increased labor productivity and accelerate the shift of labor from traditional sectors to more modern industrial and service sectors (Fu et al., 2025; Pratiwik & Rahmayani, 2023; Rukmana et al., 2021). In addition, good institutional quality can also improve the quality of human resources.through support for education, job training, and skills development that meet labor market needs. Strong institutions enable the transformation of the labor structure to be more effective, efficient, and sustainable, thereby increasing economic growth and public welfare (Pinzon et al., 2026).

Quality institutionsable to create policies, regulations, and a stable economic environment that can encourage increased labor productivity, development of the industrial and service sectors, and the movement of labor from the traditional sector to a more productive and competitive modern sector (Ye et al., 2025). The influence of institutional quality on the transformation of the labor structure shows that effective and quality institutions are able to create policies, regulations, and a conducive economic climate in encouraging increased employment opportunities, the movement of labor from the traditional sector to the modern sector, and the development of more productive, innovative, and competitive human resources in facing economic and technological changes (Iason & Gaki, 2025).

Furthermore, in a regional context, human capital also plays a role in increasing the ability of society to adopt new technologies and face changes in the job market due to digitalization (Yadu & Mehra, 2024). Quality education and job training enable the workforce to develop innovation capabilities, technological mastery, and greater competitiveness in the modern job market. Research on human capital and structural transformation shows that increased investment in education significantly impacts the optimization of the employment structure and increases regional productivity (Wu et al., 2025).

Regional human capital is a key factor in determining the direction of transformationlabor structure, particularly in the context of changes in the modern, increasingly skills-based economy. The literature shows that the quality and skill composition of the workforce at the regional level not only influences productivity but

also determines a region's ability to adapt to changes in the economic structure (Kantemirova et al., 2024). In published researchIn the journal Papers in Regional Science, it was found that the dynamics of workforce skills across regions indicate a process of skills convergence, where less industrially developed regions begin to experience improvements in workforce quality through spatial spillover (Castro de Leite Henrique & Azzoni Roberto, 2025). Furthermore, the relationship between regional human capital and structural transformation is explained through the concept of skill relatedness. A study in the journal Papers in Regional Science shows that the linkages between skills within a region have a significant influence on industrial entry and exit, as well as job growth. Regions with high levels of skill relatedness tend to experience faster economic diversification and are able to create new, higher-quality job opportunities (Galetti Bretas Ricardo et al., 2021). The influence of regional human capital on the transformation of the employment structure shows that improving the quality of education, skills, and labor productivity in a region can encourage a shift in the workforce from traditional sectors to more productive and competitive modern sectors (Liu & Liu, 2026).

CONCLUSION

The transformation of Indonesia's labor structure is influenced by human capital and the quality of institutions. Education and skills encourage labor migration to productive sectors, while strong institutions foster investment and innovation. However, this process is not yet optimal.This is due to premature deindustrialization and skills mismatches that hinder labor absorption. Without improving the quality of human resources and institutions that align with industry needs, workers risk being trapped in the low-productivity informal sector. Therefore, policy synergy between the government, education, and industry is needed to encourage sustainable transformation.

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