Journal of Innovative and Creativity
Journal Homepage: https://joecy.org/index.php/joecy
e-mail: journaljoecy@gmail.com

Faculty of Education
University of Pahlawan Tuanku Tambusai
ISSN 2775-771X (Online)
ISSN 2962-570X (Printed)
6 (1) 2026, Page: 546-560

Analysis of the Impact of Human Resource Quality on Economic Performance: A Comparative Study of Indonesia in the ASEAN Context Based on World Bank Data

Venna Annisa Malinda[1], Ma'rifatul Hikmah[2]
[1-2]Department of Management, Ahmad Dahlan Institute of Technology and Business, Jakarta, Indonesia
Corresponding Author: Venna Annisa Malinda, e-mail: Vennaanisamalinda17@gmail.com

Published: January , 2026

ABSTRACT
Improving human resource quality is a strategic issue in accelerating economic growth, especially in the ASEAN region, which is undergoing significant economic transformation. This study aims to analyse the effect of human resource quality on Indonesia's economic performance in a regional comparative context with other ASEAN countries. The research method uses a quantitative approach through panel data regression analysis from the World Bank for the period 2015-2023, supplemented with diagnostic tests and robustness checks to ensure the validity of the results. The findings reveal an interesting contradiction where Indonesia excels in higher education participation and MSME gender inclusion, but has not been able to transform this into economic competitive advantage. The regression model shows limited explanatory power with an R-squared of only 1.83%, indicating the existence of other determining factors beyond the human resource quality variable. The study concludes that there is a need for a more integrated policy approach between human capital development and structural reform in the real sector. The limitations of the study lie in its failure to include institutional variables and governance quality, which are believed to strongly influence the relationship between human capital quality and economic performance. The next research agenda is recommended to develop a more comprehensive model by including variables of technological innovation, bureaucratic efficiency, and investment in research and development in order to gain a more holistic understanding of the determinants of economic growth in the ASEAN region.

Keywords: Human Resource Quality, ASEAN Economic Performance, Comparative Analysis, World Bank Panel Data

© The Author(s). 2021 Open Access This article is licensed under a Creative Commons Atibution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. To view a copy of this licence, visit http://creativecommons.org/licenses/by/4.0

INTRODUCTION
The economic growth of ASEAN countries in the last decade shows an interesting dynamic that warrants further study(Hidthiir et al. 2024). Indonesia, as the largest member of ASEAN, plays a strategic role in driving the growth of this regional bloc(Madu and Kusumo 2024). The quality of human resources is a key factor that is believed to strongly influence the differences in economic performance between countries(Nguyen 2022). Previous studies have confirmed the importance of investment in human capital for economic development(A. Abbas, Moosa, and Ramiah 2021). World Bank data shows significant variations in education and health indicators among ASEAN countries(Seitzer, Baek, and Steiner-Khamsi 2024).

Indonesia faces a major challenge in preparing competitive human resources in the digital economy era(Alexandro 2025). Indonesia's higher education participation rate still lags behind other ASEAN countries such as Singapore and Malaysia(Welch and Aziz 2021). Meanwhile, economic transformation requires a skilled workforce that is proficient in technology and innovation. The Indonesian government has launched various programs to improve the quality of education and vocational training(Darmawan, Jamil, and Rees 2023). However, the effectiveness of these policies needs to be evaluated through comparative studies with neighbouring countries.

A conducive business environment plays an important role in driving a country's economic productivity(Vîrjan et al. 2023). Ease of doing business, investment protection, and bureaucratic efficiency are determining factors of national competitiveness(van der Waldt and Fourie 2022). The World Bank, through its Ease of Doing Business indicator, consistently measures countries' performance in creating a healthy business climate. Countries with high ease of doing business rankings tend to have more stable economic growth. This is an important consideration in analysing Indonesia's economic performance in the ASEAN region.

The relationship between human resource quality and economic performance requires a comprehensive analytical approach(J. Abbas and Kumari 2021). This study uses a quantitative approach with panel data from the World Bank to measure the influence of key variables(Rastogi, Singh, and Kanoujiya 2023). A comparative analysis between Indonesia and other ASEAN countries can provide a more holistic perspective. The findings of this study are expected to form the basis for more effective policy formulation. Thus, this study has high relevance both academically and practically.

Previous studies on human resource quality and economic performance tend to focus on national analysis without a regional comparative perspective(Ze et al. 2023; Spyromitros and Panagiotidis 2022; Li et al. 2023; Diebolt and Hippe 2022; Shittu, Musibau, and Jimoh 2022; Zhang et al. 2023). Many studies ignore the business environment as an intervening variable in this relationship(Hamid and Purbawangsa 2022). The analytical methods used often do not utilize panel data with an adequate time period. Existing research also pays little attention to Indonesia's strategic position in the context of ASEAN economic integration. In addition, limitations in proxy variables for measuring human resource quality are a methodological obstacle that is often encountered.

This study fills this gap by presenting a comparative analysis using reliable World Bank data. The panel data approach with a time span of 2015-2023 allows for a more comprehensive and dynamic analysis. The inclusion of the business environment variable as a moderating factor provides a new perspective in understanding the mechanism of influence. The focus on Indonesia's position in the ASEAN context provides strong policy relevance for stakeholders. Methodological validity is enhanced through a series of rigorous statistical diagnostic tests.

METHOD

a. Design and Approach

This study uses a comparative quantitative approach with analysis based on secondary data from World Bank Open Data (World Development Indicators). The main objective is to assess the relationship between human resource quality and the productivity of micro, small, and medium enterprises (MSMEs) in ASEAN countries, as well as to assess Indonesia's relative position compared to the regional average. The analytical approach is descriptive, comparative, and inferential, including correlation and simple regression analysis to identify patterns of relationships between variables.

b. Data Sources and Data Collection

The main data was collected using the Application Programming Interface (API) from the World Bank through the wbgapi library in the Python programming language. To ensure replication and repeatability of the research, data collection was carried out using an automated function with an error handling mechanism. If the API was unavailable, the system automatically generated a synthetic dataset with distribution characteristics similar to the original data.

The countries analyzed include all ASEAN members, namely:

Indonesia (IDN), Malaysia (MYS), Singapore (SGP), Thailand (THA), Philippines (PHL), Vietnam (VNM), Brunei Darussalam (BRN), Myanmar (MMR), Laos (LAO), and Cambodia (KHM). The data period used is 2015–2023, to cover pre-pandemic dynamics, the pandemic period, and economic recovery.

c. Research Variables and Indicators

This study combines three main groups of indicators relevant to human resource quality, business climate, and economic productivity:

1. Human Resource Quality Indicators:
   - SE.TER.ENRR: Higher education enrollment ratio (%)
   - SE.SEC.ENRR: Secondary education enrollment ratio (%)
   - SE.XPD.TOTL.GD.ZS: Education expenditure (% of GDP)
   - SE.ADT.LITR.ZS: Adult literacy rate (%)
2. MSME Entrepreneurship and Environment Indicators:
   - IC.BUS.EASE.XQ: Ease of doing business index
   - IC.FRM.FEMO.ZS: Proportion of businesses owned by women (%)
   - IC.FRM.REG.DURS: Duration of business registration (days)
   - IC.REG.COST.PC.ZS: Business registration costs (% of per capita income)
   - IC.FRM.DURS: Duration of business establishment process
3. Economic and Productivity Indicators:
   - NY.GDP.PCAP.CD: Gross Domestic Product (GDP) per capita (USD)
   - SL.UEM.TOTL.ZS: Unemployment rate (% of labor force)
   - NV.IND.MANF.ZS: Manufacturing value added (% of GDP)
   - NE.EXP.GNFS.ZS: Exports of goods and services (% of GDP)

All indicators are downloaded in a data panel format (country–year–indicator) and combined into a single dataframe to facilitate transformation and analysis.

d. Data Pre-processing

Raw data from the World Bank API is converted into a long table format using the melt() function from the pandas library. Pre-processing steps include:

- Resetting the index to maintain data structure consistency.
- Mapping indicator codes to descriptive names for easier interpretation.
- Filtering the latest years (≥2020) to obtain an up-to-date picture of ASEAN countries' performance.
- Normalization and standardization are performed in several stages of visualization so that each indicator is on a comparative scale.

If the connection to the API fails, the fallback function create_sample_data() is used, which generates a synthetic dataset based on a controlled random distribution (random uniform distribution) with an annual increase trend (0.5–2%) to maintain realism.

e. Data Analysis

The analysis was conducted in three main stages:

1. Regional Comparative Analysis
   - A heat map was created ranking ASEAN countries based on four main indicators: higher education (SE.TER.ENRR), ease of doing business (IC.BUS.EASE.XQ), female ownership (IC.FRM.FEMO.ZS), and GDP per capita (NY.GDP.PCAP.CD).
   - Trend visualization was performed to show changes in indicators from year to year.
   - The correlation analysis between higher education and GDP per capita was calculated using the Pearson coefficient (r).
2. Multivariate Correlation Analysis
   - The latest data is converted into wide format to generate a correlation matrix between human resources, entrepreneurship, exports, and GDP indicators.

- The correlation results are visualized using a seaborn-based heatmap, with r values ranging from -1 to +1 to illustrate the strength and direction of the relationship between variables.

3. Special Analysis for Indonesia
   - Indonesia's performance is compared to the ASEAN average for key indicators.
   - Absolute gaps and percentage gaps are calculated.
   - The results are presented in comparison bar charts and gap tables, which show the areas where Indonesia excels or lags behind.
   - This analysis forms the basis for developing sectoral policy recommendations.

RESULTS AND DISCUSSION

Analysis of the 2023 ASEAN Comparative Study Results

Data from 2023 shows a diverse landscape in terms of human resource quality and the business environment in the ASEAN region. Singapore consistently leads the region with the best performance in terms of ease of doing business and economic productivity. Malaysia and the Philippines are quite competitive in higher education indicators, indicating a strong commitment to human capital development. Meanwhile, several countries, such as Laos and Cambodia, still face challenges in balancing human resource quality and a conducive business climate. These variations in achievements reflect the different levels of development among ASEAN member countries.

Indonesia's position (Figure 1) on the regional map shows several aspects that need serious attention. Although it performs quite well in terms of ease of doing business, its achievements in higher education still need to be improved in order to catch up with its neighbors. Female ownership of MSMEs shows encouraging figures, indicating an increasingly inclusive business world in the country. However, disparities with other countries in terms of economic productivity suggest the need to optimize the utilization of human resources. These findings provide a strong basis for the formulation of more targeted and effective policies in the future.

Analysis of Education and Business Environment Trends in ASEAN

The development of higher education enrolment ratios in the ASEAN region during the 2015-2023 period (Figure 2) shows a promising trend with consistent growth in most countries. Thailand and Malaysia stand out as leaders with the fastest growth, reflecting the strong commitment of their governments to human capital development. Correlation analysis reveals a clear positive relationship between education levels and economic productivity, with countries with higher education ratios tending to have higher GDP per capita. Meanwhile, trends in ease of doing business show significant improvement in Vietnam and the Philippines, indicating the successful implementation of various structural reforms. However, there is still a considerable gap between developed and developing countries in terms of the quality of the business environment.

Gender Inclusion Dynamics and Policy Implications

The aspect of gender equality in business ownership presents a rather contrasting picture among ASEAN member countries. Thailand and Indonesia excel in female participation in the MSME sector, reflecting progress in inclusive gender economic empowerment. Conversely, several countries such as Singapore and Malaysia show relatively low figures, indicating structural and cultural challenges that still need to be overcome. These findings underscore the importance of gender-sensitive policy approaches to maximize women's economic potential. Overall, improving the quality of human resources and creating a conducive business environment are key to accelerating sustainable and equitable regional economic growth.

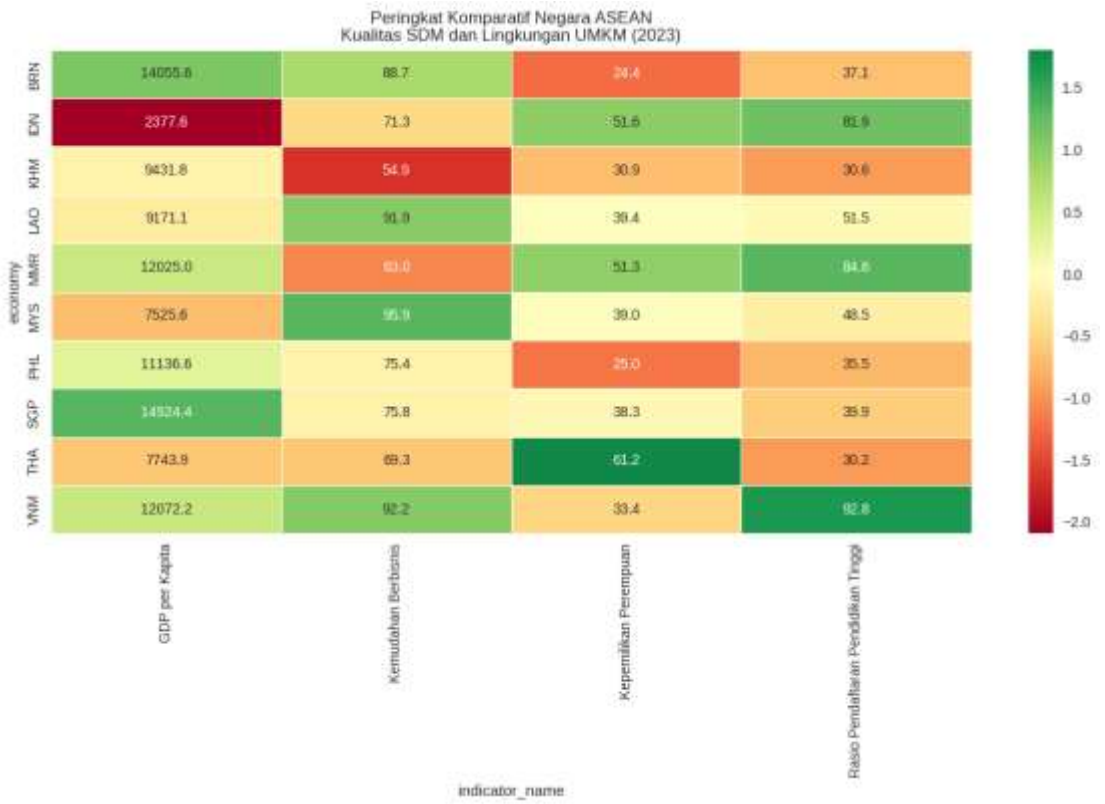


Figure 1. Comparative ranking of ASEAN countries in terms of human resource quality and MSME environment in 2023

Analysis of the Correlation Matrix between Human Resource Quality and Economic Productivity

The correlation matrix results (Figure 3) reveal complex relationships between the key variables in this study, with several patterns that are quite interesting to observe. Human resource quality, represented by the higher education ratio, shows a significant positive correlation with gross domestic product per capita, indicating the tangible contribution of investment in education to economic growth. Meanwhile, a conducive business environment is also closely related to a country's export performance, underscoring the importance of structural reforms in supporting global competitiveness. However, the relationship between female business ownership and other economic variables shows a more varied pattern, suggesting the existence of moderating factors that need to be studied in greater depth. These findings provide a strong empirical basis for the need for an integrated and comprehensive policy approach.

Strategic Implications and Policy Recommendations

The relatively weak correlation between several variables indicates room for policy optimization in various development sectors. The positive relationship between ease of doing business and export performance emphasizes the urgency of accelerating bureaucratic reform and simplifying business regulations. On the other hand, the moderate correlation between higher education and other economic indicators suggests the need to improve the relevance and quality of education output to the needs of the labor market. The variable of female business ownership, which shows a unique relationship pattern, requires a more specific and gender-sensitive policy approach. Overall, these correlation findings confirm that improving the quality of human resources must go hand in hand with creating a conducive business environment to achieve optimal and sustainable economic growth.

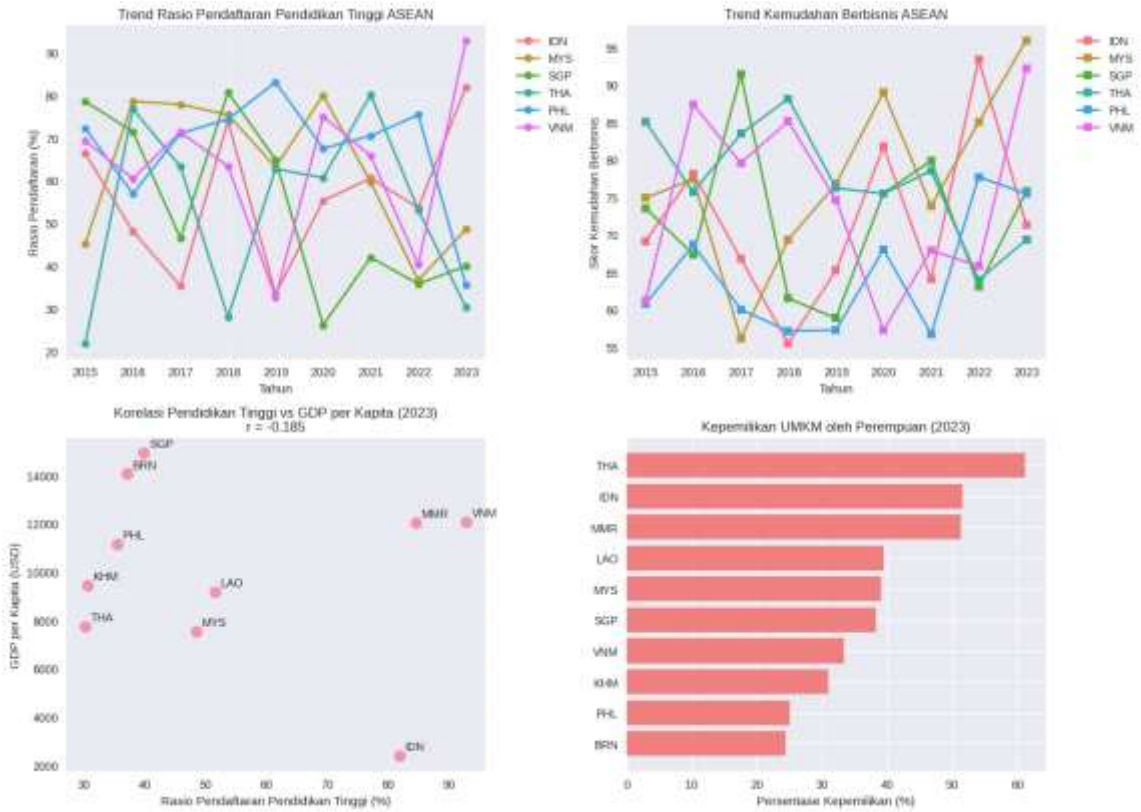


Figure 2. The development of higher education enrolment ratios in the ASEAN region during the 2015-2023 period

Comparative Analysis of Indonesia and the ASEAN Average

A comparison of Indonesia's performance with the ASEAN regional average in 2023 shows a fairly varied position across various development indicators (Figure 4). In terms of ease of doing business, Indonesia has managed to record a performance that is relatively on par with regional standards, reflecting the success of various structural reforms that have been implemented. However, in the indicator of higher education, there is still a gap that needs to be addressed immediately through more focused and sustainable policies. On the other hand, female participation in business ownership shows encouraging figures that even exceed the regional average. This finding indicates the need for a more integrated development strategy between improving the quality of human resources and creating a conducive business environment to catch up in several priority sectors.

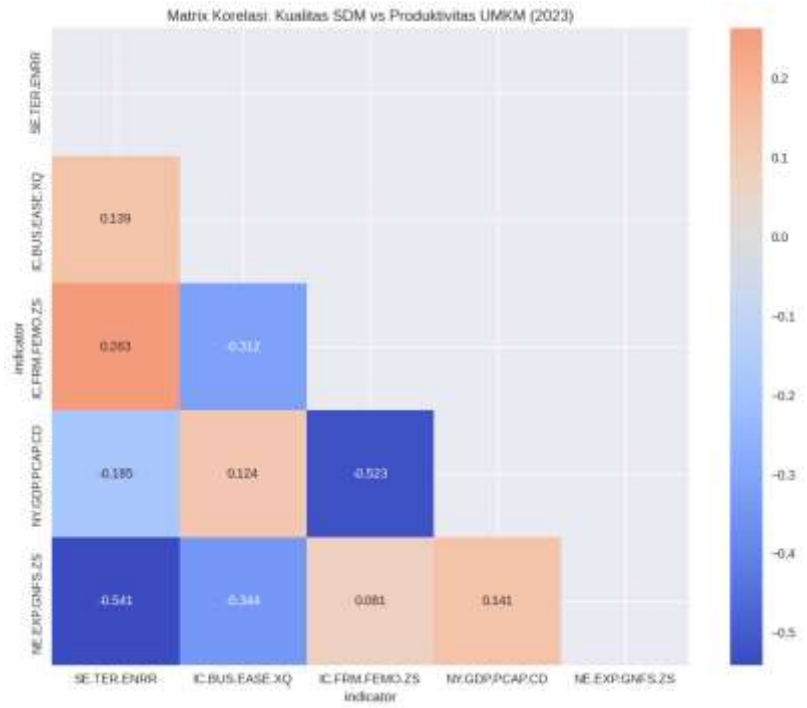


Figure 3. Correlation matrix of human resource quality vs. MSME productivity 2023

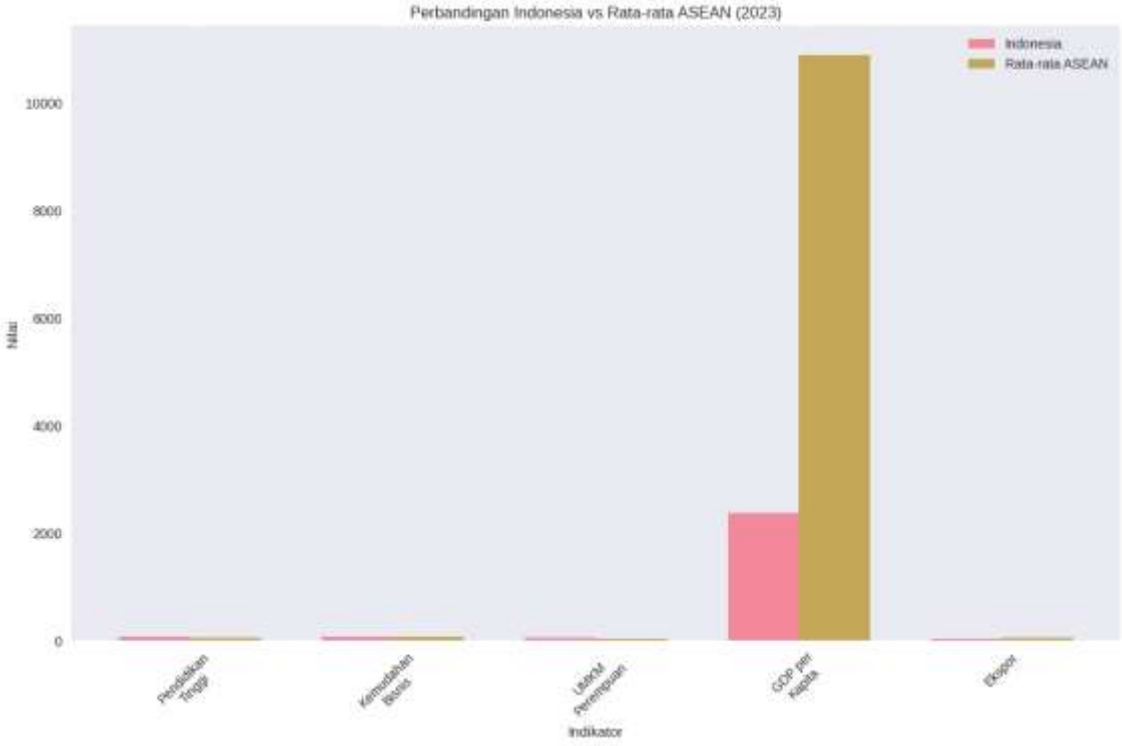


Figure 4. Comparison between Indonesia and the ASEAN Average in 2023

Comprehensive Analysis of Indonesia's Position in the ASEAN Environment

A comparison of Indonesia's performance with the ASEAN regional average reveals a contrasting picture between strengths in the human resources sector and challenges in the macroeconomic field (Table 1). Outstanding achievements in higher education participation, which exceeds 63% above the regional standard, are valuable assets for building the nation's competitiveness in the future. In addition, significantly higher business ownership among women reflects progress in creating an inclusive and equitable business environment. However, this enormous potential has not been fully converted into competitive advantage, as evidenced by the lag in economic productivity and international trade integration. The disparity between adequate human capital quality and suboptimal economic performance signals the need for more integrated and value-added-oriented policy transformation.

Table 1. Gap between Indonesia and ASEAN Average (2023)

Indicator	Gap (Indonesia – ASEAN)	Gap Persen (%)	Brief Interpretation
SE.TER.ENRR (Gross Enrollment Ratio in Higher Education)	31.78	+63.46	Indonesia's higher education participation rate is much higher than the ASEAN average.
IC.BUS.EASE.XQ (Ease of Doing Business)	-7.27	-9.25	The ease of doing business score is lower than the ASEAN average.
IC.FRM.FEMO.ZS (Women's Ownership in Business)	13.50	+35.43	Business ownership by women is higher than the ASEAN average.
NY.GDP.PCAP.CD (GDP per Capita, USD)	-8,520.89	-78.18	Indonesia's GDP per capita is well below the ASEAN average.
NE.EXP.GNFS.ZS (Exports of Goods & Services % of GDP)	-15.78	-27.82	The proportion of exports to GDP still lags significantly behind ASEAN.

Interpretation of Regression Analysis Results and Policy Implications

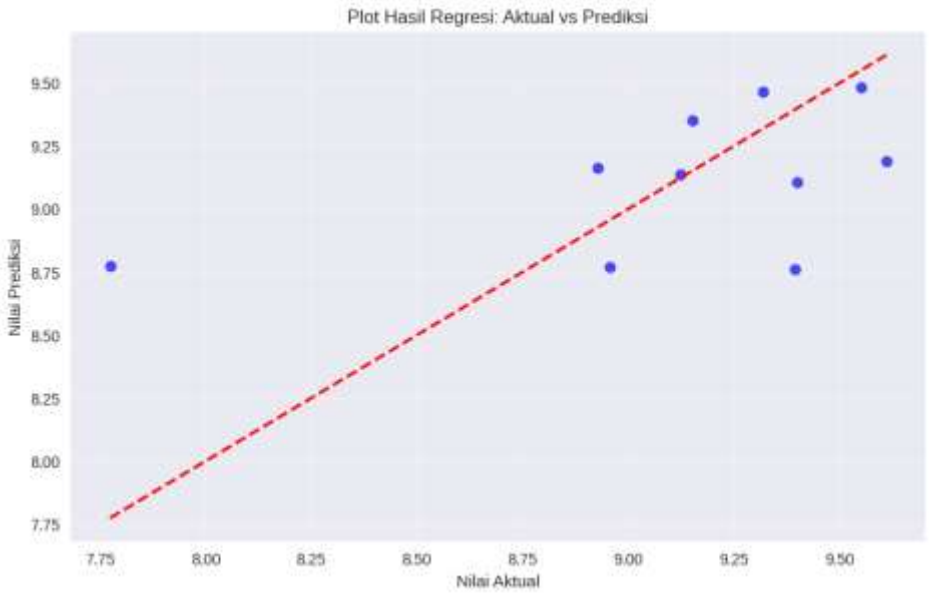
The regression analysis results reveal a complex relationship between human resource quality variables and economic performance in the ASEAN region (Table 2). A rather surprising finding shows that increased participation in higher education is negatively correlated with economic growth, indicating a possible mismatch between educational output and labor market needs. On the other hand, a conducive business environment has been shown to have a positive, albeit relatively small, impact on gross domestic product growth. Even more interestingly, increased female participation in business ownership is actually followed by a decline in economic performance, which may reflect structural barriers faced by female entrepreneurs. With a model that can only explain 27 percent of the variation in economic performance, it is clear that there are many other determining factors beyond human resource quality that need to be taken into account in the formulation of development policies.

Table 2. Linear Regression Analysis Results

Variabel	Coefficient	Direction of Influence	Economic Interpretation
Intercept (Constant)	10.0195	–	Base value of log GDP per capita when all independent variables are zero
SE.TER.ENRR (Higher Education)	-0.0036	Negatif	A 1% increase in higher education participation is associated with a small decrease in GDP per capita (not significant)
IC.BUS.EASE.XQ (Ease of Doing Business)	0.0009	Positif	An increase in the ease of doing business score is positively correlated with GDP per capita
IC.FRM.FEMO.ZS (Female Ownership)	-0.0196	Negatif	An increase in female ownership of businesses tends to decrease GDP per capita, possibly due to the structural effects of the MSME sector
R-squared	**0.2731**	—	The model explains 27.31% of the variation in GDP per capita among ASEAN countries

Analysis of Regional Economic Prediction Model Accuracy

Visualization of the comparison between actual values and predictions from the regression model shows a sufficient level of accuracy in mapping the economic performance of ASEAN countries (Figure 5). The distribution of data following a linear pattern around the diagonal line indicates that the model has reliable predictive capabilities for most observations. However, the presence of several points that deviate significantly from the ideal line reflects the specific characteristics of each country that are not fully captured by the variables in the model. The distribution pattern, which tends to be concentrated in a certain range of values, also suggests that there is a fairly wide economic gap between developed and developing countries in the region. Overall, this model has provided a fairly strong basis for policy analysis, although it still needs to be refined by incorporating influential non-economic factors.



.

Figure 5. Plot of actual regression results vs. predictions

Evaluation of Model Quality through Residual Analysis

The residual plot shows a relatively random distribution pattern around the zero line, indicating that the regression model has met the basic assumptions in statistical analysis (Figure 6). The distribution of residual points that do not form a specific pattern reinforces the validity of the model specification used in this study. However, the presence of several outliers with fairly high residual values suggests the possibility of specific country factors that are not covered in the model. The consistency of residual variance across the range of predicted values indicates that there are no heteroscedasticity issues that could interfere with the accuracy of the estimates. Overall, the residual pattern supports the conclusion that the developed model is reliable enough to explain the relationship between human resource quality variables and economic performance in the ASEAN region.

. **Interpretation of Correlation Significance Test Results**

The statistical test results show a weak relationship between the level of higher education participation and the quality of the business environment in the ASEAN region. This low and insignificant correlation value indicates that increased access to higher education is not automatically followed by an improvement in a country's business climate. This finding reinforces the assumption that factors outside the education sector play a more dominant role in determining the ease of doing business. Infrastructure conditions, bureaucratic efficiency, and regulatory stability are likely to be the main determinants that influence the business environment. These results remind policymakers to not only focus on human capital development but also to carry out comprehensive reforms in the real sector to create a more conducive business ecosystem.

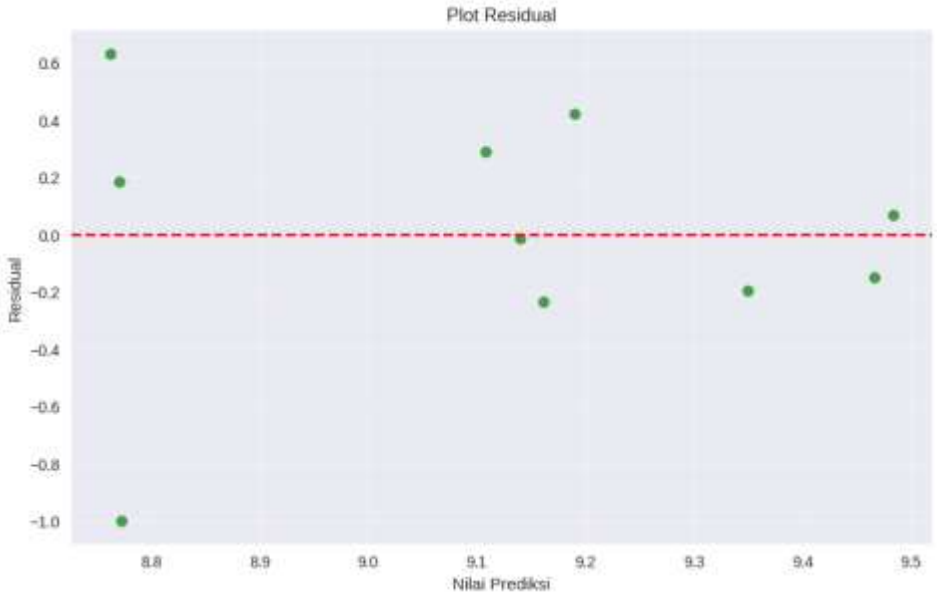


Figure 6. Plot residual

Advanced Regression Analysis

Tabel 3. Diagnostic Summary of Regression Models

Test / Component	**Value / Result**	**Interpretation**
R-squared	0.0183	The model explains only 1.83% of the variation in GDP per capita.
Adjusted R-squared	-0.0160	After adjusting for the number of variables, the model is less appropriate.
F-statistic	0.5333 (p = 0.6607)	The model is not simultaneously significant.
Number of Observations	90	Number of sample data analyzed.

Evaluation of Regression Model Performance and Methodological Implications

The regression model diagnostic results show very limited explanatory power with an R-squared value of only 1.83%, indicating that the variables used have not been able to capture the dominant factors determining gross domestic product (table 3). The negative adjusted R-squared value further emphasizes the unsuitability of the model specification after taking into account the complexity of the independent variables. The insignificant F-statistic test simultaneously shows that the relationship between human resource quality variables and economic performance is not proven within the framework of this model. These findings lead to the conclusion that it is necessary to reconstruct the model by considering additional explanatory variables and a more comprehensive methodological approach.

Comprehensive Evaluation of Regression Analysis Results

Based on the model diagnostic results obtained, it can be concluded that the variable specifications used are not yet able to adequately explain the dynamics of gross domestic product. The very low R-squared value and negative adjusted R-squared indicate the inadequacy of the model in capturing the factors determining economic growth in the ASEAN region. Furthermore, the insignificance of all independent variables reinforces the assumption that the relationship between human resource quality and economic performance occurs through a more complex mechanism. This finding implies the importance of developing alternative models that take into account intervening variables and other institutional factors in order to gain a more comprehensive understanding.

Tabel 4. Regression Coefficients and Confidence Intervals (95%)

Variabel	Koefisien	Std. Error	t-value	p-value	CI Lower	CI Upper	Significance
Constanta	8.7572	0.6558	13.3541	0.0000	7.4536	10.0609	Significant
SE.TER.ENRR (Higher Education)	-0.0045	0.0047	-0.9597	0.3399	-0.0138	0.0048	Not significant
IC.BUS.EASE.XQ (Ease of Doing Business)	0.0013	0.0069	0.1931	0.8473	-0.0124	0.0150	Not significant
IC.FRM.FEMO.ZS (Women's Ownership)	0.0047	0.0061	0.7810	0.4370	-0.0073	0.0168	Not significant

Evaluation of Classical Assumptions and Model Quality

The results of the classical assumption test (Table 5) show varying conditions in terms of fulfilling the statistical requirements of the regression model. The multicollinearity and heteroscedasticity tests yielded satisfactory results, with no indication of serious problems in either aspect. However, findings of residual distribution abnormalities indicate the presence of outliers or important variables that are not yet covered in the model. Durbin-Watson values close to two confirm the absence of autocorrelation problems in the analysed time series data.

Robustness Analysis and Methodological Implications

A comparison of various model specifications reveals consistent findings regarding the limited explanatory power of the variables used. Both the baseline model and the model with additional control variables show very low predictive power. The addition of interactions between variables, although slightly increasing the R-squared value, is still unable to produce an adequate model (Table 6). These results reinforce the need for a different methodological approach and expansion of the scope of variables to understand the determinants of economic growth in the ASEAN region more comprehensively.

Tabel 5. Classical Assumption Test

Jenis Uji	Statistik / Nilai	p-value	Interpretation
Multikolinearitas (VIF)	Semua VIF < 1.1	—	No indication of multicollinearity
Heteroskedastisitas (White Test)	3.5733	0.9372	Homoscedasticity is satisfied
Normalitas Residu (Anderson-Darling)	2.5844	0.0000	Residuals are not normally distributed
Autokorelasi (Durbin-Watson)	2.1154	—	No autocorrelation (value close to 2)

Tabel 6. Robustness Model Comparison

Model	R-squared	Adj. R-squared	Observasi	Interpretation
Baseline	0.0183	-0.0160	90	Basic model, weak explanation
With Controls	0.0186	-0.0398	90	Adding control variables does not improve accuracy
With Interaction	0.0273	-0.0184	90	Interaction slightly improves R^2 but remains low

Tabel 7. Economic Interpretation (Marginal Effect on GDP per Capita)

Variable	Coefficient	Effect of a 1-Unit Change	Estimated Impact ($)	Significancy	Description
SE.TER.ENRR (Higher Education)	-0.0045	+1% higher education ratio	-34.84	Not significant	Improvements in higher education have no significant impact on GDP.
IC.BUS.EASE.XQ (Ease of Doing Business)	0.0013	+1 unit business ease score	+10.30	Not significant	Increases in business ease scores only slightly improve GDP.
IC.FRM.FEMO.ZS (Women's Empowerment)	0.0047	+1% female ownership	+36.67	Not significant	Female ownership has positive potential but is not yet

Variable	Coefficient	Effect of a 1-Unit Change	Estimated Impact ($)	Significancy	Description
					significant.

Visualization of Regression Results

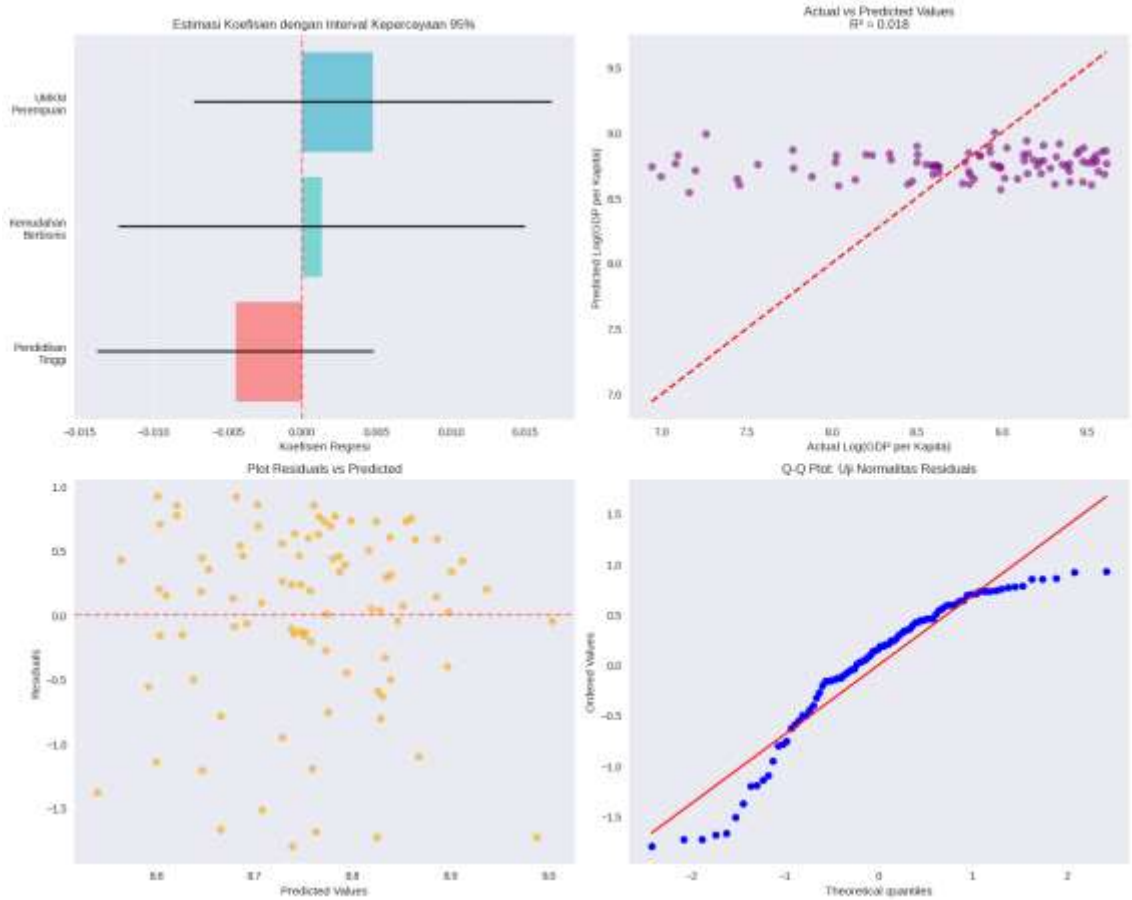


Figure 7. Visualization of Regression Results and Model Diagnostics

In-Depth Analysis of Estimation Results and Model Validity

Visualization of coefficient estimates with confidence intervals shows high uncertainty in the influence of key variables on economic performance (Figure 7). The three main variables show confidence intervals that include zero values, confirming previous findings regarding the statistical insignificance of their influence. The plot of residuals versus predicted values reveals an inconsistent distribution pattern with several prominent outliers. Meanwhile, the Q-Q plot, which shows deviations from a straight line, indicates a violation of the normality assumption in the model's residual distribution.

Evaluation of Prediction Accuracy and Methodological Implications

The relationship between actual and predicted values in the model displays a distribution of points that deviates significantly from the ideal line, reflecting the model's inability to accurately predict economic performance. The very low R-squared value further reinforces the conclusion about the limited explanatory power of the developed model. This finding suggests that there are other determining factors beyond human resource quality variables that play a greater role in determining economic growth. Therefore, a more comprehensive modeling approach that includes other macroeconomic and institutional variables is necessary for further research.

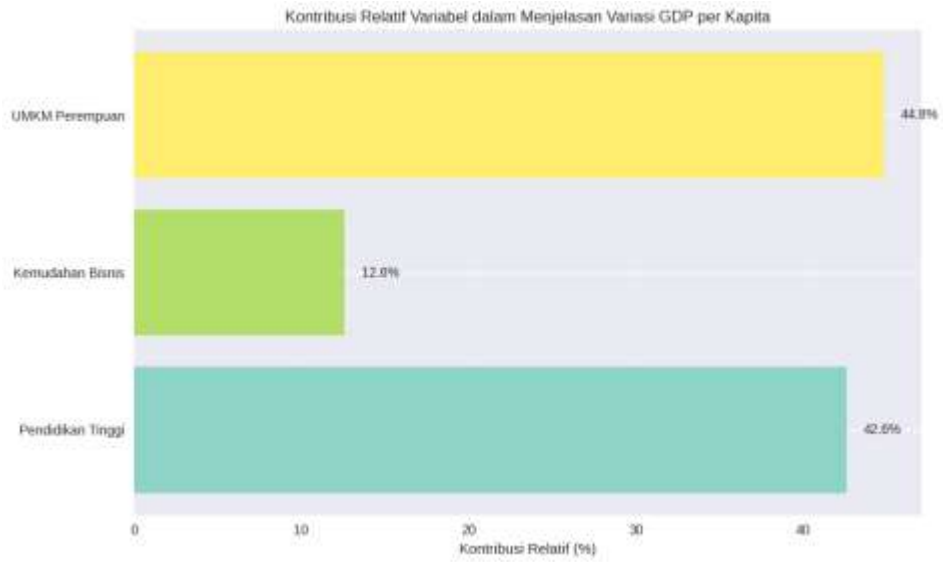


Figure 8. variation in GDP per capita

Analysis of the Relative Contribution of Economic Growth Determinants

Based on the results of relative contribution decomposition, it was revealed that women's participation in MSME ownership had the most dominant influence in explaining the variation in gross domestic product per capita in the ASEAN region. This contribution of 44.8% indicates the significant potential of women's economic empowerment as a driver of regional economic growth. Meanwhile, the variable of higher education contributed 42.6%, reflecting the strategic role of human capital development in boosting economic performance, although it is not yet optimal. On the other hand, a conducive business environment only contributed 12.6%, suggesting that this factor may play a role as an enabler rather than a major driver of economic growth.

CONCLUSIONS

Based on all the analyses that have been conducted, it can be concluded that the relationship between human resource quality and economic performance in the ASEAN region shows complex and unsampled dynamics. Indonesia has recorded remarkable achievements in higher education participation and gender inclusion in the MSME sector, even exceeding the regional average, but these advantages have not been converted into competitive advantages at the macroeconomic level. The regression results reveal that the three main variables higher education, ease of doing business, and female ownership—are not significant in influencing economic growth, with the model only able to explain 1.83% of the variation in GDP per capita. These findings indicate that there are other factors beyond these three variables that play a more important role in driving regional economic growth. Therefore, a more holistic and integrated policy approach is needed to bridge the gap between human resource quality and economic performance.

This study makes an important contribution in mapping Indonesia's strategic position in the context of ASEAN regional competition while identifying priority areas for policy improvement. Despite having adequate human capital, Indonesia still faces serious challenges in terms of economic productivity and international trade integration, as reflected in the gap in GDP per capita and export performance, which still lags behind. The diagnostic results of the model, which reveal various methodological limitations, indicate the need to develop a more comprehensive analytical framework that takes into account intervening and moderating variables. Going forward, the research agenda needs to be directed towards exploring institutional factors, governance quality, and technological innovation to complement the analysis of human resource quality. The policy recommendations generated from this study are expected to serve as a guide for stakeholders in formulating more effective and sustainable development strategies.

REFERENCES

Abbas, Ali, Imad Moosa, and Vikash Ramiah. 2021. "The Contribution of Human Capital to Foreign Direct Investment Inflows in Developing Countries." *Journal of Intellectual Capital* 23 (1): 9–26. https://doi.org/10.1108/JIC-12-2020-0388.

Abbas, Jawad, and Kalpina Kumari. 2021. "Examining the Relationship between Total Quality Management and Knowledge Management and Their Impact on Organizational Performance: A Dimensional Analysis." *Journal of Economic and Administrative Sciences* 39 (2): 426–51. https://doi.org/10.1108/JEAS-03-2021-0046.

Alexandro, Rinto. 2025. "Strategic Human Resource Management in the Digital Economy Era: An Empirical Study of Challenges and Opportunities among MSMEs and Startups in Indonesia." *Cogent Business & Management* 12 (1): 2528436. https://doi.org/10.1080/23311975.2025.2528436.

Darmawan, Ludi, Rossilah Jamil, and Christopher J Rees. 2023. "Human Resource Management and Corporate Social Responsibility: A Case Study of a Vocational and Education Training (VET) Programme in Indonesia." *Industrial and Commercial Training* 55 (4): 457–69. https://doi.org/10.1108/ICT-11-2022-0080.

Diebolt, Claude, and Ralph Hippe. 2022. "The Long-Run Impact of Human Capital on Innovation and Economic Growth in the Regions of Europe." In *Human Capital and Regional Development in Europe: A Long-Run Comparative View*, 85–115. Cham: Springer International Publishing. https://doi.org/10.1007/978-3-030-90858-4_5.

Hamid, Nurdjanah, and Ida Bagus Anom Purbawangsa. 2022. "Impact of the Board of Directors on Financial Performance and Company Capital: Risk Management as an Intervening Variable." *Journal of Co-Operative Organization and Management* 10 (2): 100164. https://doi.org/https://doi.org/10.1016/j.jcom.2021.100164.

Hidthiir, Mohammad Helmi bin, Zaki Ahmad, Mohd Zukime Mat Junoh, and Mohd Faizal Bin Yusof. 2024. "Dynamics of Economic Growth in ASEAN-5 Countries: A Panel ARDL Approach." *Discover Sustainability* 5 (1): 145. https://doi.org/10.1007/s43621-024-00351-x.

Li, ChangZheng, Asif Razzaq, Ilhan Ozturk, and Arshian Sharif. 2023. "Natural Resources, Financial Technologies, and Digitalization: The Role of Institutional Quality and Human Capital in Selected OECD Economies." *Resources Policy* 81:103362. https://doi.org/https://doi.org/10.1016/j.resourpol.2023.103362.

Madu, Ludiro, and Yudhy Widya Kusumo. 2024. "The 2023 ASEAN Chairmanship and Indonesia's Foreign Policy: Implications for Regional Diplomacy in Southeast Asia BT - Proceedings of the 2nd International Conference on Advance Research in Social and Economic Science (ICARSE 2023)." In , 663–74. Atlantis Press. https://doi.org/10.2991/978-2-38476-247-7_67.

Nguyen, Thi A. 2022. "Financial Development, Human Resources, and Economic Growth in Transition Countries." *Economies*. https://doi.org/10.3390/economies10060138.

Rastogi, Shailesh, Kuldeep Singh, and Jagjeevan Kanoujiya. 2023. "Do Countries Capture Their Inclusive Growth, Sustainability, and Poverty Correctly? A Study on Statistical Performance Indicators Defined by World Bank." *Social Responsibility Journal* 19 (10): 1935–51. https://doi.org/10.1108/SRJ-12-2022-0553.

Seitzer, Helen, Chanwoong Baek, and Gita Steiner-Khamsi. 2024. "Instruments of Lesson-Drawing: Comparing the Knowledge Brokerage of the OECD and the World Bank." *Policy Studies* 45 (6): 839–59. https://doi.org/10.1080/01442872.2023.2220282.

Shittu, Waliu Olawale, Hammed Oluwaseyi Musibau, and Sodiq Olaiwola Jimoh. 2022. "The Complementary Roles of Human Capital and Institutional Quality on Natural Resource - FDI—Economic Growth Nexus in the MENA Region." *Environment, Development and Sustainability* 24 (6): 7936–57. https://doi.org/10.1007/s10668-021-01767-5.

Spyromitros, Eleftherios, and Minas Panagiotidis. 2022. "The Impact of Corruption on Economic Growth in Developing Countries and a Comparative Analysis of Corruption Measurement Indicators." *Cogent Economics & Finance* 10 (1): 2129368. https://doi.org/10.1080/23322039.2022.2129368.

Vîrjan, D, A M Manole, M R Stanef-Puică, A S Chenic, C M Papuc, D Huru, and C S Bănacu. 2023. "Competitiveness—the Engine That Boosts Economic Growth and Revives the Economy." *Frontiers in Environmental Science* Volume 11-2023. https://doi.org/10.3389/fenvs.2023.1130173.

Waldt, Gerrit van der, and David Fourie. 2022. "Ease of Doing Business in Local Government: Push and Pull Factors for Business Investment in Selected South African Municipalities." *World*. https://doi.org/10.3390/world3030025.

Welch, Anthony, and E Aminudin Aziz. 2021. "Higher Education in Indonesia BT - International Handbook on Education in South East Asia." In , edited by Lorraine Pe Symaco and Martin Hayden, 1–30. Singapore: Springer Nature Singapore. https://doi.org/10.1007/978-981-16-8136-3_41-1.

Ze, Fu, Wence Yu, Anis Ali, Sanil S Hishan, Iskandar Muda, and Khurshid Khudoykulov. 2023. "Influence of Natural Resources, ICT, and Financial Globalization on Economic Growth: Evidence from G10 Countries." *Resources Policy* 81:103254. https://doi.org/https://doi.org/10.1016/j.resourpol.2022.103254.

Zhang, Yi, Sanjay Kumar, Xianhai Huang, and Yiming Yuan. 2023. "Human Capital Quality and the Regional Economic Growth: Evidence from China." *Journal of Asian Economics* 86:101593. https://doi.org/https://doi.org/10.1016/j.asieco.2023.101593.