

Analysis Productivity Labor in Indonesia

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Abstract: *In the ASEAN context, the Republic of Indonesia ranks fourth in labor productivity within the region, reflecting ongoing complex challenges in optimizing its labor sector. Despite being endowed with abundant labor resources, Indonesia's labor productivity lags behind several ASEAN neighbors, influenced by factors such as education gaps, skills mismatches, and uneven regional development. This study aims to identify Indonesian provinces falling into the optimal category of labor productivity based on key criteria: Gender Development Index, Health, Minimum Wage, and Investment. The novelty lies in explaining how Indonesia's regional characteristics form diverse pathways that illustrate the optimization potential of these regions. The objective of this study focuses on examining the conditions of regional characteristics associated with optimal labor productivity. This research uses a continuous analysis method known as Crisp-set Qualitative Comparative Analysis (csQCA). csQCA specializes in analyzing binary data to identify multiple causal patterns logically and holistically. It uses Boolean algebra to simplify complex data sets, revealing how different combinations of conditions relate to outcomes. The objects studied were 34 provinces in Indonesia in 2023. The results showed that provinces with optimal Gender Development Index conditions are located in the DKI Jakarta area with the flagship Transjakarta Pink program. In addition, the optimal Good Health Operational (BOK) conditions are in the Southeast Sulawesi region through the flagship program of the Mobile Health Service Program. Optimal wage conditions were observed in 19 provinces as a result of government policies in maintaining people's purchasing power.*

Keywords: BOK, Gender Development Indeks, Investment PMDN PMA, Labor Productivity, Provincial Minimum Wage (UMP) ; QCA

JEL: J3; J4; J5

1. INTRODUCTION

Development is a process of change carried out by every country, which is considered necessary in order to achieve progress for the nation (Juliannisa & Siswantini, 2021). Economic development refers to efforts to improve the standard of living of a country's population, which is related to sustainable economic growth. Economic development focused on regencies/cities in Indonesia has been carried out with the aim of advancing the region (Juliannisa & Siswantini, 2021).

One of the key factors in achieving successful development in a country is labor productivity, which can be measured by high economic growth rates and a close relationship with the quality of human resources. Quality human resources play a very important role in supporting various national development activities. A country's economic development is essentially the result of the interaction between various groups of variables, including natural resources, capital, human resources, technology, and other factors (Widiasih & Yuliarmi, 2022).

In Adam Smith's work published in 1776 and titled "An Inquiry into the Nature and Causes of The Wealth of Nations," there is a theory known as the Labor Theory of Value. This theory argues that the greater the capital used, the greater the likelihood of specialization and division of labor, which ultimately increases labor productivity. This increase in productivity has the potential to improve individual well-being and living standards (Puspasari, 2020). This is because when workers receive incentives that align with their interests and needs, they tend to work more diligently. Thus, these incentives are expected to drive increased labor productivity, which in turn

increases output. This increase in output further encourages producers to provide higher wages as incentives to employees (Maria, 2012).

One of the most important indicators in measuring a country's economic progress is labor productivity. In line with Sustainable Development Goal (SDG) 8 on Decent Work and Economic Growth, improving labor productivity is a top priority for achieving inclusive and sustainable economic growth. Resilient and sustainable economic growth can only be realized through the availability of decent work, productive employment opportunities, and a supportive work environment. From a macroeconomic perspective, productivity that contributes to profits will drive a country's economic growth. This will ultimately bring well-being to society and contribute to decent income for workers (Ponto, 2023).

Sustainable Development Goal (SDG) 8 focuses on promoting sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all. Improving labor productivity is a central component of this goal. If a more formal academic rewrite or referencing is needed, that can also be provided gender inclusive policies reduce disparities, promote equal pay, and support women's participation in labor markets, as emphasized in the targets of SDG 8. Additionally, investments in healthcare, occupational health and safety, and workplace wellness programs help reduce absenteeism and improve work performance. Providing workers with access to healthcare ensures they can maintain high productivity levels and contribute effectively to economic activities. To enhance labor motivation, setting a fair minimum wage encourages workers to exert effort and increases their commitment. Adequate wages improve living standards, reduce poverty, and stimulate consumption, thereby benefiting economic growth. Wage policies should balance fairness with labor market dynamics to sustain employment and productivity. Furthermore, investment in skills development, technology, infrastructure, and innovation drives productivity growth. Training programs improve workers' skills; technological upgrades increase efficiency; and sustainable investments in labor-intensive and high-value-added sectors boost output and economic diversification (UNDP, 2020).

The World Bank acknowledges that Indonesia is among the countries with the highest labor force in the world, ranking fourth. Although Indonesia has a significant labor force, this poses challenges related to labor productivity in the country. Based on data from the International Labor Organization (ILO) in 2023, labor productivity in Indonesia remains an issue that requires serious attention.

Table 1. Title Labor Productivity and Gross Domestic Product of ASEAN Countries (in dollars) in 2023

No	Country	Labour Productivity Rate per Hour
1	Singapore	\$ 74
2	Brunei Darussalam	\$ 49.00
3	Malaysia	\$ 26.00
4	Thailand	\$ 15.00
5	Indonesia	\$ 14.00
6	Vietnam	\$ 10.00
7	Philippines	\$ 10.00
8	Lao People's	\$ 9.00
9	Myanmar	\$ 5.00
10	Cambodia	\$ 4.00

Source: ASEAN (2023)

Based on Table 1, there are variations in labor productivity and GDP figures in the ten ASEAN countries according to their regions, using dollars as the international standard to facilitate comparisons between countries. In the figure, Indonesia ranks fifth among the ten ASEAN countries. Indonesia's productivity level is below that of Singapore, Brunei Darussalam, Thailand, and Malaysia; however, Indonesia has a higher GDP level compared to other ASEAN countries. This is due to its very large labor force population, while the contribution per individual tends to be small, resulting in relatively low labor productivity despite its relatively high total GDP.

Factors that can trigger high labor productivity include gender equality in improving the quality of education and health (Rahmawati & Hidayah, 2020). In Indonesia, in 2023, the percentage of female formal workers in the workforce is still relatively low, at only 35.75% (Badan Pusat Statistik, 2024). In addition, the labor force participation rate for women is also much lower, reaching only 54.52%, compared to the labor force participation rate (LFPR) for men, which was 84.26% in the same year (Badan Pusat Statistik, 2024). Time allocation constraints are one of the reasons women choose to leave their jobs, resulting in lower labor force participation rates for women compared to men (Hidayat & Ash Shidiqie, 2024).

In an effort to measure gender development in Indonesia, one of the instruments used is the Gender Development Index (GDI). The Gender Development Index is calculated using components found in the Human Development Index (HDI). These components include health indicators, such as Life Expectancy (LE), education indicators, which include Expected Years of Schooling (EYS) and Average Years of Schooling (AYS), and economic indicators represented by real per capita expenditure (Badan Pusat Statistik Kabupaten Purwakarta, 2024).

Table 2. Graph of Labor Productivity and Gender Development Index of Provinces in Indonesia in 2023

No	Provinces	Gender Development Index
1	Aceh	92.55
2	Sumatera Utara	91.31
3	Sumatera Barat	94.93
4	Riau	88.98
5	Jambi	89.29
6	Sumatera Selatan	93.25
7	Bengkulu	91.57
8	Lampung	90.75
9	Bangka Belitung	89.84
10	Kepulauan Riau	93.96
11	Dki Jakarta	95.24
12	Jawa Barat	90.23
13	Jawa Tengah	92.87
14	D I Yogyakarta	94.93
15	Jawa Timur	92.15
16	Banten	92.48
17	Bali	94.59
18	Nusa Tenggara Barat	91.39
19	Nusa Tenggara Timur	93.38
20	Kalimantan Barat	88.06
21	Kalimantan Tengah	89.49
22	Kalimantan Selatan	89.65
23	Kalimantan Timur	87.13
24	Kalimantan Utara	88.46
25	Sulawesi Utara	95.06
26	Sulawesi Tengah	92.63
27	Sulawesi Selatan	93.19
28	Sulawesi Tenggara	91.2
29	Gorontalo	88.25
30	Sulawesi Barat	90.25
31	Maluku	93.51
32	Maluku Utara	90.59
33	Papua Barat	84.18
34	Papua	81.64

Source: ASEAN (2023) Indonesian Central Statistics Agency (BPS), 2023

The high Gender Development Index (GDI) in Riau, West Sumatra, and Bengkulu provinces is not matched by adequate labor productivity. There is a significant imbalance reflected in the percentage of job vacancies available to men and women. In Riau Province, the percentage of job vacancies for women is only 2%, compared to 23.3% for job vacancies that are not gender-specific.

In West Sumatra Province, the percentage of job vacancies for women is recorded at 0.6%, while job vacancies for men and women reach 21%. Meanwhile, in Bengkulu Province, the percentage of job vacancies for women is only 0.2%, while for general job vacancies for men and women accounted for 57.4% (Kementerian Ketenagakerjaan Republik Indonesia, 2024).

Health issues, in addition to gender equality, are very important to study. Health conditions are a crucial aspect for workers in increasing productivity, which aims to improve the quality of life of individuals and the development of society as a whole. Health Operational Assistance has become the government's main instrument in improving access to and quality of health services through the development of medical facilities and disease prevention programs (Amalia & Juliannisa, 2024).

Table 3. Graph of Labor Productivity and Health Operational Assistance Funds (in billions) by Province in Indonesia in 2023

No	Provinces	Dana Bantuan Operasional Kesehatan	
1	Aceh	Rp	8,970,104
2	Sumatera Utara	Rp	18,310,642
3	Sumatera Barat	Rp	4,627,615
4	Riau	Rp	9,205,127
5	Jambi	Rp	6,102,226
6	Sumatera Selatan	Rp	13,402,291
7	Bengkulu	Rp	4,979,352
8	Lampung	Rp	16,287,980
9	Bangka Belitung	Rp	4,343,579
10	Kepulauan Riau	Rp	5,709,890
11	Dki Jakarta	Rp	9,520,164
12	Jawa Barat	Rp	37,191,527
13	Jawa Tengah	Rp	41,869,116
14	D I Yogyakarta	Rp	3,361,198
15	Jawa Timur	Rp	45,541,856
16	Banten	Rp	15,274,000
17	Bali	Rp	6,178,942
18	Nusa Tenggara Barat	Rp	16,022,835
19	Nusa Tenggara Timur	Rp	17,936,156
20	Kalimantan Barat	Rp	11,049,526
21	Kalimantan Tengah	Rp	10,653,934
22	Kalimantan Selatan	Rp	10,955,815
23	Kalimantan Timur	Rp	6,295,205
24	Kalimantan Utara	Rp	4,407,287
25	Sulawesi Utara	Rp	6,212,409
26	Sulawesi Tengah	Rp	11,147,812
27	Sulawesi Selatan	Rp	16,462,555
28	Sulawesi Tenggara	Rp	7,970,755
29	Gorontalo	Rp	3,963,587
30	Sulawesi Barat	Rp	5,061,222
31	Maluku	Rp	9,750,391
32	Maluku Utara	Rp	7,065,369
33	Papua Barat	Rp	9,930,966
34	Papua	Rp	14,794,419

Source: ASEAN (2023) Indonesian Central Statistics Agency (BPS), 2023

Based on Table 3, West Java, Central Java, and East Java provinces have the highest BOK Fund Allocation in Indonesia in 2023, because these three provinces had the highest stunting rates in 2022. West Java reported 971,792 cases, followed by East Java with 651,708 cases, and Central Java with 508,618 cases. Stunting rates are influenced by malnutrition, which hinders growth, primarily due to insufficient nutrient intake, particularly protein and iron, during pregnancy and early childhood.

The high prevalence of stunting in West Java, Central Java, and East Java provinces indicates that these provinces are unable to adequately meet food needs, commonly referred to as food insecurity. Food Insecurity directly contributes to inadequate nutrient intake, which can increase stunting cases in a region. This aligns with research conducted by (Juliannisa, Rahma, Mulatsih, et al., 2025) who stated that West Java, East Java, and Central Java provinces, despite being the largest rice-producing regions, have a large consumer base, making these three provinces highly sensitive and vulnerable to food shortages (Juliannisa, Rahma, & Mulatsih, 2025).

Productivity is expected to increase along with wage increases. This relationship is supported by Keynes' consumption theory, which states that the higher a person's income, the greater their consumption and savings. Wage increases can play a role in increasing worker motivation, so that workers will be encouraged to develop their skills and experience (Chairunnisa & Juliannisa, 2022)

Table 4. Graph of Labor Productivity and Minimum Wage in Provinces in Indonesia (in millions) in 2023

No	Provinces	UMP
1	Aceh	Rp 3,413,666
2	Sumatera Utara	Rp 2,710,494
3	Sumatera Barat	Rp 2,742,476
4	Riau	Rp 3,191,663
5	Jambi	Rp 2,943,033
6	Sumatera Selatan	Rp 3,404,177
7	Bengkulu	Rp 2,418,280
8	Lampung	Rp 2,633,285
9	Bangka Belitung	Rp 3,498,479
10	Kepulauan Riau	Rp 3,279,194
11	Dki Jakarta	Rp 4,901,798
12	Jawa Barat	Rp 1,986,670
13	Jawa Tengah	Rp 1,958,170
14	D I Yogyakarta	Rp 1,981,782
15	Jawa Timur	Rp 2,040,244
16	Banten	Rp 2,661,280
17	Bali	Rp 2,713,672
18	Nusa Tenggara Barat	Rp 2,371,407
19	Nusa Tenggara Timur	Rp 2,123,994
20	Kalimantan Barat	Rp 2,608,602
21	Kalimantan Tengah	Rp 3,181,013
22	Kalimantan Selatan	Rp 3,149,978
23	Kalimantan Timur	Rp 3,201,396
24	Kalimantan Utara	Rp 3,251,703
25	Sulawesi Utara	Rp 3,485,000
26	Sulawesi Tengah	Rp 2,599,546
27	Sulawesi Selatan	Rp 3,385,145
28	Sulawesi Tenggara	Rp 2,758,985
29	Gorontalo	Rp 2,989,350
30	Sulawesi Barat	Rp 2,871,795
31	Maluku	Rp 2,812,828
32	Maluku Utara	Rp 2,976,720
33	Papua Barat	Rp 3,282,000
34	Papua	Rp 3,864,696

Source: Central Statistics Agency (BPS) Indonesia, 2023

The province of Nangroe Aceh Darussalam in 2023 indicates that the provincial minimum wage is high but labor productivity is low. The increase in the minimum wage in Aceh Province aims to realize the rights of workers/laborers to a decent living in order to maintain the purchasing power of the community, but there is still a significant problem of unemployment at the end of 2021. The high unemployment rate is due to the limited availability of job opportunities, while the labor supply continues to grow (Badan Pusat Statistik Banda Aceh, 2023). North Sumatra Province also increased its UMP in 2023, as the unstable economic conditions had a significant impact on the decision to raise the UMP in 2023 (Government of North Sumatra Province, 2022).

Not only IPG, health, and wages can increase labor productivity, but investment in a country can also create jobs that will help absorb labor and create labor productivity. Investment can take the form of physical investment or investment in human resources. Investment involves the allocation of funds for infrastructure, technology, education, and training, which can influence the workforce's ability to produce greater and more efficient output. Foreign Direct Investment (FDI) and Domestic Direct Investment (DDI) are the two main forms of investment that play a crucial role in driving economic development, particularly through infrastructure development, technology advancement, and improvements in workforce quality.

Table 5. Graph of Labor Productivity and Investment (in rupiah) in Provinces in Indonesia in 2023

No	Provinces	Investment
1	Aceh	Rp 9,132
2	Sumatera Utara	Rp 22,755
3	Sumatera Barat	Rp 4,609
4	Riau	Rp 50,286
5	Jambi	Rp 8,984
6	Sumatera Selatan	Rp 27,081
7	Bengkulu	Rp 7,295
8	Lampung	Rp 7,846
9	Bangka Belitung	Rp 8,034
10	Kepulauan Riau	Rp 9,621
11	Dki Jakarta	Rp 100,032
12	Jawa Barat	Rp 96,297
13	Jawa Tengah	Rp 34,551
14	D I Yogyakarta	Rp 5,062
15	Jawa Timur	Rp 79,678
16	Banten	Rp 42,423
17	Bali	Rp 7,759
18	Nusa Tenggara Barat	Rp 31,235
19	Nusa Tenggara Timur	Rp 3,532
20	Kalimantan Barat	Rp 15,383
21	Kalimantan Tengah	Rp 9,477
22	Kalimantan Selatan	Rp 15,237
23	Kalimantan Timur	Rp 53,504
24	Kalimantan Utara	Rp 9,471
25	Sulawesi Utara	Rp 7,902
26	Sulawesi Tengah	Rp 12,017
27	Sulawesi Selatan	Rp 11,805
28	Sulawesi Tenggara	Rp 8,183
29	Gorontalo	Rp 3,994
30	Sulawesi Barat	Rp 2,035
31	Maluku	Rp 2,011
32	Maluku Utara	Rp 11,899
33	Papua Barat	Rp 1,291
34	Papua	Rp 1,182

Source: Central Statistics Agency (BPS Indonesia), 2023

East Java Province has high investment but low labor productivity due to the low quality of its workforce, which is unable to utilize 4.0 Industrial Revolution technology (BP2D Jawa Timur, 2023). West Java Province has high investment, but this has not been accompanied by job creation, resulting in low labor productivity (Bp2d Jawa Barat, 2023).

This study addresses an existing research gap, noting that few journal articles have investigated the characteristics of optimal regional conditions for worker productivity. Furthermore, research on investment in workers remains very limited in the literature, which this study aims to elucidate. This study addresses a significant gap in the existing literature by focusing on the characteristics of regional conditions that optimize worker productivity, an area that has received limited attention in previous research. While many studies explore productivity, few have specifically examined how regional factors influence worker output. Moreover, investment in workers such as training, welfare, and development has been minimally addressed in academic journals. This study aims to fill these gaps by providing detailed insights into how optimal regional conditions and worker investments contribute to productivity improvements, thereby enriching the understanding of labor productivity dynamics at the regional level. This approach contributes to policy formulation and practical strategies to enhance workforce efficiency and regional economic performance.

Based on the above background regarding labor productivity, the author conducted research on “Analysis of Labor Productivity Conditions in Indonesia.”

2. LITERATURE REVIEW

2.1. Productivity Labor

Smith stated that this process begins with the division of labor. The division of labor will affect how much of the factors of production can be used and how much can be produced from those factors. The labor theory of value determines the use of production factors, especially labor. This theory states that a person will work optimally if the incentives they receive are in line with their desires and needs in life (Sari, 2022).

According to the United Nations Development Programme (UNDP), such alignment is crucial for motivating increased labor productivity, which subsequently boosts overall production. UNDP emphasizes that providing fair wages and appropriate incentives encourages workers to contribute more effectively, fueling economic growth and inclusive development. This cycle of incentive, productivity, and output underscores the importance of human capital investment and social protection policies to ensure sustainable livelihoods and equitable growth in both formal and informal labor markets (UNDP, 2020).

2.2. Economic Development

Adam Smith's theory in his book entitled “An Inquiry into the Nature and Causes of the Wealth of Nations” (1776) also discusses economic development issues. Smith argues that economic development is a process driven by increased productivity and market expansion triggered by population growth. He believed that population growth could expand markets, which in turn enabled a high degree of specialization among the workforce. Smith emphasized that the division of labor was central to his theory, as efficient task division increased labor productivity, thereby accelerating the overall pace of economic development (Srihidayati & Suhaeni, 2022).

2.3. Economic Growth

Adam Smith's theory, presented in his seminal work *An Inquiry into the Nature and Causes of the Wealth of Nations* (1776), underscores the pivotal role of population growth and specialization through the division of labor in driving economic growth. According to Smith, labor constitutes one of the key inputs in the production process, and the division of labor—where complex tasks are broken down into simpler, specialized ones performed by different workers—is central to increasing labor productivity. Smith famously illustrated this concept with his example of a pin factory, where dividing the production process into distinct tasks allowed a small group of workers to manufacture vastly more pins collectively than if each worker attempted to make pins independently. This specialization enhances workers' dexterity, skill, and

efficiency, contributing directly to greater output and economic expansion. Furthermore, Smith linked the division of labor to the expansion of markets, since specialization increases productivity and output, which require broader exchange systems. He noted that this process emerges naturally from human propensity to trade, enabling individuals to benefit from others' specialized productive efforts without intending the overall societal benefit—a concept of spontaneous order. Over time, this specialization leads to technological innovation and capital accumulation, both reinforcing economic growth. Thus, the division of labor fosters economic development by improving workers' abilities through repetitive focus on tasks, increasing output per worker, and facilitating market growth through enhanced exchange and cooperation. This classical theory remains foundational in understanding productivity and growth dynamics, emphasizing how labor specialization and market expansion together promote sustained economic progress (Srihidayati & Suhaeni, 2022).

2.4. Gender

The Equilibrium Theory proposed by Richard Henry Tawney emphasizes the critical importance of partnership and harmony in the relationships between women and men, advocating for cooperation grounded in mutual respect and social justice. Tawney's vision aligns with international development goals that highlight gender equality as a foundation for sustainable development. According to the International Labour Organization (ILO) 2017, fostering harmonious gender relations in workplaces improves productivity and social cohesion. The World Bank similarly stresses that gender partnership is key to economic growth and poverty reduction. Furthermore, the United Nations Development Programme (UNDP) underscores gender equality and harmonious interactions as essential for inclusive development and peacebuilding, reflecting Tawney's call for social cooperation based on equality, respect, and shared purpose among all people. This convergence underlines the enduring relevance of Tawney's theory in contemporary development frameworks (Kartini & Maulana, 2019). This view asserts that gender, which includes women and men, must collaborate in cooperation and harmony in the life of a nation (Kartini & Maulana, 2019).

2.5. Health

In supporting a country's development, human resources with sufficient knowledge and competence in various fields of expertise are needed. Therefore, standards are needed to assess human development capacity, which form the basis for the parameters set by the United Nations Development Programme (UNDP). In Indonesia, since 2014, there has been a change in the method of calculating the Human Development Index (HDI). This calculation technique follows the standards used by the UNDP, which include three main components: health index, education index, and purchasing power index. Improved health will contribute to increased labor productivity (Schultz, 1961).

2.6. Wage

The Efficiency Wage Theory was proposed by John Maynard Keynes, who stated, "High wages can make workers more productive." Labor productivity and wage levels have a direct relationship, meaning that when wages increase, workers will perform better and labor productivity will improve. The determination of the Minimum Wage (UMP) takes into account the sum of inflation, the product of economic growth, and the alpha coefficient, which reflects the contribution of labor to economic growth. Contracted economic growth has impacted economic productivity and consumption levels (Juliannisa et al., 2023).

2.7. Investment

The Solow-Swan theory states that the ratio of capital to output is demand-driven, meaning that to achieve a certain level of output, capital and labor must be balanced. Low labor use, and conversely, low capital use will result in high labor use. Additionally, this theory emphasizes that in the production function, there is technology related to involving production factors such as

capital and labor. As capital use increases, it will create job opportunities, thereby implying a boost in labor productivity (Pratama & Projo, 2024).

This study examines labor productivity across Indonesia's 34 provinces using four key variables: the Gender Development Index (GDI), Health Operational Assistance Funds (BOK), Provincial Minimum Wage (UMP), and investment combining both domestic (PMDN) and foreign (PMA) sources. Drawing on Adam Smith's Labor Theory of Value, investments in education, health, and gender equality are essential for enhancing human capital and economic productivity. When these factors are optimized, they strengthen labor capacity, reduce unemployment, and support long-term economic growth. The study employs Qualitative Comparative Analysis (QCA) to identify effective condition combinations that drive labor productivity, offering strategic insights for more equitable and sustainable development.

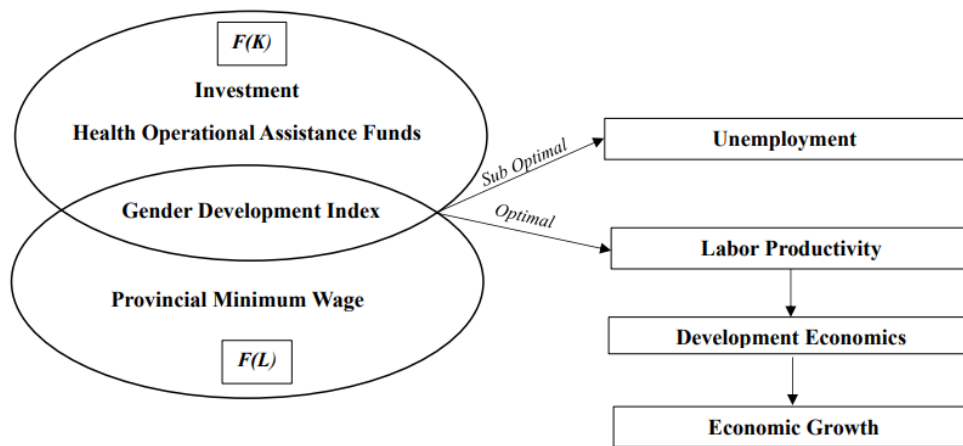


Figure 1. Research Model

3. METHOD

3.1. Population and Sample

The population in this study is the condition of labor productivity in Indonesia in 2023, which variables measured as causal condition are: Gender Development Index, Health conditions measured using the amount of fund allocation for health, Wage Levels, and Investment using Domestic Investment and Foreign Investment. The sample used in 34 provinces from 38 provinces as population.

3.2. Data Analysis Technique

Crisp Set Qualitative Comparative Analysis (csQCA) is a research method used to analyze causal relationships by categorizing variables as either present or absent, using binary data coded as 1 or 0. Developed by Charles Ragin in the late 1980s, csQCA applies Boolean algebra to identify patterns and combinations of conditions that lead to specific outcomes. Unlike traditional statistical methods, csQCA focuses on identifying multiple pathways or configurations that produce an outcome, rather than isolating individual variables. This approach is particularly useful for small to medium-sized sample cases and helps reveal complex causality in social sciences and policy research. In determining the data analysis technique, the author chose to use Crip-set QCA (csQCA) by illustrating it in a simple framework where raw data is presented using binary Boolean notation, namely "1" and "0" (none).

4. RESULTS AND DISCUSSION

4.1. Consistency and Coverage Test Results

Province	IPG	BOK	UMP	INV	Labor Productivity Level
Bangka Belitung Islands , Gorontalo , West Sulawesi	0	0	1	0	C
North Kalimantan	0	0	1	1	1
Lampung	0	1	0	0	0
West Java, West Kalimantan	0	1	0	1	0
Jambi, West Papua, Papua, Riau, Central Kalimantan , South Kalimantan, East Kalimantan , North Maluku	0	1	1	0	1
West Sumatera, Bengkulu, Yogyakarta	1	0	0	0	0
Riau Island	1	0	1	1	1
Bali, East Nusa Tenggara, Southeast Sulawesi	1	1	0	0	C
North Sumatera, Central Java, East Java, Banten, West Nusa Tenggara, Central Sulawesi	1	1	0	1	C
North Sulawesi, Maluku	1	1	1	0	C
Aceh, South Sumatera, Jakarta, South Sulawesi	1	1	1	1	C

Source: Tosmana Data Processing Results

Based on the truth table, it can be analyzed that from IPG, BOK Funds, UMP, and Investment through consistency testing, there are 12 pathways in classification between labor productivity levels and IPG, BOK Funds, UMP, and Investment conditions. The truth table shows that there are 3 (three) conditions of IPG, BOK Fund, UMP, and Investment that influence labor productivity levels, and 6 (six) conditions of IPG, BOK Fund, UMP, and Investment that are contradictory.

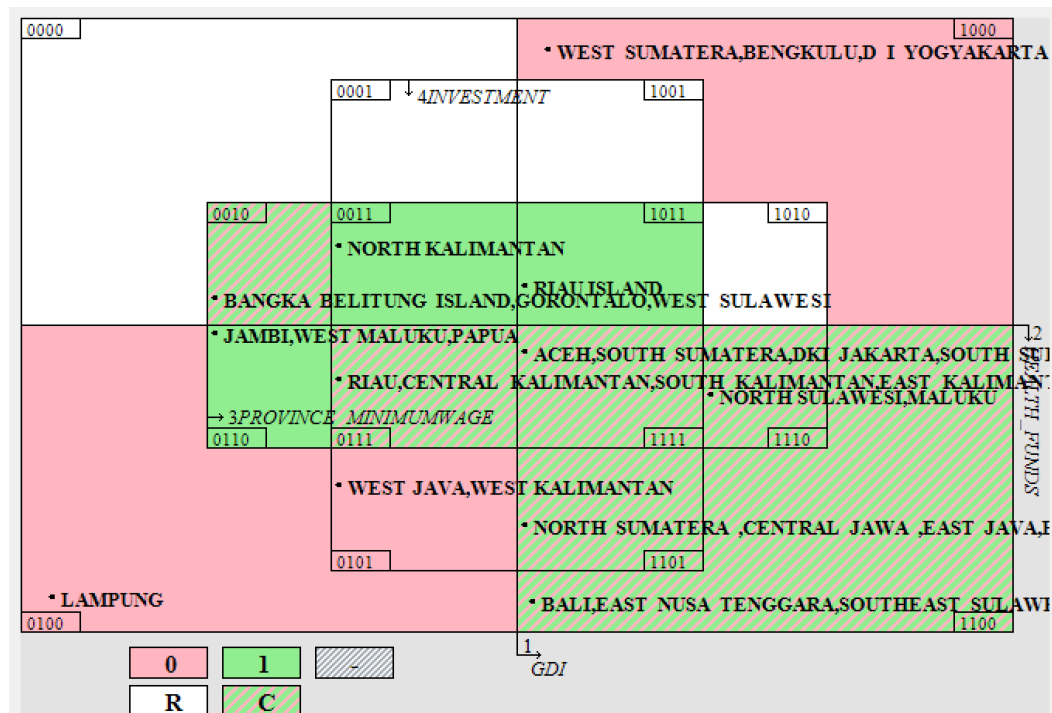


Figure 1. Economic growth rate in Indonesia, 1985-2018 (%)

Source: Tosmana Data Processing Results

1. A value of “0” (marked in pink) indicates the absence of an outcome.
2. A value of “1” (marked in green) indicates the presence of an outcome.
3. The symbol C, which indicates a shaded area, reflects contradictory outcomes.
4. This indicates that Labor Productivity has conditions that can be influenced by factors such as gender development, health, wages, and investment; however, in practice, the results do not meet these expectations.

4.2. Economic Analysis and Discussion

That from the conditional clauses, there are optimal regions that contribute to influencing labor productivity levels in provinces in Indonesia. In this analysis, five provinces were found to have optimal values, including the Riau Islands Province, North Kalimantan Province, West Papua Province, Papua Province, and Jambi Province. This condition indicates that the IPG, BOK Fund, UMP, and Investment conditions in some provinces in Indonesia can explain optimal labor productivity. The table below shows the quantity and ranking of optimal labor productivity in Indonesia.

Riau Islands Province recorded Labor Productivity of 196.25, a high figure reflecting good performance in terms of labor productivity. Based on the results of the csQCA method, the Riau Islands Province is in a condition that shows optimal outcomes (1), with three conditions IPG, UMP, and Investment having optimal values (1) in contributing positively to labor productivity. The success of the Riau Islands Province in achieving this optimal condition is inseparable from effective government policies and programs on related indicators, as follows:

1. Gender Development Index (GDI), to improve the GDI, the Riau Islands Provincial Government has implemented a program called “Capacity Building for Women in Politics.” This program aims to help women develop their potential in speaking, managing, and leading organizations, thereby motivating them to build their self-confidence (Pemerintah Provinsi Kepulauan Riau, 2021).

2. Provincial Minimum Wage (UMP), in 2023, the Riau Islands Government considered the uncertain economic conditions in 2023 and the high open unemployment rate in the Riau Islands in 2022, which stood at 8.23% (Pemerintah Provinsi Kepulauan Riau, 2022). Additionally, the government considered inflation of 6.79% and economic growth of 4.79% (Pemerintah Provinsi Kepulauan Riau, 2022). With rising inflation, the government needs to increase the minimum wage to maintain workers' purchasing power so that they can continue to meet their basic needs. Therefore, the Riau Islands government increased the UMP by Rp 229,022 in 2023, bringing the 2023 UMP in Riau Islands to Rp 3,279,194 per month (Pemerintah Provinsi Kepulauan Riau, 2022).
3. Investment, in 2023, investment conditions are rated as (1) or optimal in contributing positively to labor productivity. This is supported by the Riau Islands Province's achievement in realizing higher investment compared to 2022, with 20.16% realized in 2023 and 18.22% realized in 2022 (Pemerintah Provinsi Kepulauan Riau, 2023). The highest FDI realization in 2023 was \$237,281,100 in the machinery, electronics, instruments, medical equipment, electrical equipment, precision instruments, optics, and watches industry, while the realization of domestic investment (PMDN) in 2023 was Rp 1,700,876,80 in the housing, industrial zones, and office sectors (Pemerintah Provinsi Kepulauan Riau, 2023).

The province of North Kalimantan recorded a labor productivity of 187.54, a relatively high figure that reflects good performance in terms of labor productivity. Based on the results of the csQCA method, North Kalimantan Province is in a condition that shows optimal outcomes (1), with three conditions: UMP and Investment, which have optimal values (1) in contributing positively to Labor Productivity. The success of North Kalimantan Province in achieving this optimal condition is closely tied to the government's effective policies and programs related to the following indicators:

1. The province of North Kalimantan has a minimum wage that shows optimal results (1) in terms of labor productivity. One of the factors driving the high average wage in the Bangka Belitung Islands is the local government's decision to increase the UMP by Rp 3,251,703 from the 2022 UMP of Rp 3,016,738. The established Provincial Minimum Wage (UMP) reflects the government's support in maintaining purchasing power amid a 1.29% inflation rate, thereby fostering economic growth.
2. In North Kalimantan Province Investment realization in 2023 in North Kalimantan Province, both in the form of Domestic Investment (PMDN) and Foreign Investment (PMA), reached Rp 27,026,584,635,157. The investment created 9,268 jobs, with 9,009 Indonesian workers and 259 foreign workers. Compared to the 2022 investment realization of Rp 13,704,547,246,093, there was a cumulative increase of 97.2% in the 2023 investment realization (DPMPTSP North Kalimantan, 2024). North Kalimantan has been able to attract a significant amount of foreign investment due to the planned relocation of the national capital to North Kalimantan (Ministry of Defense of the Republic of Indonesia, 2024).

West Papua Province recorded a Labor Productivity of 144.63, a relatively high figure that reflects good performance in terms of labor productivity. Based on the results of the csQCA method, West Papua Province is in a condition that shows optimal outcomes (1) with three conditions, namely BOK and UMP, which have optimal values (1) in contributing positively to labor productivity. The success of West Papua Province in achieving this optimal condition is inseparable from effective government policies and programs on related indicators, as follows:

1. The BOK fund in West Papua Province shows optimal outcomes (1) for labor productivity. The optimal health conditions are supported by the government, which

has implemented a Human Resource Capacity Building Program in the health sector, encompassing three main activities: planning human resource needs for Community Health Units (UKM) and Individual Health Units (UKP), improving quality, and enhancing technical competencies of human resources, and the implementation of health insurance in Papua integrated with the National Health Insurance Program (JKN) (Pemerintah Daerah Provinsi Papua Barat, 2023).

2. West Papua has a minimum wage that shows optimal outcomes (1) for labor productivity. One of the factors driving the high average wage in the Bangka Belitung Islands is the local government's decision to increase the UMP by IDR 3,282,000. The determination of the UMP for West Papua in 2023 is an effort by the government to realize the rights of workers and ensure they have a decent life.

The province of Papua recorded a labor productivity of 114.63, a relatively high figure that reflects good performance in terms of labor productivity. Based on the results of the csQCA method, Papua Province is in a condition that shows optimal outcomes (1) with three conditions, namely BOK and UMP, which have optimal values (1) in contributing positively to labor productivity. The success of Papua Province in achieving this optimal condition is inseparable from effective government policies and programs on related indicators, as follows:

1. The BOK fund in Papua Province shows optimal outcomes (1) for labor productivity. The optimal condition of BOK for labor productivity is supported by the government's success in implementing the National Health Insurance Program (JKN), which has been in effect since January 1, 2014, with the aim of ensuring that all basic health needs are accessible to the entire population (Badan Pusat Statistik Provinsi Papua, 2023).
2. The minimum wage in Papua Province shows optimal outcomes (1) for labor productivity. One factor driving the high average wage in the Bangka Belitung Islands is the local government's decision to increase the minimum wage by IDR 3,864,696. With the increase in the UMP, it is hoped that people's purchasing power will remain stable despite rising inflation, so that household consumption, as one of the main drivers of the economy, can continue to contribute positively to regional economic growth.

The province of Jambi recorded a labor productivity of 93.92, a relatively high figure that reflects good performance in terms of labor productivity. Based on the results of the csQCA method, Jambi Province is in a condition that shows optimal outcomes (1) with three conditions, namely BOK and UMP, which have optimal values (1) in contributing positively to labor productivity. The success of Jambi Province in achieving this optimal condition is inseparable from effective government policies and programs on related indicators, as follows:

1. The condition of BOK funds in Jambi Province shows optimal outcomes (1) for labor productivity. This optimal condition is supported by the government's success in implementing the five priority programs of the National Development Plan (RKP) for the Health Sector in 2023, which include reducing maternal and infant mortality rates, controlling stunting, preventing and managing diseases, the Healthy Living Movement (Germas), and strengthening health system governance, including strengthening management, financing, and research and development in the health sector ((Dinas Kesehatan Provinsi Jambi, 2023).
2. The Province of Jambi has a minimum wage that shows optimal outcomes (1) for labor productivity. One of the factors driving the high average wage in the Bangka Belitung Islands is the local government's decision to increase the UMP by Rp

2,943,033. The UMP in 2023 increased by 9.04%, which was due to consideration of workers' expectations. The increase in the UMP was also supported by the government's consideration of the rising inflation rate, which reached 5.71% yoy, in order to maintain people's purchasing power (Rahman, 2019).

5. CONCLUSION AND SUGGESTION

CONCLUSION

It can be concluded that diverse characteristics clearly exist in each regional pathway, reflecting the characteristics of optimal causal conditions for labor productivity in Indonesia.

- There are 12 regional pathways, consisting of 6 contradictory clusters, 3 optimal clusters, and 3 suboptimal regions.
- The contradictory regions are Bangka Belitung Islands, Gorontalo, West Sulawesi, Kalimantan, East Kalimantan, North Maluku, Bali, East Nusa Tenggara, Southeast Sulawesi, North Sumatra, Central Java, East Java, Banten, West Nusa Tenggara, Central Sulawesi, North Sulawesi, Maluku, Aceh, South Sumatra, Jakarta, and South Sulawesi. This is because causal variables are too complex to explain the characteristics of these regions.
- The suboptimal provinces are Lampung, West Java, West Kalimantan, West Sumatra, Bengkulu, and Yogyakarta, due to low labor productivity, low wages, and minimal investment in these regions.
- The optimal regions are North Kalimantan, Jambi, West Papua, Papua, and Riau Island. The factors that can lead to optimal conditions for labor productivity are high regional wages, many foreign investors interested in opening employment opportunities in the region, and a concern for operational health assistance costs.

SUGGESTION

This section is a Future research is encouraged to explore different variable conditions affecting labor productivity using methods like Qualitative Comparative Analysis (QCA) to identify optimal contributing factors. Practically, findings show that Gender Development Index, Health Operational Assistance (BOK), Provincial Minimum Wage, and Investment significantly influence labor productivity, especially in provinces like North Kalimantan, Jambi, West Papua, Papua, and Riau Islands. To improve productivity nationwide, strategies include optimizing health programs, adjusting wages based on inflation and productivity, enhancing strategic investments, and empowering women through tech-based training and digital market access. These insights offer guidance for policymakers, researchers, and communities to support evidence-based development.

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