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HIGH UNEMPLOYMENT, DISRUPTED ECONOMIC GROWTH AND SUSTAINABLE DEVELOPMENT GOALS: ANALYZING UNEMPLOYMENT REDUCTION

Hadi Tjahjanto
Ministry of Agrarian Affairs and Spatial Planning / National Land Agency, Jakarta, Indonesia
E-mail: haditjahjanto.menteriatrbpn@gmail.com
ORCID 0009-0003-7127-8974

Tuhana Tuhana*
Universitas Sebelas Maret, Surakarta, Indonesia
E-mail: tuhana@staff.uns.ac.id
ORCID 0000-0001-9200-7346
**Corresponding author*

Izza Mafruhah
Universitas Sebelas Maret, Surakarta, Indonesia
E-mail: izzamafruhah_fe@staff.uns.ac.id
ORCID 0000-0001-5572-6712

Nurul Istiqomah
Universitas Sebelas Maret, Surakarta, Indonesia
E-mail: nurulistiqomah_fe@staff.uns.ac.id
ORCID 0000-0002-6367-3312

Dewi Ismoyowati
Universitas Sebelas Maret, Surakarta, Indonesia
E-mail: dewiismoyowati@staff.uns.ac.id
ORCID 0009-0002-6295-5593

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ABSTRACT. This study aims to analyze the factors influencing unemployment and determine the role of stakeholders in reducing unemployment in Central Java Province, Indonesia. Data encompasses 35 regencies and municipalities of the Central Province from 2007 to 2020, with the total sample being 490. The employed sequential mixed method includes two analytical tools, namely panel data and vector regression with mactor software; the latter is used to examine the convergence among actors. Six main actors in reducing unemployment are identified, namely Regional Development Planning Agency (*Badan Perencanaan Pembangunan Daerah*/Bappeda), Department of Labor, Department of Education, community leaders; job training center, and Indonesian Chamber of Commerce (*Kamar Dagang dan Industri Indonesia*/Kadin). The results of the first analysis show that the variables of economic growth, Human Development Index (HDI) and school enrollment have negative and significant effect on unemployment. The results of convergence analysis highlight the importance of the Department of Labor in linking the supply and demand sides of labor in Central Java.

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Introduction

Todaro & Smith (2012) reveal four prerequisites for sustainable economic growth in developing countries, i.e., equitable development, the affordability of education, the accessibility of health facilities, and job opportunities. The four factors are highly interrelated. Disturbances in one can potentially disrupt the overall economic development and result in unsustainable development. Indonesia is the fifth most populous country in the world, with a population of about 271 million people as of January 2021. With a population that is mostly concentrated on Java, Indonesia faces an unequal distribution of economic development. Moreover, due to geographical conditions residents of small islands and remote areas do not yet have access to affordable education and health facilities. Most of the industries are clustered in several industrial agglomerations on the island of Java and other metropolitan areas in Indonesia, resulting in an uneven distribution of employment in the formal sector outside the primary cities. Meanwhile, the rural workforce is mostly employed in agriculture, small-scale trade, and non-formal services.

Although human capital is fundamental to national development, a large population is also burdensome for stakeholders in terms of providing employment. Today, the Indonesian economy faces three main problems in its national development, namely unemployment, poverty and social inequality. The high unemployment rate as an economic problem has resulted in unstable and less participatory economic development. Statistics Indonesia (*Badan Pusat Statistik*/BPS) reported the total workforce of 139.81 million people in February 2021. The report also revealed a nation-wide increase in employment employment productivity from 62.98 in August 2020 to 63.82 in February 2021. This means that almost 2/3 of the population over 15 years of age works, which indicate that Indonesia is in a demographic bonus. However, over the past five years, the unemployment rate has averaged over 5 percent of Indonesia's total workforce. BPS (2020) reported the open unemployment of 5.2 percent in August 2019. The sector that contributed to unemployment was dominated by agriculture at 27.33 percent, trade by by 18.81 percent and the manufacturing industry by 14.96 percent. The Covid-19 pandemic worsened the unemployment to 21.32 million people or 10.32 percent of the working age population (BPS, 2021). The 2021 National Employment Census (*Survei Angkatan Kerja Nasional*/SAKERNAS) showed the open unemployment reaching 6.26 percent. Open unemployment is defined as the ratio of unemployment to the total labor force. This figure is an increase of 1.32 percent compared to February 2020. The Covid-19 pandemic has reduced job opportunities. On the other hand, the pandemic has also caused many companies to reduce their business activities or stop doing business. In addition, SMEs as one of the largest labor absorbers in Indonesia were also facing the detrimental effects of the pandemic. This is not only typical in Indonesia. In an investigation into the effects of Covid-19 on SMEs in the United States, Ozili & Arun (2020), Bartik et al. (2020) show that there were at least four effects of Covid-19 for small-scale business, namely drastic reduction in working hours, various reductions in working hours, reduction in working hours due to government regulations, and layoffs of employees (Ozili & Arun, 2020; Bartik et al., 2020; Ali, 2021; Wahyuni & Huda, 2021).

In Indonesia, guidelines and directives on employment were largely based on the policies of each province by considering local resources and economic growth. Therefore, wage levels may vary between regions, which results in the competitiveness of each region being significantly different from the others. West Java and East Java were two provinces with high industrial agglomeration, which led to the high absorption of industrial workers. In contrast, industrialization in Central Java is not as high as the two, with the southern region largely dependent on agriculture. In 2021, open unemployment in Central Java was reportedly 5.95 percent (BPS Central Java, 2022). Addressing unemployment requires support, policies, and programs that involve several local actors. With local policies characterized, the role of stakeholders can be identified in employment. Specifically, in Central Java, there were several actors identified as playing an important role in overcoming unemployment, namely the Regional Development Planning Agency (*Badan Perencanaan Pembangunan Daerah*/Bappeda), department of labor, department of education, community leaders, job training center, and the Indonesian Chamber of Commerce and Industry (*Kamar Dagang dan Industri Indonesia*/Kadin). Thus, this study aims to analyze the factors influencing unemployment in Central Java and to formulate the convergence among stakeholders in reducing unemployment. This study also focuses on factors influencing unemployment in Central Java, with the two factors analyzed HDI and school enrollment. Considering the lack of attention from previous research on actors' roles and strategies, this study utilizes the Mactor method, useful in analyzing proximity and convergence among stakeholders.

1. Literature review

Previous studies have confirmed a linear relationship between unemployment and poverty. John & Morufu (2013), Rizqi (2019) Mafruhah (2009) argue that unemployment is directly proportional to the poverty rate. It means the higher the unemployment rate, the higher the poverty. Poverty, followed by economic inequality, would likely encourage socio-cultural and security problems (Trang, 2017). On the other hand, the low number of unemployed is an important indicator of the success of national development. Theoretically, some leading economists have estimated a 1 percent increase in unemployment for every 2 percent decline in GNP (Okun, 1962; Samuelson, 2005). Darman (2013) found that Indonesia's unemployment in the long term is statistically influenced by real output growth in connection with Indonesia's employment structure which is largely dominated by the agricultural and informal sectors.

Employment problems have been identified for a long time. Elwan Clague (1935) stated that business turnover considerably influences employment and unemployment reduction. Unemployment consists of various factors, including the low quality of labor, labor productivity, and labor welfare. In addition, the narrower job opportunities, the high level of family dependence, the low contribution and absorption of the development sector to employment, and the unidentified link between education and work also affect the unemployment rate. Either directly or indirectly, unemployment would impact increasing poverty, crime, and other socio-economic problems. Unemployment has always been a problem faced both nationally and regionally. This employment issue is urgent because it involves inter-sectoral linkages. It has a specific consequence in the public sector. Specifically, employment planning is urgently needed in Indonesia because it is very complex. Planning and providing employment information is the responsibility of all parties at the central, regional, private, and community levels. The handling is more directed at sustainable employment growth, which is carried out in a systematic and integrated manner. The emphasis is on reducing unemployment, expanding job opportunities, and placing workers in accordance with their competencies.

Moreover, unemployment is closely related to the quality of human resources. The importance of human capital in development has been seriously identified by Theodore Schultz

(1961) regarding investment in human capital. Schultz (1961) argues that education is a form of investment in development. In its development, Schultz (1961) showed that the development of the education sector by positioning humans as the focus of development contributes directly to the economic growth of a country. This can be achieved by increasing the workforce's expertise, skills and production capabilities (Shucksmith, 2000; Suadi, 2021).

Several important approaches to human capital theory have been recognized (Nelson & Phelps, 1966); Lucas Jr., 1988). Nelson & Phelps (1966) found that the capital stock of a more skilled and educated workforce was more capable of filling the specified job qualifications. Aghion & Howitt (1998) concluded that human capital is a very important factor in the economic growth of a country. The argument raised is that differences in stock and the quality of human resources caused differences in growth rates in different countries. In other words, workers with higher education would be able to respond to innovation which would increase a country's economic growth (Nelson & Phelps, 1966). Another approach was put forward by Lucas Jr. (1988), which emphasized the existence of a significant accumulation of human capital on economic growth. Lucas Jr (1988) argues that two factors that shape human capital in a country are education and learning by doing (Meier & Rauch, 1995; Stiglitz & Meier, 2000).

Overcoming unemployment is also closely related to controlling population growth, the political environment and national policies, national and global economic stability, and technological progress (Šileika & Bekeryt, 2013). Mohammad & David (2019) showed a proportional relationship between poverty and unemployment in Nigeria. A decrease in the unemployment rate would lead to an increase in national income so that people can improve their standard of living and reduce poverty (Mohammad & David, 2019). Papadakis et al. (2020) show that education is key to increasing life opportunities, whether through the labor market or not. People with a basic level of education were almost three times more likely to live in poverty than those with a higher education (Papadakis et al., 2020). By analyzing the relationship between economic growth, unemployment, and poverty in the Vietnamese provinces, Quy (2016) showed that public investment positively affects economic growth and poverty alleviation, while imports and exports negatively affect unemployment.

High unemployment is more likely to disrupt economic growth and slow down sustainable development goals. As the HDI indicates, high and persistent unemployment also has a high potential to reduce people's welfare. In this context, by emphasizing the supply side, the economy would help because it would accelerate the pace of economic turnover, which would accompany an increase in the demand for labor. One of the links that would reduce unemployment is labor mobility, both at the regional and state levels (Taner et al., 2011).

2. Methodological approach

2.1. Procedure and sample

This study uses a sequential mixed method, a combination research method combining quantitative and qualitative research (Creswell & Creswell, 2014). The first examination was carried out using a quantitative approach, namely the panel data econometric model. The second analysis is conducted with a qualitative method with a factor analysis tool by using Mactor software. Mactor stands for Matrix of Alliances and Conflicts: Tactics, Objectives, and Recommendations. The Mactor method based on the convergence approach between actors was developed by Michel Godet (1979). This approach is then adopted in software which can be downloaded via http://en.laprospective.fr/methods-of-prospective/downloading-the-applications.html. The factor was developed in response to the lack of involvement of actors in

conventional forecasting methods (Godet, 1979). Mactor's specialty is to analyze the convergence and divergence between actors in a related goal. This makes Mactor, as a game theory, has a fairly high degree of implementability in realizing alliance policies or conflicts between actors. Previous studies have extensively used this method in their empirical examinations of various subjects (Godet, 1991; Elmsalmi & Hachicha, 2014; Cerezo-Narváez et al., 2021; Fetoui et al., 2021; Troche-Escobar & Freires, 2020; Heger & Rohrbeck, 2012).

This study was conducted in Central Java province as the research locus. The labor force in Central Java in February 2020 was 18.78 million people, an increase of 0.19 million people compared to February 2019. In line with that, the labor force participation rate increased slightly to 70.22 percent as of February 2020. By education, the highest unemployment contributed by vocational high school graduates by 7.50 percent. In addition, as many as 10.52 million people (58.49 percent) of the workforce work in informal activities. This research was conducted from January to March 2022.

This study identifies six stakeholders influencing employment in Central Java. The first is the Regional Development Planning Agency (*Badan Perencanaan Pembangunan Daerah*/Bappeda), as the agency authorized to plan and determine the direction of development at the regional level. The second is the department of labor as the agent responsible for handling labor issues at the regional level. The third is the department of education which focuses on making policies related to the quality of education in the workforce. This department is indirectly related to the supply of labor in the regions regarding an educated workforce. The fourth is community leaders as important stakeholders in determining community support in providing employment and entrepreneurship opportunities to reduce unemployment. The fifth is the job training center as a provider of training venues to improve the skills and expertise of the workforce in accordance with market needs and demands. The sixth is the Indonesian Chamber of Commerce and Industry (*Kamar Dagang dan Industri Indonesia*/Kadin), an association of business organizations to advocate business interests.

2.2. Measures

Items used as interview materials include (AQ1) the ease of job information, especially stakeholder opinions regarding the ease of obtaining job vacancies information, (AQ2) the suitability of education with work, namely the opinion of actors about how the curriculum applied in education can be in accordance with the needs of employment, (AQ3) the length of time looking for a job, refers to the opinion of the actor to find out the length of time for the workforce to find a job, (AQ4) the availability of regulations on job opportunities, refers to the opinion of the actor regarding the existence and function of regulations as an important part of the reduction.

The first objective of this study is to analyze the factors that influence unemployment in Central Java. The data covers 35 regencies and municipalities for 14 years (from 2007 to 2020), so the total sample is 490. The variables used in this study include dependent variables and independent variables. The dependent variable in this study is unemployment (un_em), while the independent variables include the rate of GRDP (r_grdp), the Human Development Index (hdi), and school enrollment (sch) for adolescents (16-18 years old). The school entry age limit (sch) is determined by considering the age of 15 years as the minimum age to enter the workforce in Indonesia. It means that school enrollment (sch) was included to identify school-age students who chose to attend school and did not enter the labor market.

The second objective is to formulate the relationship between stakeholders in reducing unemployment in Central Java. This analysis is important to determine the most influential actors and focuses on solving problems, how they interact, and which priorities were most important in reducing unemployment. To analyze, this study identifies, differentiates,

categorizes, and investigates stakeholders' interests. Mactor analysis used in this study describes the relationship between stakeholders, the strength of the network formed, divergence and convergence, the significance of the relationship between one stakeholder and another and the usefulness of the relationship in strategizing to achieve goals (Fontaine et al., 2006; Reed et al., 2009).

As an actor analysis, Mactor is a method to analyze the relationship between stakeholders in decision making. In the context of public policy, the examined stakeholders consist of the government, academics, business actors, communities, and the mass media, better known as *pentahelix* (Sudiana et al., 2020). Each actor was examined the relationship of divergence and convergence and the extent of alliance and conflict between them. This assessment is carried out by conducting in-depth interviews on the relationship between actors and their attitudes toward the strategic goals that were raised. Actors with similar relationships and goals were more likely to forge alliances, so their convergence relationship was close. Meanwhile, actors with conflicting goals would have weak convergence and high divergence. In the context of the public sector, stakeholder analysis is useful for determining the role of each actor in decision making, strategies, and leadership abilities of each actor in a particular alliance.

In this study, stakeholder analysis was processed using Mactor. The advantage of this method is that it is simple and easy to access. In addition, the method can be applied very widely because it can be used even for up to 20 related purposes. In-depth interviews through questionnaires must be answered honestly by stakeholders to obtain accurate analysis results (Ahmed et al. 2009; Rees et al. 2018; Rees and Macdonell 2017). The formation of the Mactor matrix includes the following stages:

(1) Determining the key variables and actors involved;
(2) Compiling the actor table;
(3) Formulating strategic issues and objectives;
(4) Positioning actors and strategic objectives in the position matrix;
(5) providing a reciprocal assessment of the relationship between one actor and another with a score between 0 (no relationship) to 4 (very close) for the relationship's closeness level. This scoring is useful for showing the close relationship between actors, especially in the coordination and similarity of programs and activities;
(6) Providing an assessment of the strategic objectives that each actor has determined, with a score between -4 (strongly disagree) to 4 (strongly agree). The score is then calculated using the specified matrix.

The convergence and divergence matrices are calculated in the three stages by calculating the power matrix's direct and indirect relationship, calculating the position matrix's value and arranging them in a relationship diagram, and analyzing the strategic recommendations of each actor.

3. Conducting research and results

3.1. Identifying factors influencing unemployment: Panel data regression

The first objective of this research is to identify factors influencing unemployment is processed using panel data regression. The data used in this study were obtained from secondary data with 490 data consisting of 35 districts/cities in Central Java from 2007 to 2020, descriptively the results obtained were as follows:

Table 1. Statistics Descriptive

Items	Un_Employment	Rate_ GRDP	HDI	SCH
Mean	6.033388	4.733469	70.24309	63.09161
Median	5.695000	5.300000	69.95500	64.34000
Maximum	15.74000	23.54000	83.19000	91.39000
Minimum	1.500000	-10.36000	58.64000	28.83000
Std. Dev.	2.302673	2.228606	4.548055	13.14435
Skewness	0.996356	-1.136303	0.417868	-0.230419
Kurtosis	4.413505	20.15763	3.300392	2.404066
Jarque-Bera	121.8651	6115.792	16.10243	11.58663
Probability	0.000000	0.000000	0.000319	0.003048
Sum	2956.360	2319.400	34419.11	30914.89
Sum Sq. Dev.	2592.825	2428.709	10114.87	84486.44
Observations	490	490	490	490

Source: *own calculation*

Table 2 shows that the average unemployment rate in all regencies and municipalities in Central Java is 6.033 percent, while the average GRDP growth rate is 4.73 percent. Furthermore, Human Development Index is 70,24309, while school enrollment is 63.09 percent. Furthermore, the data distribution for each independent variable is shown in *Figure 1*.

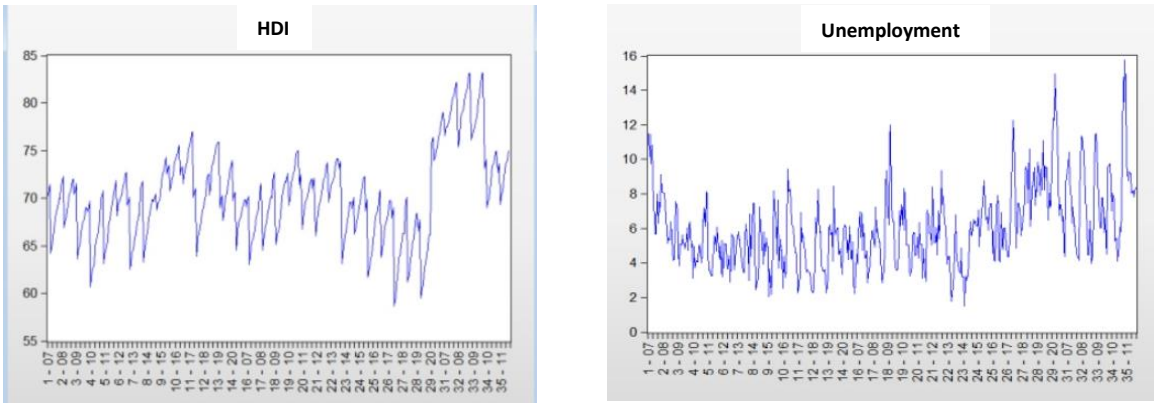

Figure 1. HDI and Unemployment in Central Java's districts and municipalities (2007-2020)
Source: *own calculation*

Figure 1 shows that several regions in Central Java had a high HDI level continuously. However, there were also areas with a low HDI level. The gap between HDI among districts and municipalities is relatively high. It is indicated by the Gini Index of 0.359. The analysis also showed that the level of fluctuation tends to be uniform between regions in Central Java. It indicates that the gap between regions is fairly low in terms of unemployment.

Panel data processing is carried out with two effect models of Random Effect and Fixed Effect while selecting the best model uses the Hausman test to obtain the best model for estimation. Hausman test using Ho = Random Effect Model and H1 = Fixed Effect Model. The data processing results with the Hausman test are shown in *Table 2*.

Table 2. Hausman test

Correlated Random Effects - Hausman Test				
Test cross-section random effects				
Test Summary		Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random		22.568674	3	0.0000
Cross-section random effects test comparisons:				
Variable	Fixed	Random	Var(Diff.)	Prob.
GRDP	-0.176838	-0.153081	0.000029	0.0000
HDI	-0.101769	-0.042623	0.000180	0.0000
SCH	-0.083625	-0.076984	0.000003	0.0001

Source: *own calculation*

Hypothesis acceptance of the model was determined using an alpha value of 5 percent within the 95% confidence level. P-value less than 5 percent indicates the hypothesis is accepted. The data processing results in Table 2 show that the right model to be used in this study is the fixed effect. Furthermore, the results of panel data processing using fixed effects are shown in Table 3.

Table 3. Panel Least Squares

Dependent Variable			: Un_em	
Sample			: 2007-2020	
Periods included			: 14	
Cross-sections included			: 35	
Total panel (balanced) observations			: 490	
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	19.29505	2.362505	8.167201	0.0000
R_GRDP	-0.176838	0.033688	-5.249282	0.0000
HDI	-0.101769	0.033381	-3.048736	0.0024
RSP	-0.083625	0.008069	-10.36424	0.0000
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.592175	Mean dependent var		6.033388
Adjusted R-squared	0.558791	S.D. dependent var		2.302673
S.E. of regression	1.529517	Akaike info criterion		3.762160
Sum squared resid	1057.419	Schwarz criterion		4.087440
Log likelihood	-883.7292	Hannan-Quinn criter.		3.889909
F-statistic	17.73834	Durbin-Watson stat		1.070751
Prob(F-statistic)	0.000000			

Source: *own calculation*

From this analysis, the following equation is obtained:

$$Un\_em = 19.29 - 0.1768\ R\_GRDP - 0.101769\ HDI - 0.0836\ SCH + e$$

The statistical output showed the negative effect of GRDP on the contribution. The resulting t-statistic value is -5.2492, with a p-value of 0.00. The coefficient of - 0.1768 indicates that economic growth of 1 percent is more likely to reduce unemployment by 0.1768 percent. These results were similar to traditional estimates in Indonesia of the actual relationship between economic growth and employment. Purnomo (2018) reports that the job creation ratio in Indonesia is 290,000 - 340,000 jobs for every 1 percent of economic growth. This is also the same as the estimation of previous studies which examined Okun's law regarding the

relationship between a decrease in unemployment and an increase in the gross national product (Hamada & Kurosaka, 1984; Economou & Psarianos, 2016; Melguizo, 2017). More specifically, Pambayun (2021) found an empirical association between unemployment in Indonesia and economic growth and employment opportunities. However, this coefficient indicates that Central Java's economic growth has not been able to create jobs optimally. By referring to the panel regression output, every 1 percent growth can only reduce unemployment by 2,147 people. This number is very far from the number of unemployed workers in Central Java, as many as 1,214,342 people in 2020.

This result is consistent with Vetlov's (2003) finding that 40 percent economic growth in Lithuania from 1995-2002 could only reduce unemployment by 5 percent. It is related to the level and structure of unemployment in districts and municipalities. Economic growth would find it difficult to deal with high unemployment that exceeds the natural unemployment rate. In the local context, the magnitude of local economic growth capability in reducing unemployment highly depends on the regional economy (Wahid & Sarfiah, 2021). In addition, the wage level affects the unemployed's behavior to choose not to take existing jobs but to keep looking for work (Mortensen & Pissarides, 1994). Digital disruption also affects employment in the industrial and manufacturing sectors. The more sophisticated technology tools cause the need for labor is decreasing. Today, the service sector is a sector that has experienced a drastic decrease in the need for human labor. Computerization and digitization have caused many businesses that previously had to be handled by workers, which can be carried out by the owners themselves with the help of digital technology. Economic characteristics in Central Java, coupled with economic digitization and the lack of massive industrialization, have caused Central Java's economic growth to have not been able to increase job opportunities and reduce unemployment according to traditional economic estimates.

The panel regression calculation also showed the Human Development Index has a t-statistic value of -3.0487 with a p-value of 0.0024. It means that HDI has a significant effect on the number of unemployed. The results show that when the HDI coefficient increases by 1 point, unemployment will decrease by 0.1018. HDI is a composite index consisting of 3 elements: education, health, and economy. HDI showed the level of welfare of society as a whole so that if welfare increases, it will reduce unemployment. The results were in accordance with Ulas & Keskin (2017), which analyzes the relationship between HDI and economic growth.

The results show that school enrollment (SCH) has a mean of 63.09. It means that only two thirds of school children aged 16-18 years continue their studies, and the rest enter the labor market. In developing countries, parents' work has not been able to guarantee family life, so school-age children were forced to leave the world of education early to enter the labor market. Meanwhile, apart from being a child's human right and having become part of sustainable development goals (Banerjee, 1990; Dustmann & Soest, 2007; Shah, 2011), the general consensus states that education can improve worker skills and create job opportunities.

The processing results showed that the t-statistic of SCH was -10.3642 with a p-value of 0.00 <0.05. The variable of SCH has a significant negative effect on the number of unemployed, indicated by a coefficient of -0.0836. That is, an increase in school enrollment by 1 percent is more likely to reduce unemployment by 0.0836 percent. The Indonesian government's policy of requiring 12 years of basic education positively impacts the quantity and quality of an educated workforce and expands job opportunities. The results of this study were in line with Núñez & Livanos (2010), who found that in the short-term, academic degrees were more effective in reducing the possibility of unemployment. In this context, Tcherneva (2017) emphasizes the negative effect of unemployment on a country's macroeconomics and its socio-economic costs.

3.2. Actor convergence: Mactor method

Overcoming unemployment requires the role of all stakeholders. The panel regression analysis has found an empirical relationship between regional economic growth, HDI, school enrollment, and unemployment. Traditional extrapolation based on forecasting methods leaves criticism because it does not consider the role of stakeholders involved in an alliance and its goals. To fill this gap, this study continues testing with a qualitative analysis using the Mactor method to assess the actors' role in reducing unemployment in Central Java.

The results of panel regression analysis were useful as a guide for determining key variables as the basis for making questionnaires and matrices. The actors involved in handling unemployment problems in Central Java were Bappeda, the department of labor, the department of education, community leaders, the job training center, and the Kadin. The six actors would discuss four goals in reducing unemployment: the ease of job information, educational suitability for employment, the time to obtain jobs, and employment regulations.

In-depth interviews were conducted with the actors about the relationship between institutions and their opinions on the goals, strategies, results, and performance. The interview confirmed that the link and match between the education sector and employment have not yet been arranged. It causes the results of education, skills, and expertise from schools not necessarily be under the needs and expertise of the demand for labor. In addition, the low wages set by the local government through the minimum wage scheme have caused many higher education graduates to choose not to enter blue-collar jobs. In addition, the potential that has recently emerged is the opportunity to do business in the digital world, online marketing, and special government assistance for entrepreneurship and creative economy empowerment.

The processing results with Mactor show that the interdependence of actors can be predicted from their position. First, the actors who were the technical and implementing units of government policies (Job Training Center, Disnaker, and Education Office) have a high level of influence and dependence on each other. It differs from the Bappeda, a strategic policymaker with a lower level of influence and dependence on other government actors. It is because the strategic position of Bappeda is not technical and cannot afford specific programs to reduce unemployment. Furthermore, Kadin has a high dependency on the low level of influence. It is because Kadin is on the demand side as an institution that requires workers and is dependent on labor supply. Furthermore, community leaders have a low level of dependence with moderate influence. The results of the analysis with Mactor are shown in Figure 2.

The relationship between these actors is then processed by including similarities and closeness in achieving goals. The convergence between actors shows the result. The analysis results show that the closest convergence occurs between the labor department and the community. It happens because in looking for job opportunities, people seek more information, take care of permits, and get various kinds of training this agency provides. Central Java Department of Labor is the main actor in reducing unemployment. In addition, the analysis found a strong relationship between Kadin, the labor department, and vocational training centers. It indicates that two main actors represented the demand side (Kadin) and the supply side of labor (labor department and job training centers). Job training centers in Central Java were influential in their 'mix and match' role by providing venues and training to improve the workforce's technical skills and capabilities according to the labor market's needs. Kadin, representing its member companies, cooperates with the Department of Labor.

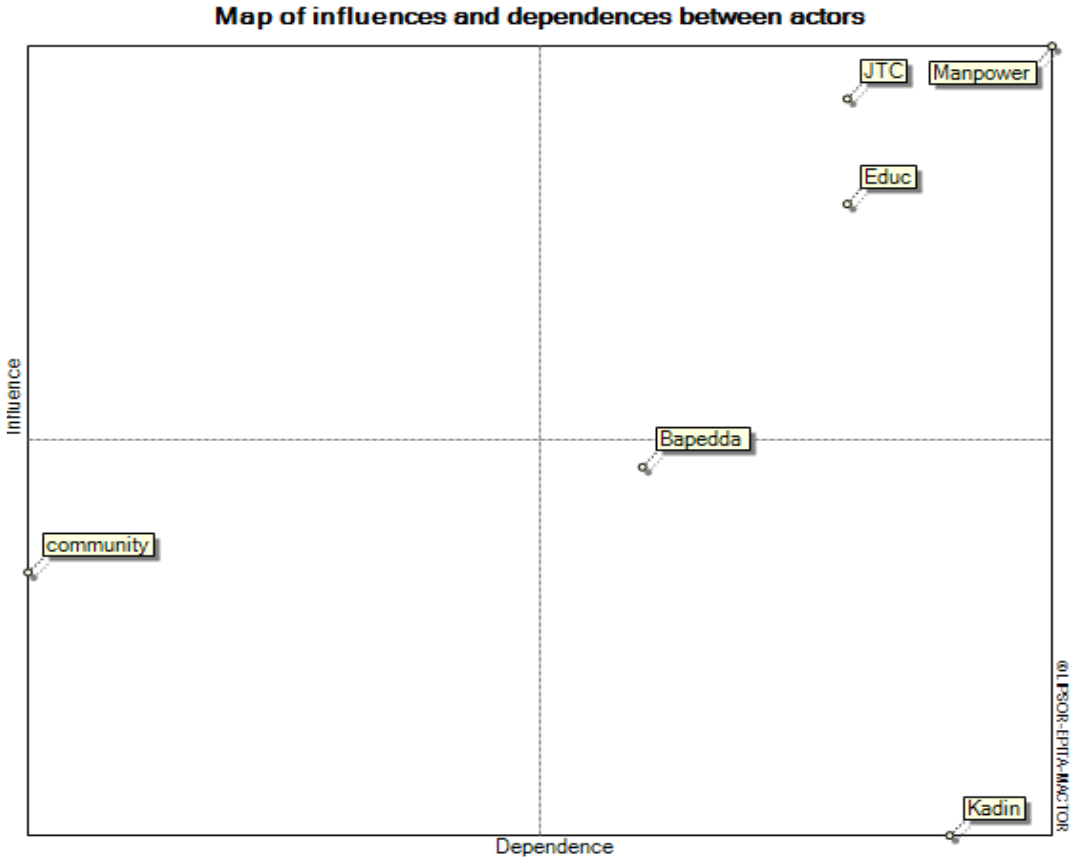

Figure 2. The level of dependence and influence between actors
Source: *own calculation*

In addition, the analysis showed moderate convergence between Bappeda and the Department of Education. Bappeda's strategic policies were specified by the Department of Labor as a reference framework for activities, making it a technical program for reducing unemployment. In addition, the community also has moderate convergence with the company, represented by Kadin and the job training center. Furthermore, one of the interesting points from the findings is that there is no close relationship between the community and the education department in the workforce reduction program. The results of the interview revealed that this happened because the community felt that education was the main factor for every workforce and the basis for determining the capacity of educated workers in the labor market. The public considers the education department to function more as an organizer and regulator of on-the-ground education, so it is perceived that they were not directly involved in employment. The results of the convergence analysis of each actor are shown in Figure 3.

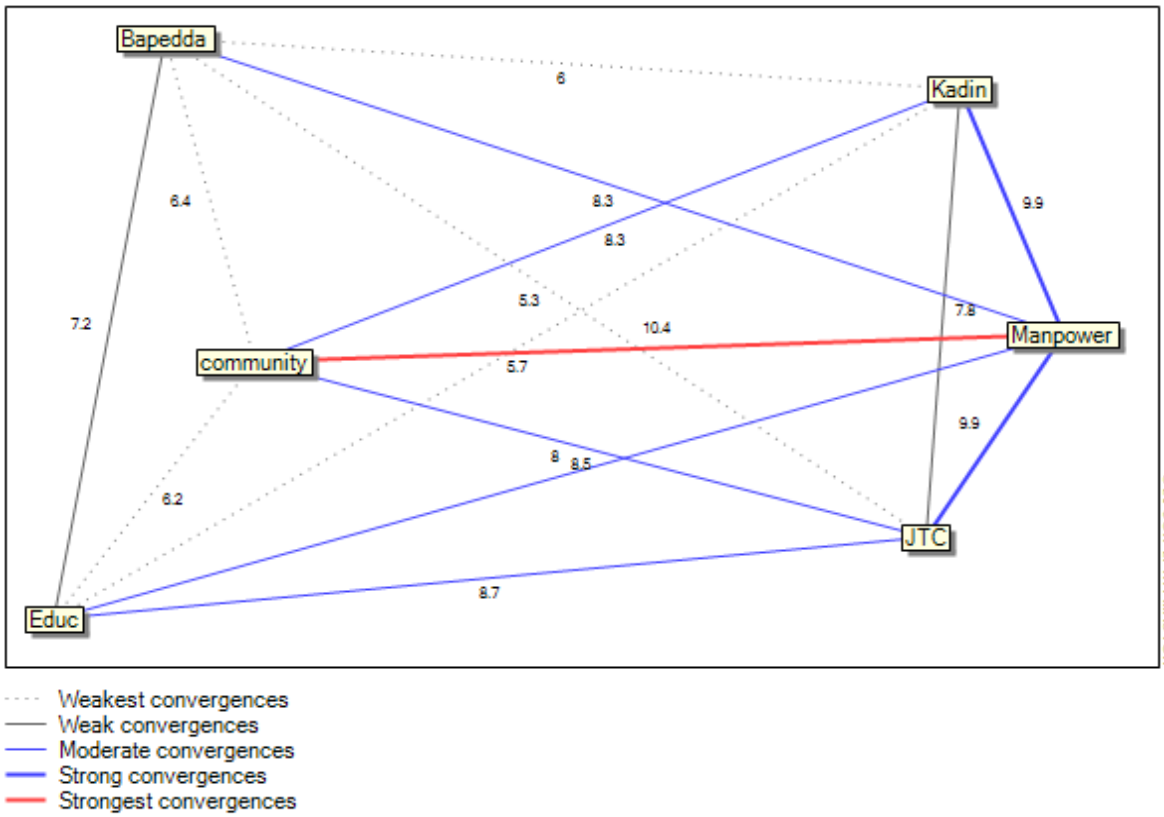

Figure 3. Convergence among actors in reducing unemployment in Central Java
Source: *own calculation*

The findings demonstrated the main role in reducing unemployment is the labor department which had a mediating role with other actors. In this context, the government must provide an important portion for this agency to become the center of cooperation in unemployment reduction programs and policies. Specifically, the labor department is the main link in the national goal of increasing social welfare through labor absorption and reducing unemployment. Generally, the findings were in line with previous studies demonstrating the ability of Mactor to identify the relationship between the actor in unemployment data in a regional context (Mafruhah et al., 2019; Stimson et al., 2006; Lakner, 2013). The results were also in line with previous research stating the need to measure the potentialities of the strategic actors in reducing unemployment as well as increasing the human development index in terms of regional economic planning (Guerra, 2014; Manso et al., 2015; Krutova, 2019; Karamanis & Kolias, 2022).

Conclusion

The empirical evidence obtained in this research, conducted through panel regression analysis during 2007-2020, showed that three main variables, namely local economic growth as proxied by GRDP, human development index (HDI), and school enrollment, have a significant effect on reducing unemployment in Central Java. These three variables have a negative effect on unemployment. It means that economic growth, increase in HDI, and school enrollment was more likely to reduce unemployment.

The analysis through Mactor showed the convergence between actors. It underscored the important role of the Central Java Department of Labor in reducing unemployment with its significant function in finding the demand and supply of labor. In addition, the roles of other

stakeholders from the government, entrepreneurs, and the community were needed to cooperate in executing and supporting unemployment reduction policies and programs.

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