

POLICY APPROACHES TO ANTICIPATE THE POTENTIAL RECURRENCE OF THE COVID-19 PANDEMIC OR SIMILAR CRISES AS A MEANS TO STRENGTHEN COMMUNITY ECONOMIC RESILIENCE

Mona Zarminiaty¹, Irman Firmansyah²

¹Universitas Terbuka, Indonesia

²Natural Resources and Environmental Management Science (NREMs)

IPB University, Indonesia

[†]Email: monabe.06@gmail.com

(Received: December 16, 2025; Accepted: February 21, 2026; Published: June 5, 2026)

DOI: <https://doi.org/10.24843/JSFD.2026.v01.i01.p03>

ABSTRACT – The COVID-19 pandemic, which began in early 2020, significantly impacted various sectors, with the economic sector in Indonesia being among the hardest hit. Social restrictions, transportation disruptions, and declining global demand affected approximately 2.8 million workers, including 749,400 who were laid off. A study by BRIN revealed that 15.6% of employees experienced termination, with 13.8% receiving no severance pay – highlighting the weakness of the existing social protection system and the unpreparedness of labor policies during large-scale crises. Therefore, it is essential to evaluate past policy implementation and formulate anticipatory strategies should similar crises occur in the future. This study aims to develop a prioritized strategic structure for strengthening community economic resilience in the event of a recurring pandemic. Conducted from February to May 2025, the study employed literature review and expert interviews, with informants selected through purposive sampling based on expertise and policy involvement. Data were analyzed using the Interpretative Structural Modelling (ISM) method. The findings recommend strategies such as conditional wage subsidies, flexible employment schemes, digitalization of public services and MSMEs, and national logistics reform. ISM provides a hierarchical framework that enables policymakers to design more targeted and effective responses to enhance economic resilience in future crises.

Keywords: community; economic empowerment; ISM; pandemic; policy

1. INTRODUCTION

The COVID-19 pandemic, which struck the world in early 2020, has had a profound impact on all aspects of societal life, including in Indonesia. The most apparent effects have been observed in the economic sector, where numerous activities experienced significant disruptions due to the implementation of social restrictions, transportation shutdowns, and a global decline in the demand for goods and services. According to data from the Ministry of Manpower and the Social Security Agency for Employment (*BPJS Ketenagakerjaan*), approximately 2.8 million workers were directly affected by the pandemic, with 1.7 million formal workers

being furloughed and 749,400 experiencing layoffs. Research conducted by the Population Research Center of BRIN noted that by the end of April 2020, around 15.6% of laborers and employees had been laid off, with 13.8% receiving no severance pay. This highlights the weakness of the social protection system and the unpreparedness of labor policies to manage large-scale crises.

This crisis has not only been temporary but has also had long-term effects on the structure of the national economy. The decline in economic growth from 5.02% in 2019 to 2.97% in 2020 reflects Indonesia's vulnerability to external shocks. Unemployment rose sharply from 5.28% to 7.07% over the same period. Disruptions to global supply chains also severely impacted the export sector, which saw a 2.6% decline in 2020 compared to the previous year. Labor-intensive sectors, tourism, and manufacturing industries were among the hardest hit, leading to ripple effects on household purchasing power and rising poverty levels.

Recognizing the scale of the impact, the Indonesian government responded by launching various fiscal and monetary policies through the National Economic Recovery Program (Program Pemulihan Ekonomi Nasional, or PEN), amounting to IDR 695.2 trillion in 2020 and increasing to IDR 699.43 trillion in 2021. These policies included direct cash transfers, wage subsidies, MSME support programs, and health sector assistance. The program provided short-term economic relief for vulnerable populations and business actors. However, several challenges remain, particularly regarding targeting accuracy, distribution effectiveness, and inter-agency coordination (Astuti & Afifuddin, 2021).

Moreover, the uneven economic impact across regions revealed that a centralized policy approach is not entirely effective. Tourism-based regions such as Bali experienced a steep drop in revenue due to travel restrictions. Meanwhile, industrial hubs like West Java faced challenges related to raw material supply and declining demand. In contrast, agricultural regions such as Sumatra and Sulawesi proved relatively more resilient due to sustained food demand. Nonetheless, these regions still faced challenges related to limited digital access and aid distribution. These conditions underscore the importance of a policy approach that is data-driven and responsive to local characteristics (Putra & Anas, 2022).

Given that the COVID-19 pandemic is unlikely to be the last crisis of its kind, and similar events may occur in the future, there is an urgent need to formulate anticipatory and systematic policy frameworks. Economic policies must not only serve as buffers in times of crisis but also function as instruments for strengthening economic foundations, expanding financial inclusion, reinforcing social resilience, and promoting digital transformation (Nugroho & Suryani, 2023).

Future economic recovery efforts must go beyond short-term stimulus and embrace comprehensive, inclusive, and sustainable long-term strategies. Investments in healthcare, strengthening social protection systems, promoting digitally-based MSMEs, and enhancing regional capacities to respond to crises must be prioritized. Without a robust and adaptive policy framework, Indonesia risks incurring even greater economic losses in the event of future crises.

Therefore, it is crucial to evaluate the implementation of policies during the COVID-19 pandemic and identify strategic measures to address potential future pandemics. This evaluation should include the effectiveness of social protection systems, the resilience of local economies, business adaptation to digitalization, and the collaboration between central and regional governments. This study aims to contribute to the formulation of anticipatory economic policies that can strengthen the resilience of Indonesian society in facing future crises. The primary objective of this research is to develop a prioritized strategic framework for economic strengthening at the community level in the event of recurring pandemics.

2. MATERIAL AND METHODS

This research was conducted from February to May 2025 using an observational approach based on a review of studies and research conducted during the COVID-19 pandemic, as well as interviews with selected experts and academics specializing in public health and regional economics. Methods of data collection using survey methods through interview and observation techniques (Paulus et.al., 2022). Experts were selected through purposive sampling, based on the relevance of their expertise and professional roles to the research topic, as well as their direct involvement in policymaking, program implementation, or socio-economic observation of communities.

The method used in this study is descriptive qualitative, which focuses on exploring ideas, perceptions, opinions, and beliefs that cannot be measured numerically (Casnan et.al., 2021). Data analysis was carried out using the Interpretative Structural Modeling (ISM) approach. ISM is employed to structure complex and abstract problems into a more organized framework. The analytical process began with the inventory of strategic policies required in the event of a recurring pandemic. Identified constraints were then evaluated through pairwise comparison using the VAXO method. Performance measurement is a tool or method to access personal/company/organizational progress compared to the established goals and objectives (Sumantri et.al., 2020). The ISM output included a problem map and a structured hierarchy of issues, subject to consistency verification of the analysis results.

Dominant constraint scenarios were identified and analyzed as alternative inputs for policy and strategy formulation. The stages of the ISM analysis in this study are illustrated in Figure 1. The ISM analysis facilitates the mapping and structuring of abstract problems, making them more comprehensible. However, careful attention must be paid to the assessment process using the VAXO method, as it is critical for determining contextual relationships between elements. The ISM process is divided into two main stages: Hierarchy Structuring and Constraint Classification.

The first step involves establishing contextual relationships (direction) between identified constraints through pairwise comparisons, as assessed by domain experts. If multiple experts are involved, the results are averaged to reach a consensus. Contextual relationships are assessed using the following VAXO symbols:

V if $e_{ij} = 1$ and $e_{ji} = 0$; meaning constraint i must be addressed before constraint j
 A if $e_{ij} = 0$ and $e_{ji} = 1$; meaning constraint j must be addressed before constraint i
 X if $e_{ij} = 1$ and $e_{ji} = 1$; meaning both constraints should be addressed simultaneously
 O if $e_{ij} = 0$ and $e_{ji} = 0$; meaning neither constraint is a priority in relation to the other

Here, $e_{ij} = 1$ indicates that there is a contextual relationship from constraint i to constraint j , while $e_{ji} = 0$ indicates the absence of a reciprocal relationship.

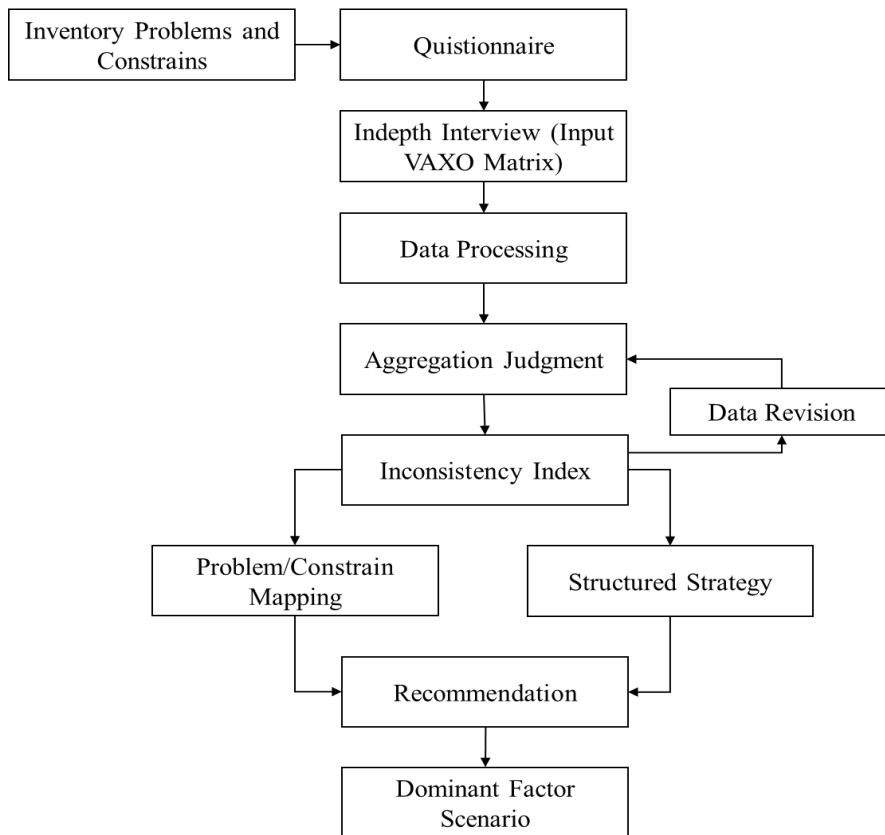


Figure 1. Stages of ISM analysis

The output of this assessment is compiled into the Structural Self-Interaction Matrix (SSIM). The SSIM is then transformed into a Reachability Matrix (RM) by converting the VAXO symbols into binary values (1s and 0s) according to specific rules. Once the SSIM is completed based on expert inputs, the matrix is converted into a binary format to produce the final Reachability Matrix. From this, a set of analytical values can be derived: (a) Driver power is calculated by summing the horizontal values (row totals), and is used for ranking, with higher totals indicating greater influence; (b) Dependence is calculated by summing the vertical values (column totals), indicating how dependent a constraint is on others; and (c) Level is determined by ranking the dependence values from highest to lowest, to define the positioning of

constraints in the hierarchical structure. This structured approach allows for identifying dominant constraints, understanding the interrelations among issues, and guiding the formulation of more targeted and effective policy strategies.

3. RESULTS AND DISCUSSION

3.1 Structuring Constraints in Strengthening the Economy to Anticipate Future Pandemic Situations

The data analysis was derived from expert interviews, focusing on strategic actions that should be taken in the event of a future pandemic or similar crisis, particularly in strengthening community-level economic resilience. The formulation of these strategies is based on constraints previously encountered during the COVID-19 pandemic. The identified constraints that emerged during the COVID-19 pandemic are presented in the following Table 1.

Table 1. Constraints faced during the COVID-19 Pandemic

No	Constraint Group	Constraint (E = Element)
A	Increasing Household Income During COVID-19	E1. Mass layoffs (termination of employment) E2. Restrictions on public mobility
B	Stimulating Household Consumption During the Pandemic	E3. Decline in household purchasing power E4. Closure or operational limitations of retail and service sectors
C	Reducing Unemployment in Certain Regions	E5. Digital infrastructure disparities across regions E6. Slow recovery of business sectors
D	Minimizing MSME Closures During the Pandemic	E7. Disruption in raw material supply and logistics E8. Technology adaptation requires time and uneven support
E	Reducing the Proportion of Newly Impoverished Populations During COVID-19	E9. Inaccurate or incomplete data of social assistance recipients E10. Uneven coverage of social assistance programs E11. Limited resources and capacity of community groups to manage economic empowerment programs

Based on the results of the analysis using the Interpretative Structural Modeling (ISM) approach, a constraint mapping ordination was developed to identify and structure the key challenges encountered during the pandemic, particularly in relation to community-level economic recovery. The visualization of this constraint mapping ordination is presented in Figure 2.

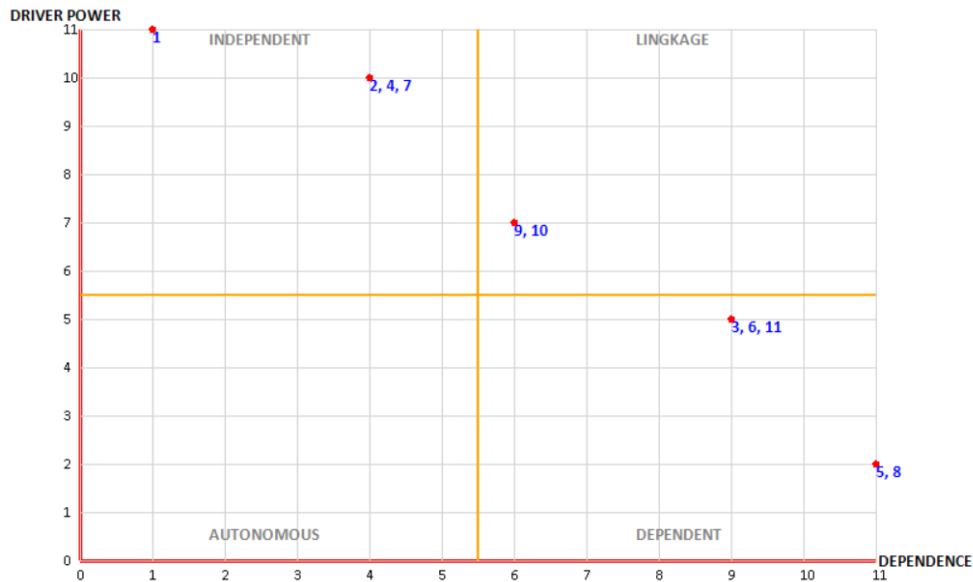


Figure 2. Driver power–dependence matrix of constraint elements for community economic improvement during the COVID-19 Pandemic

Based on the results of the mapping in the Driver Power–Dependence Matrix, the elements influencing community economic improvement during the COVID-19 pandemic can be grouped into four strategic quadrants.

In Quadrant I (Independent Variables), the elements are characterized by high driving power and low dependence. These include E1: Mass layoffs, E2: Restrictions on public mobility, E4: Closure of retail and service sectors, and E7: Disruption in raw material supply and logistics. These elements serve as the primary drivers of the system and act as root causes. In other words, changes or interventions targeting these elements are likely to generate significant systemic impacts. Therefore, policy formulation should prioritize addressing these elements first, as they trigger cascading effects throughout the system.

In Quadrant II (Linkage Variables), the elements E9: Inaccurate social assistance data and E10: Uneven coverage of social assistance programs are present. These variables exhibit both high driving power and high dependence, indicating that they are highly interconnected—both influencing and being influenced by many other factors. Linkage variables are inherently unstable and sensitive; interventions in these areas can result in unpredictable ripple effects. Thus, policy actions targeting these elements should be carefully designed, particularly in the context of social policy and aid distribution.

Quadrant III (Dependent Variables) includes E3: Decline in purchasing power, E6: Slow recovery of business sectors, E11: Limited community capacity, E5: Regional digital infrastructure gaps, and E8: Slow and uneven technology adaptation, technology development for optimization of market management is more important (Sumantri *et. al.*, 2020). These elements are marked by low driving power and high dependence, which suggests that they are more likely to be consequences rather than

causes. Within the ISM framework, these variables can be interpreted as outcomes of deeper structural issues. Improvements in these areas can only be achieved if elements in Quadrants I and II are addressed effectively.

Thus, this mapping provides a systemic overview of policy priorities and strategic interventions. ISM facilitates the identification of logical sequences among the elements and enables policymakers to design strategies based on a clear hierarchy of influence.

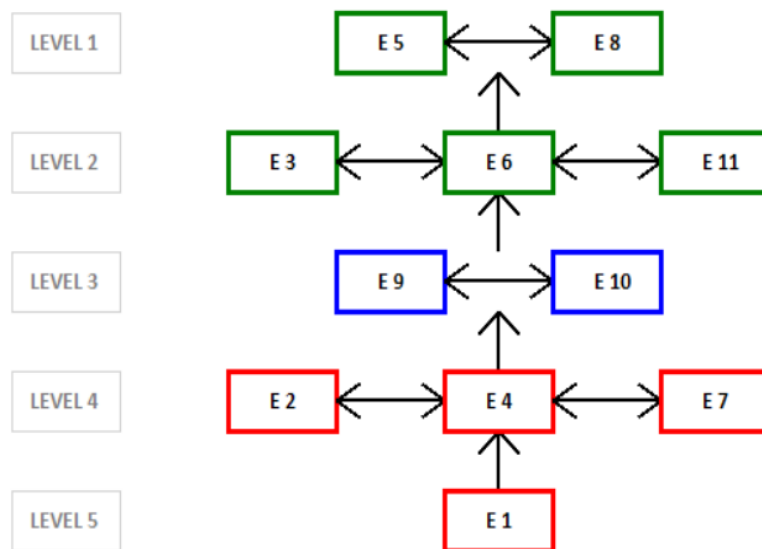


Figure 2. ISM model diagram of constraint elements in community economic improvement during the COVID-19 Pandemic

The ISM Structure illustrates the hierarchical relationships among factors influencing the rise in new poverty and other socio-economic issues during the COVID-19 pandemic. Each element (E1–E11) is represented as a box and positioned on a level based on its influence and dependence on other elements. The lower a factor is positioned, the more foundational its impact within the system. The following is an analysis of each level:

Mass layoffs (E1) during the COVID-19 pandemic emerged as one of the most tangible consequences of the economic crisis, caused by the disruption of various economic and social activities. The pandemic led to a decrease in market demand, supply chain disruptions, and mobility restrictions, all of which pushed companies to make large-scale efficiency measures. Within the context of Interpretive Structural Modeling (ISM), mass layoffs can be identified as a fundamental or key driving element with strong influence over other elements, such as declining purchasing power, consumption, and the sustainability of small businesses. Ardiyono (2022) found that the wave of layoffs in ASEAN-5 countries stemmed from a combination of reduced corporate revenues and long-term uncertainty, which led to labor reductions. ISM helps visualize the interrelationship between layoffs and other factors through a

hierarchical structure, allowing policymakers to grasp the strategic positioning of layoffs within the broader problem system. This approach facilitates root-cause-based solutions, where addressing layoffs requires not only labor incentives but also intervention in structural causes.

The ISM analysis prioritizes Level 5 and Level 4, as these fall within the "Independent" quadrant, indicating that Level 5 contains the most fundamental and influential element: mass layoffs (E1). This element serves as the key driver influencing all others. The extensive and deep impact of mass layoffs on household purchasing power, consumption levels, and business sustainability gives it the highest influencing power and positions it as the root cause of many related issues.

Mobility restrictions (E2) during the pandemic served as one of the main triggers of mass layoffs, particularly in sectors highly dependent on physical movement such as tourism, transportation, and trade. Through ISM, the relationship between mobility restrictions and economic outcomes—such as layoffs—can be mapped and understood. ISM helps identify mobility restrictions (e.g., E2) as an intermediate element mediating the relationship between pandemic-related policies and their economic impacts. Ardiyono (2022) explains that mobility restrictions in ASEAN-5 countries directly influenced corporate decisions to reduce staff for operational efficiency. The ISM cause-effect structure confirms that mobility restrictions have high driving power, significantly affecting downstream variables like household income and consumption. Hence, ISM not only maps the strategic position of mobility restrictions but also provides a hierarchy of interventions needed to reduce layoff rates.

The closure or operational restrictions on retail and service sectors (E4) during COVID-19 also contributed significantly to mass layoffs. These sectors are labor-intensive and heavily dependent on direct consumer interaction. As a result, government restrictions forced many businesses in these sectors to shut down. In ISM analysis, this factor (e.g., E4) frequently appears as a "linkage" element—one that connects policy-level factors (like mobility restrictions) to downstream effects such as household income reduction and rising unemployment. Ahmad and Rachmawati (2021) argue that layoffs in the retail sector were driven not only by declining demand but also by business owners' inability to rapidly adjust their business models. ISM helps identify that this factor has medium-to-high driving power, meaning it can either aggravate or mitigate further economic impacts depending on intervention strategies. ISM thus enables policymakers to map this element's strategic position in the causal system and formulate more targeted recovery steps.

These three elements emerged as direct consequences of pandemic conditions and containment policies, which worsened the economic crisis. They act as intermediaries connecting foundational factors (e.g., layoffs) with longer-term issues like business recovery delays and reduced purchasing power.

Disruptions to raw material and logistics distribution (E7) during the pandemic had significant impacts on business operations, particularly in manufacturing, retail, and MSMEs. When supply chains are disrupted, many firms

struggle to maintain production, leading to reduced business activity and workforce downsizing. Within ISM, such logistics disruptions (e.g., E7) are classified as linkage elements because they both affect and are affected by other variables, such as mobility restrictions (E2) and retail closures (E4). Putra and Saifudin (2022) note that global logistics instability further pressured local producers, especially smaller firms. ISM visualizations help clarify how logistical disruptions contribute to the domino effect that leads to layoffs. Additionally, ISM allows analysis of this element's influence hierarchy, enabling strategic policymaking targeting infrastructure or regulatory points for maximum impact.

Although Levels 3, 2, and 1 are less foundational, they remain important. At Level 3, elements such as inaccurate or incomplete social aid recipient data (E9) and limited reach of social assistance programs (E10) play significant roles. These relate to ineffective social interventions that prolong the pandemic's impact on vulnerable populations (Ministry of Social Affairs, 2022). Though they represent downstream effects, these elements hinder the social recovery process (Putra & Sari, 2023). At Level 2, three surface-level issues are evident: the decline in household purchasing power (E3), slow business recovery (E6), and limited community resources and capacity for managing economic empowerment programs (E11). These factors exacerbate poverty and significantly reduce public consumption (Rahman & Nugroho, 2021). They are influenced by the more fundamental drivers found in Levels 4 and 5 (World Bank, 2020).

At Level 1, the topmost level indicating final impacts, are elements such as the digital infrastructure gap between regions (E5) and uneven technological adaptation (E8). These represent long-term systemic consequences, reflecting the slow recovery, access limitations, and inadequate public readiness for digital transformation during the crisis (Putra & Sari, 2023; World Bank, 2020). These elements pose significant end-stage challenges in social and economic recovery efforts.

3.2 Strategies and Policy Directions for Strengthening the Economy in Pandemic or Similar Conditions

Based on the ISM results and priority structure (especially the "Independent" quadrant), the following strategies are proposed for strengthening community economic resilience during a pandemic:

E1. Mass Layoffs (PHK)

Strategies: Conditional wage subsidies: Provide wage support to companies—especially MSMEs and informal sectors—that retain employees; Flexible work arrangements: Adjust labor regulations to allow for part-time or rotational work while ensuring social protection; and Community-based labor-intensive programs: Create temporary jobs through local projects such as public facility improvements.

E2. Mobility Restrictions

Strategies: Digitization of public and informal services: Expand digital platforms for healthcare, education, commerce, and licensing to function under

restricted mobility; and Priority logistics transport: Ensure uninterrupted logistics for essential goods and medical supplies during restrictions.

E4. Retail and Service Sector Closures

Strategies: UMKM digital onboarding: Accelerate MSME digitization through online marketing and payment platforms. Conducting outreach and socialization activities, either directly or indirectly, for business actors or activities to encourage the utilization of technology (Firmansyah and Syaepudin, 2018); Rent and tax incentives: Offer tax relief and rental subsidies to small retailers during operational closures; and CHSE certification and training: Equip service sectors to operate under strict health protocols.

E7. Logistics and Raw Material Distribution Disruptions

Strategies: National logistics zoning: Redesign logistics routes to ensure continuity during mobility restrictions; Local logistics warehouse incentives: Strengthen local reserves for raw materials and food supplies in each region; and Supply chain digitization: Integrate national distribution data to enhance logistics efficiency.

4. CONCLUSION

Four key elements emerged as the primary drivers of the economic crisis during the COVID-19 pandemic: mass layoffs, mobility restrictions, the closure or operational limitation of the retail and service sectors, and disruptions in raw material and logistics distribution. These elements exert a strong influence on other factors, such as the decline in household purchasing power, the slow recovery of business sectors, and the rise in poverty levels. Therefore, strategic interventions must focus on these root causes to break the chain of systemic impact and enable a more effective economic recovery. Recommended policy strategies include the provision of conditional wage subsidies, labor flexibility mechanisms, digitization of public services and MSMEs, tax and rent incentives for affected sectors, as well as the digitalization and zoning of the national logistics system. With proper and data-driven planning, governments can strengthen community economic resilience and reduce vulnerability to future shocks of similar nature. Furthermore, ISM mapping provides a structured and hierarchical framework for policy formulation, enabling more efficient decision-making with broader and longer-term impact on post-pandemic economic recovery and preparedness for future crises.

ACKNOWLEDGMENTS

The authors express their gratitude honorable to the relevant experts for their willingness to be interviewed. Many thanks also to the Head of System Dynamics Center Research for the scientific support of this research implementation.

REFERENCES

- Ahmad, R. F., & Rachmawati, L. (2021). *Fenomena PHK masa pandemi COVID-19 dan dampaknya terhadap fresh graduate jurusan Ilmu Ekonomi Universitas Negeri Surabaya. Independent: Journal of Economics*, 1(1), 157–169.
- Ardiyono, S. K. (2022). *COVID-19 pandemic, firms' responses, and unemployment in the ASEAN-5. Economic Analysis and Policy*, 76, 337–372.
- Astuti, D. R., & Afifuddin, M. (2021). *Evaluasi Kebijakan Program PEN dalam Merespons Dampak Pandemi COVID-19. Jurnal Ekonomi dan Kebijakan Publik*, 12(2), 189–202.
- Budi Sumantri¹, Siswoyo Haryono, Irman Firmansyah and Casnan. (2020). National Quality Standard Approach for Business Competitiveness and Sustainability: A Study of Indonesian Public Market. *International Journal of Advanced Science and Technology*, Vol. 29, No. 6, 3764 – 3770.
- Casnan, Purnawan, Heti Triwahyuni, Evan Farhan Wahyu Fuadi, Irman Firmansyah. 2021. Analisis Kendala Pembelajaran Daring PAUD dan SD Dengan Pendekatan Interpretative Structural Modeling. *Jurnal Pelita PAUD*. Vol. 6 No. 1, 33-40.
- Firmansyah, I & Syaepudin. 2018. Information Technology-Based Smart Village Model. (A Case Study of Surade District, Sukabumi Regency, West Java Province). *JURNAL DESA* Volume 1 No. 1 Desember 2018.
- Kementerian Sosial Republik Indonesia. (2022). *Laporan Evaluasi Program Bantuan Sosial dan Dampaknya pada Masyarakat Rentan*. Jakarta: Kementerian Sosial RI.
- Nugroho, Y., & Suryani, A. I. (2023). *Kebijakan Ekonomi Antisipatif terhadap Krisis Kesehatan Global: Pelajaran dari Pandemi COVID-19. Jurnal Administrasi Publik*, 20(1), 55–69.
- Paulus C.A., Yahyah, Aludin Al Ayubi, Azmanajaya E., Firmansyah I. 2022. Policy Design For Coastal and Marine Tourism Development in Komodo National Park Using Interpretative Structural Modeling: A Case Study Of Padar and Komodo Islands. *Russian Journal of Agricultural and Socio-Economic Sciences*, 11(131), 258-266.
- Putra, A. A., & Saifudin, M. (2022). *Pengaruh gangguan rantai pasok global terhadap kinerja perusahaan manufaktur di Indonesia selama pandemi COVID-19. Jurnal Ilmu Ekonomi dan Bisnis Islam*, 10(2), 115–128.
- Putra, A., & Sari, R. (2023). Analisis Sistem ISM terhadap Dampak Sosial Ekonomi Pandemi Covid-19. *Jurnal Ekonomi dan Pembangunan*, 12(3), 45-60.
- Putra, I. W. G. A., & Anas, T. (2022). *Ketimpangan Dampak Ekonomi Pandemi dan Respons Kebijakan Daerah di Indonesia. Jurnal Perencanaan Pembangunan: The Indonesian Journal of Development Planning*, 6(1), 71–86.
- Rahman, F., & Nugroho, H. (2021). Pengaruh PHK Massal terhadap Pemulihan Ekonomi dan Sosial di Indonesia. *Jurnal Manajemen dan Kebijakan Publik*, 9(2), 112-127.

- Sumantri, B., Haryono S, Firmansyah I, Casnan. 2020. National Quality Standard Approach for Business Competitiveness and Sustainability: A Study of Indonesian Public Market. *International Journal of Advanced Science and Technology* Vol. 29, No. 6, (2020), pp. 3764 – 3770.
- World Bank. (2020). *Indonesia Economic Prospects: Managing the Impact of COVID-19*. Washington, DC: World Bank Publications.