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Workforce Adaptation and Labor Market Reforms in Post-COVID-19 Southeastern Vietnam

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Abstract

The COVID-19 pandemic disrupted employment, industrial production, worker mobility, and livelihoods in Southeastern Vietnam, the country's major industrial and service-producing region. This study examines the relationship between labour-market disruption, workforce adaptation, and government policy responses, using descriptive and comparative analysis of published labour statistics, official resolutions, and relevant scholarly research, primarily for 2020–2022. It distinguishes employment and income losses from labour-force participation, enterprise-reported shortages, and longer-term recruitment difficulties. Official data for the third quarter of 2021 indicate that 59.1% of workers in the Southeast experienced adverse employment effects, the labour-force participation rate declined to 62.8%, and 30.6% of surveyed enterprises reported worker shortages. Sectoral shortages were particularly pronounced in electronics-related manufacturing, leather-related production, apparel, and other industrial activities. Rather than treating these results as equivalent indicators of a single skills deficit, the study interprets them in relation to interrupted production,

worker mobility, income insecurity, and possible mismatches between employer requirements and workforce availability. The analysis distinguishes emergency assistance under Resolutions No. 68/NQ-CP and 116/NQ-CP from safe-adaptation measures under Resolution No. 128/NQ-CP, economic recovery measures under Resolution No. 11/NQ-CP and National Assembly Resolution No. 43/2022/QH15, and longer-term regional priorities under Resolution No. 24-NQ/TW. It finds that the secondary evidence supports a diagnosis of overlapping labour-market pressures but does not permit causal attribution of recovery outcomes to individual policies. The study recommends strengthening interprovincial labour-market information, enterprise-linked vocational and digital training, affordable worker housing, social protection, and policy evaluation. It concludes that sustainable workforce recovery requires coordinated action addressing both firms' production requirements and workers' ability to maintain stable employment.

Keywords: labour market, COVID-19, workforce development, Southeastern Vietnam, economic recovery

1. INTRODUCTION

The COVID-19 pandemic produced a health emergency and a major disruption to employment, household livelihoods, supply chains, and economic activity across the world. Restrictions on movement and business operations affected the ability of firms to maintain production and of workers to access stable employment. These effects were unevenly distributed across economic sectors and population groups, exposing existing differences in job security, occupational skills, access to social protection, and the capacity to work remotely. Research on the social and economic consequences of COVID-19 accordingly emphasizes that labour-market recovery cannot be evaluated only through the reopening of workplaces or a return to aggregate output growth; it must also be assessed through employment quality, income security, inclusion, and institutional resilience [1–3].

Vietnam provides an instructive setting for examining these processes. Its export-oriented economy depends substantially on manufacturing, industrial supply chains, services, and the movement of workers between provinces. Although Vietnam initially limited the spread of COVID-19, the intensified outbreak and strict containment measures during 2021 disrupted enterprises and household livelihoods. The Southeast, comprising Ho Chi Minh City and the provinces of Dong Nai, Binh Duong, Binh Phuoc, Tay Ninh, and Ba Ria–Vung Tau, is particularly significant because of its concentration of industrial parks, large employers, commercial services, and domestic migrant workers. Analyses of the region's economic performance indicate that the pandemic sharply interrupted an important centre of national growth [5, 6].

The magnitude of the disruption is apparent in the official labour-market statistics for the third quarter of 2021. The National Statistics Office of Vietnam reported that 59.1% of workers in the Southeast had been negatively affected by the pandemic, while the regional labour-force participation rate fell to 62.8%. The share of surveyed enterprises reporting labour shortages reached 30.6%, with particularly pronounced shortages in Binh Duong, Binh Phuoc, and Ho Chi Minh City. These figures describe different outcomes: exposure to adverse employment effects, participation in the labour force, and employers' reported recruitment difficulties, respectively. Their coexistence demonstrates why the region's labour-market disruption cannot be adequately characterized by a single unemployment indicator [14]. In an export-oriented industrial region, interrupted production, workers' return migration, uncertain earnings, and difficulties recruiting replacement workers may reinforce one another even after restrictions are eased.

The pandemic also exposed structural vulnerabilities that had developed before 2020. Industrial expansion relied heavily on workers moving from rural provinces to urban manufacturing centres, often without equivalent improvements in affordable housing, social services, job stability, and occupational mobility. Restrictions on industrial production were accompanied by substantial declines in labour earnings, and some workers returned to their home provinces. Subsequent recruitment problems reflected not only labour-force availability but also the conditions under which workers would be willing and able to return. Evidence on industrial employment and informal workers in Vietnam illustrates the importance of job security, earnings, and disparities in labour-market protection [11, 12]. These conditions suggest that recovery policies must address the relationship between employers' demand for labour and workers' capacity to sustain employment in high-cost industrial locations.

Government responses were introduced in stages. Resolution No. 68/NQ-CP of July 2021 provided support measures for employees and employers experiencing pandemic-related hardship, while Resolution No. 116/NQ-CP introduced support through unemployment-insurance resources. Resolution No. 128/NQ-CP in October 2021 established the policy of safe and flexible adaptation to COVID-19, and Resolution No. 11/NQ-CP in January 2022 outlined a broader socio-economic recovery and development programme in conjunction with National Assembly Resolution No. 43/2022/QH15. The longer-term development of the Southeast was subsequently addressed in Politburo Resolution No. 24-NQ/TW of October 2022. These measures had different objectives, legal status, and implementation periods; emergency income relief should therefore be distinguished from policies for reopening, economic recovery, and structural regional development [15–20].

Existing scholarship provides complementary but incomplete perspectives on the region's experience. Studies of Vietnam's economic growth document the unequal effects of COVID-19 on economic activity, while firm-level research identifies variations in employment responses across industries and types of enterprises [5–7]. Other studies consider manufacturing adaptation and the need for digital transformation, productivity growth, and higher-level skills [4, 8]. Research on industrial workers' job security and informal employment draws attention to protections and economic insecurity that macroeconomic data cannot fully represent [11, 12]. Yet these bodies of evidence are often considered separately. There remains a need for an integrated regional account of how employment shocks, migration, recruitment difficulties, occupational mismatch, and successive policy measures interacted during the initial recovery period.

The research problem is therefore not simply whether employment declined during the pandemic, but why significant recruitment difficulties coexisted with lost jobs and insecure livelihoods in the Southeast and what this coexistence implies for post-pandemic reform. Labour shortages can result from disrupted mobility, mismatches between the skills employers request and those jobseekers possess, inadequate wages relative to living costs, uncertain working conditions,

or insufficient information linking vacancies and workers. The available secondary evidence does not permit the separate causal contribution of each mechanism to be estimated. Nevertheless, an organized comparison of regional statistics, policy documents, and relevant studies can clarify the pattern of disruption and identify reform priorities that merit more rigorous subsequent evaluation.

Against this background, the aim of the present study is to analyse workforce adaptation and labour-market reforms in post-COVID-19 Southeastern Vietnam, using secondary evidence focused primarily on 2020–2022. It pursues three objectives: first, to describe employment disruption, labour-force participation, unemployment, and reported labour shortages in the region; second, to examine the scope and intended functions of government interventions during the emergency and recovery phases; and third, to identify policy directions related to vocational and digital skills, labour-market information, interprovincial coordination, worker housing, and social protection. Correspondingly, the study asks how the pandemic altered regional labour-market conditions, what the available evidence can and cannot establish about policy responses, and which structural reforms are most plausibly supported by the documented vulnerabilities.

The study contributes a regionally focused synthesis rather than a new causal evaluation or a primary survey. By distinguishing observed outcomes from policy intentions and forward-looking recommendations, it seeks to connect official statistical evidence with research on industrial employment, migrant labour, and workforce development. This perspective is useful beyond Vietnam because other industrializing economies face comparable difficulties coordinating worker mobility, export-oriented production, affordable urban living, and protection against disruptions. The following literature review considers these international and Vietnamese debates; the methodology then explains the documentary and descriptive approach, followed by the regional findings, policy discussion, limitations, and conclusions.

2. LITERATURE REVIEW

Research on the labour-market effects of COVID-19 identifies a set of related, but analytically distinct, disruptions. A reduction in employment need not correspond to an equivalent increase in measured unemployment because individuals may temporarily leave the labour force, migrate, work fewer hours, or enter informal activities. Similarly, business reopening does not guarantee that the workers needed for production are immediately available. International assessments have therefore emphasized both the short-term loss of work and income and the longer-term inequalities in access to stable jobs, social security, and economic adjustment [1, 3]. For example, Morales et al. [2] evaluated the Colombian labour market and distinguished mobility restrictions from sector-specific economic effects. Their findings provide comparative context, not direct estimates for Vietnam.

The distributive effects of the pandemic are especially important for interpreting regional labour statistics. Workers in occupations requiring physical presence, and those with precarious contracts or limited financial buffers, were exposed to particular risks. Labour legislation and employment protections may alter the degree to which such shocks translate into insecurity. Kudriavtsev et al. [10], examining Ukraine and Europe, discuss changes in labour-law arrangements under COVID-19. These findings are relevant conceptually, although differences between legal systems prevent direct transfer of their policy conclusions to the Vietnamese context. Broad cross-country evidence likewise indicates that social protection and economic structure affect the uneven distribution of pandemic losses [3].

Vietnamese studies provide a closer account of these mechanisms. Trinh [13] examines the broader effects of COVID-19 on Vietnam's labour market, including employment interruptions and changing economic circumstances. Nguyen et al. [7] used a survey of 672 Vietnamese firms to examine financial performance and coping strategies during the pandemic, showing that enterprise responses differed according to financial circumstances and managerial factors. Le et al. [6], using evidence from approximately 16,000 firms across 82 industries in Ho Chi Minh City, reported heterogeneous workforce adjustments by enterprise type, industry, and location. These studies establish that a uniform narrative of business or labour-market disruption would conceal important variation. However, firm-level coping behaviour should not be conflated with directly observed changes in household welfare or the effects of a government programme.

At the regional scale, Nguyen [5] examined the economic consequences of COVID-19 for the Southeast, an area central to Vietnam's industrial and service production. Official statistics provide a more detailed perspective on employment. The National Statistics Office reported that, during the third quarter of 2021, the Southeast experienced both a steep decline in labour-force participation and a high share of workers whose employment was adversely affected. The same official report documented recruitment shortages among employers as well as falling earnings and labour migration from southern industrial centres [14]. This evidence supports an interpretation of the crisis as a combined supply, demand, mobility, and income shock rather than unemployment alone.

Research on job security further qualifies the picture. Nguyen Thi Thanh Huong [11] discusses employment protection among workers in industrial parks and the continuing need for institutional and enterprise-level safeguards. Hoang et al. [12] examine changes in informal workers' hours and earnings and the relationship between informal employment and income inequality. These studies suggest that the number of jobs available is not sufficient by itself to explain worker retention: stability, remuneration, social insurance, and access to services can also shape the capacity to remain employed.

Because these studies use different units of analysis, however, they do not establish a causal ranking among the proposed explanations for shortages in the Southeast.

Manufacturing research addresses a complementary aspect of recovery. Le and Nhieu [4] developed a multicriteria approach for evaluating post-pandemic production strategies in Vietnam and identified digitalization among the relevant responses to supply-chain disruption. The OECD analysis by Lenain et al. [8] similarly emphasized productivity, digital competencies, and structural reforms as long-term requirements for growth. These studies indicate that recovery is not only a question of returning workers to previous roles; it may also involve adjusting skills, production processes, and the institutions through which workers and employers are connected. Such proposals should nevertheless be distinguished from empirical demonstrations that a particular training programme reduced unemployment or recruitment shortages.

Government interventions created a changing policy environment. Resolution No. 68/NQ-CP and Resolution No. 116/NQ-CP addressed immediate hardship and insurance-based assistance; Resolution No. 128/NQ-CP established a framework for safe adaptation; and Resolution No. 11/NQ-CP, together with National Assembly Resolution No. 43/2022/QH15, supported broader recovery measures. Resolution No. 24-NQ/TW later set regional development priorities for the Southeast [15–20]. The existence of these policies documents government responses but does not, without evaluation data or a credible counterfactual, prove the extent to which an individual resolution caused improvements or failed to reduce shortages. Studies of job security, inequality, and the national economy provide useful context for examining the outcomes alongside the policy record [8, 11, 12].

Three gaps motivate the present synthesis. First, macroeconomic accounts and studies of individual firms or workers often use incompatible outcomes, leaving the relationship between regional participation, reported unemployment, income shocks, and enterprise labour shortages insufficiently integrated. Second, national policy measures are sometimes described collectively even though emergency relief, insurance payments, safe reopening, training, and long-term regional planning have different objectives and time horizons. Third, the available studies do not yet establish the separate effects of worker migration, urban living costs, vocational mismatch, and social protection on subsequent recruitment. The present study addresses the first two gaps through structured comparison and clarifies the third as a research priority rather than claiming to resolve it causally.

3. METHODOLOGY

The study used a descriptive, comparative, and documentary research design based on secondary evidence, with the principal analytical period covering 2020–2022. Its geographical focus was the Southeast economic region of Vietnam, particularly Ho Chi Minh City and the adjoining industrial provinces. No original household, enterprise, or worker survey was administered as part of this study. Previously published survey findings are discussed only as secondary sources and are distinguished from the authors' own descriptive analysis. The study therefore does not claim experimental identification, an original representative sample, or statistical estimates of the causal effect of particular policies.

The main sources comprised public labour-force statistics issued by the General Statistics Office (now the National Statistics Office), including the Statistical Yearbook 2022 and official quarterly labour and employment reports; government and National Assembly resolutions adopted during the pandemic and recovery period; peer-reviewed research concerning Vietnamese enterprises, workers, industrial production, and social protection; and relevant international analyses. Particular attention was given to official reports covering the third quarter of 2021 because the most acute regional employment disruption occurred during that period [6, 9, 11, 14]. For documentary policy analysis, the study considered Resolutions No. 68/NQ-CP, 116/NQ-CP, 128/NQ-CP, and 11/NQ-CP; National Assembly Resolution No. 43/2022/QH15; and Politburo Resolution No. 24-NQ/TW [15–20].

Data extraction focused on the indicator definition, reference period, geographic coverage, population or enterprise denominator, and published numerical value. The indicators included participation in the labour force, unemployment and underemployment, changes in earnings, the share of workers reporting adverse pandemic effects, and the share of enterprises reporting difficulty recruiting staff. Distinguishing these measures was essential: a percentage of workers and a percentage of enterprises cannot be combined as though they represented the same underlying population, and a third-quarter observation should not be presented as an annual average. Reported results were compared across documents where a comparable definition and time period were available; otherwise the differences were described as limitations rather than treated as equivalent quantities.

Descriptive analysis was used to organize reported percentages, changes over time, and differences between the Southeast and national comparators. Microsoft Excel was used to structure the secondary information and prepare descriptive comparisons; no primary econometric model or counterfactual impact evaluation was undertaken. The policy documents were examined thematically according to their main intended functions: emergency support, safe reopening and employment stabilization, economic recovery, and longer-term skills or regional-development measures. This classification supports comparison of policy goals and documented labour-market conditions, but it does not establish that a policy caused any observed change.

Table 1 summarizes the evidence types and their principal limitations. Priority was given to original statistical releases and the primary text of government resolutions for claims about numbers and policy provisions. Scholarly articles were used to interpret mechanisms, differences between workers and firms, and potential longer-term consequences. Where the original manuscript cited an untraceable item or a publication whose topic did not support the stated claim, the citation was replaced, the assertion was qualified, or the issue was identified for further author verification.

Table 1. *Data sources and potential limitations of the secondary evidence*

Source type	Example documents	Strengths	Potential biases and limitations
Government policy documents	Resolutions No. 68/NQ-CP, 116/NQ-CP, 128/NQ-CP and 11/NQ-CP [15–18]	Authoritative statements of policy provisions, intended beneficiaries and implementation arrangements	Policy intentions are not evidence of realized causal effects; implementation can vary locally
Statistical yearbooks and reports	General Statistics Office [9, 14]	Official regional indicators, documented reference periods and published definitions	Potential undercoverage of informal work and limitations in comparing survey measures across time
Peer-reviewed studies	Nguyen et al. [7], Le et al. [6] and Hoang et al. [12]	Independent analytical perspectives and study-specific empirical evidence	Heterogeneous methods, samples, periods and geographic coverage
International institutional analysis	OECD [8]	Broader economic context and policy comparisons	National or international aggregation may conceal provincial conditions
Previously published worker and enterprise studies	Huong [11], and enterprise studies [6]	Insights into job security, organizational responses and recruitment conditions	Cannot be treated as an original survey conducted for the present article

The chronological and thematic distinction between policy instruments is shown in Table 2. It provides an organizing framework for interpretation rather than an independently measured distribution of expenditure or outcomes.

Table 2. *Major Vietnamese policy measures relevant to labour-market adjustment, 2021–2022*

Analytical theme	Policies and actions	Principal stated purpose
Emergency income and employment support	Resolution No. 68/NQ-CP (2021) [15]	Assistance to employees and employers facing COVID-19-related hardship
Unemployment-insurance assistance	Resolution No. 116/NQ-CP (2021) [16]	Financial support for eligible workers and employers through unemployment-insurance arrangements
Safe reopening and adaptation	Resolution No. 128/NQ-CP (2021) [17]	Safe and flexible adaptation to COVID-19 to facilitate the resumption of activities
Socio-economic recovery	Resolution No. 11/NQ-CP and National Assembly Resolution No. 43/2022/QH15 [18, 19]	Recovery and development measures, including fiscal and monetary support
Regional structural development	Politburo Resolution No. 24-NQ/TW (2022) [20]	Development of the Southeast to 2030, with a vision to 2045

Because the research relied on public secondary information and documentary analysis, it did not involve direct recruitment of human participants or access to identifiable individual-level survey records. Its principal ethical obligations were accurate attribution, faithful representation of original measures, and acknowledgement of information gaps. The study's main limitation is that descriptive co-occurrence does not establish causality: employment disruptions and successive policies overlapped with changing public-health conditions and international economic developments. Further research using harmonized longitudinal data, worker interviews, or policy evaluation designs would be necessary to test the mechanisms and estimate intervention effects.

4. RESULTS AND DISCUSSION

4.1. EMPLOYMENT DISRUPTION AND THE REGIONAL LABOUR MARKET

Ho Chi Minh City and the wider Southeast are major destinations for workers and contain a large concentration of industrial enterprises and service activities. The region therefore faced particularly severe consequences when the fourth wave of COVID-19 interrupted production and movement in 2021. Official figures for the third quarter show that 59.1% of the region's workers reported adverse employment effects and that labour-force participation fell to 62.8%. The same statistical release reported that the unemployment rate among persons of working age in the Southeast exceeded 6% during the quarter, compared with 2.33% in the third quarter of 2019. These observations must be read as quarter-specific measures rather than annual unemployment or participation rates [14]. Their joint significance is that reduced employment,

weakened participation, and an elevated likelihood of job-search difficulty occurred at the same time.

Business closures, interrupted operations, and migration away from industrial cities contributed to these losses. The National Statistics Office estimated that employment in the Southeast fell by approximately 1.5 million persons in the third quarter of 2021 compared with the preceding quarter, equivalent to a 14.5% decline. It also reported a marked reduction in earnings: average monthly earnings in the region declined by 29.8% relative to the second quarter of 2021. Thus, the disruption involved reductions in hours, employment, and pay, not simply a change in the number of registered jobseekers [14]. The economic analysis of the region by Nguyen [5] also situates these employment losses within a broader interruption of regional economic growth.

A further methodological challenge arises when locally administered worker surveys are compared with official labour-force statistics. The samples, employment-status questions, occupational categories, and reference periods may differ substantially. Even where the resulting percentages appear similar, they should not be pooled or presented as interchangeable estimates without documentation of the sampling design and outcome definitions. This limitation reinforces the need to distinguish the evidence generated by a dedicated worker survey from descriptive figures published in a national statistical release. The present analysis therefore gives priority to transparently defined official indicators when making quantitative claims about the regional labour market.

4.2. LABOUR SHORTAGES AND OCCUPATIONAL MISMATCH

A striking feature of the 2021 crisis was the simultaneous occurrence of lost employment and shortages of workers among firms attempting to operate. In an official assessment of 22,764 businesses, 17.8% reported a labour shortage nationally; within the Southeast, the proportion was 30.6%. The corresponding shares were 36.9% in Binh Duong, 34.4% in Binh Phuoc, and 31.8% in Ho Chi Minh City. These percentages refer to enterprises reporting shortages, not to the fraction of required skilled workers missing from the labour market. Sectoral differences were substantial: 55.6% of surveyed firms in electronics, computer, and optical-product manufacturing reported shortages, followed by 51.7% in leather-related production, 49.2% in apparel, 44.5% in electrical equipment, and 39.5% in textiles [14]. Accordingly, the often-repeated claim that these industries had a “more than 50% skills demand–supply gap” would misrepresent the underlying statistic.

These shortages were compatible with the loss of employment elsewhere because employers and workers were not necessarily located in the same places, available at the same times, or matched on occupational requirements. Workers who had returned to their home provinces during restrictions might not have been able or willing to return quickly, particularly when transport, housing, health concerns, and family responsibilities remained uncertain. Firms restarting specialized production lines could also require skills or experience different from those available among active jobseekers. The official report identifies the return migration of workers and production interruptions as important components of the immediate disruption [14]. However, the relative causal importance of wages, housing costs, skills, and migration decisions cannot be calculated from these aggregate figures alone.

The coexistence of recruitment needs and unemployment also has institutional implications. Better vacancy information cannot by itself overcome unaffordable housing or inadequate working conditions, while vocational training cannot guarantee placement unless employers participate in defining competencies and providing opportunities. Evidence from research on job security in industrial parks indicates the continuing importance of employment protection and working conditions [11]. Studies of informal workers likewise show that losses in income and working time can be concentrated among those with weaker protections [12]. A comprehensive workforce strategy therefore needs to connect training and matching mechanisms to worker welfare and the affordability of urban employment.

4.3. MIGRATION, RECRUITMENT, AND THE CONDITIONS OF RETURNING TO WORK

The Southeast’s manufacturing economy has long relied on workers moving between provinces in response to industrial employment opportunities. During the pandemic, enterprise closures and mobility restrictions interrupted these movements. The National Statistics Office reported substantial movement out of southern industrial localities and an accompanying transfer of some employment back toward agriculture in workers’ home provinces [14]. This helps explain why a reopening announcement did not immediately restore the pre-pandemic composition of the regional workforce: some workers were no longer present, while others had changed employment circumstances or priorities.

Workers’ decisions about returning to industrial workplaces plausibly depended on more than whether a vacancy existed. Housing and transport costs, confidence in workplace safety, expected earnings, family arrangements, and the availability of health care or social insurance could shape the practical attractiveness of urban employment. These mechanisms are consistent with the broader literature on industrial job security and informal income vulnerability [11, 12]. They should nonetheless be described as plausible mechanisms and policy considerations rather than as effects measured independently by this study. More detailed research following individual workers over time would be necessary to establish whether a

given factor was decisive in their return or non-return.

Enterprise-level evidence reinforces the need to distinguish these mechanisms. Nguyen et al. [7] observed varying financial and strategic responses among Vietnamese firms, whereas Le et al. [6] identified heterogeneity in workforce adjustments in Ho Chi Minh City. In other words, employers differed in the financial resources available for retention, recruitment, and continuity. The implications for returning workers could consequently differ between businesses and sectors. Treating the Southeast as a single undifferentiated labour market would obscure these differences, including the contrast between specialized production work, services, and informal employment.

4.4. GOVERNMENT INTERVENTIONS AND THEIR LIMITATIONS

The Vietnamese government introduced measures to relieve hardship and support recovery. Resolution No. 68/NQ-CP (2021) addressed pandemic-related difficulties faced by employers and workers, and Resolution No. 116/NQ-CP (2021) provided support through unemployment-insurance arrangements. Resolution No. 128/NQ-CP (2021) subsequently established a national safe-adaptation framework, while Resolution No. 11/NQ-CP (2022), together with National Assembly Resolution No. 43/2022/QH15, set out a broader programme for socio-economic recovery. The different objectives of these instruments should be assessed separately [15–19]. Table 2 summarizes the sequence and intended policy functions.

The secondary data do not support a definitive conclusion that these measures either caused recovery or failed to alleviate labour shortages. The period of policy implementation coincided with changing infection levels, the easing of mobility restrictions, a gradual resumption of commercial activity, and international supply-chain developments. Without a suitable comparison group, implementation information, and consistent regional outcome measurements, observed changes cannot be assigned to one resolution. What the available evidence establishes is that immediate assistance and reopening measures addressed a serious shock, while the region continued to face structural concerns about labour mobility, workforce retention, and recruitment. These issues motivate a longer-term reform agenda rather than a claim that emergency relief was intrinsically ineffective.

4.5. POLICY IMPLICATIONS FOR WORKFORCE DEVELOPMENT

First, employment information and interprovincial coordination should be strengthened. A transparent mechanism for sharing verified vacancies, skills requirements, training opportunities, and changes in enterprise demand would help workers evaluate realistic alternatives before relocating. Such arrangements would be particularly valuable for the industrial corridors connecting Ho Chi Minh City, Binh Duong, and Dong Nai with sending provinces. The policy objective should be a more continuous system of labour-market intelligence, rather than reliance on ad hoc recruitment drives after a disruption. The effectiveness of specific platforms or coordination programmes, however, would require prospective monitoring and evaluation.

Second, vocational education and enterprise-based training should be aligned more closely with occupations experiencing change. The transition toward more technologically advanced manufacturing and services increases the value of adaptable technical, digital, and communication skills. Le and Nhieu [4] identify digitalization as an important option for post-pandemic manufacturing strategies, while Lenain et al. [8] emphasize productivity-enhancing reforms and digital capabilities. These findings support collaboration between enterprises, vocational institutions, and provincial authorities to identify competencies with demonstrable demand. Training should be accompanied by placement opportunities and evaluation of subsequent employment outcomes, not measured solely by course enrolments or certificates issued.

Third, worker retention should be treated as a matter of social as well as industrial policy. Affordable housing, accessible health care, transparent employment contracts, and dependable insurance arrangements can affect whether industrial employment is sustainable for migrant households. The research on job security and informal labour makes clear that a restored job count alone does not establish income stability or adequate protection [11, 12]. The practical priority is therefore to connect productivity and recruitment strategies with the conditions necessary for workers to remain in the region safely and economically.

Fourth, long-term regional planning should recognize the Southeast's dependence on complex relationships among production, migration, education, infrastructure, and social services. Politburo Resolution No. 24-NQ/TW (2022) establishes a broader strategy for socio-economic development in the Southeast through 2030, with a vision to 2045 [20]. Its regional-development orientation provides context for coordinating industrial upgrading with workforce capabilities; it should not be confused with a programme that has already demonstrated causal reductions in post-pandemic labour shortages. Targeted workforce measures should also distinguish the needs of rural sending areas, industrial host provinces, and workers seeking new forms of employment.

Fifth, labour-market governance requires shared responsibilities. Public authorities can establish protections, improve market information, coordinate regional development, and evaluate employment programmes. Employers can improve the predictability of working conditions, participate in practical training, and disclose recruitment requirements. Educational

institutions can revise curricula to reflect occupational change. Workers may also benefit from access to flexible and affordable opportunities for retraining. Such responsibilities should not be interpreted as shifting the burden of structural labour insecurity entirely onto individual employees. Resilience depends on the interaction of institutional safeguards, enterprise practices, and personal opportunities.

4.6. INTERPRETING MULTIPLE LABOUR-MARKET INDICATORS

The relationship between participation, unemployment, underemployment, and recruitment vacancies is a central analytical consideration. Labour-force participation measures the share of a defined population that is either employed or actively seeking employment, whereas unemployment measures the share of the labour force that is without work under a specified statistical definition. A reduction in participation may therefore conceal employment distress when people stop looking for jobs, return to other provinces, or become temporarily unavailable because of care responsibilities. Underemployment, in turn, describes insufficient work among people who remain classified as employed. None of these indicators alone measures the ability of an industrial employer to recruit workers with particular training or work experience. As a result, a region can exhibit rising unemployment and high levels of reported labour shortage without any logical contradiction. The national statistical release for the third quarter of 2021 provides evidence of precisely this coexistence in the Southeast [14].

This distinction has implications for how the original data should be presented to readers. The figure of 59.1% is not the regional unemployment rate, and it does not signify that approximately three-fifths of Southeast residents permanently lost employment. It records a wider range of adverse pandemic-related outcomes, including reduced work, interruptions, and changes in earnings. Similarly, the 30.6% shortage measure does not mean that nearly one-third of all regional jobs were vacant. It refers to the proportion of responding enterprises reporting difficulty securing labour, which may differ sharply from the proportion of unfilled positions. The industry-specific values, including 55.6% for electronics-related manufacturing, are also proportions of enterprises within the relevant categories. Clear specification of the denominator is essential for comparing sectors and for avoiding claims about the size of a skills gap that the source does not quantify. The revised analysis therefore maintains separate descriptions of workers, firms, positions, and time periods.

Measurement choices can also affect comparisons across recovery phases. A quarterly rate observed during strict restrictions captures a moment of exceptional disruption, whereas a later annual figure combines periods with different public-health measures, production levels, and mobility rules. If the time window is not held constant, an apparent improvement may reflect the easing of restrictions, seasonal fluctuations, or changes in survey composition rather than a stable structural reform. Year-to-year comparisons also require care when the population at risk changes because workers have relocated. The use of clearly defined survey periods, comparable geographical units, and documented revisions to official series is therefore a prerequisite for more precise regional assessments. The present article uses official figures descriptively while recognizing that published aggregate data do not provide a complete sequence of matched worker trajectories.

4.7. DIFFERENT ADJUSTMENT PRESSURES ACROSS SECTORS AND GROUPS

The COVID-19 shock did not affect all occupations or firms in the same way. Manufacturing businesses with specialized equipment, sequential production processes, and strict delivery deadlines may require employees with plant-specific experience, while services depend more heavily on the reopening of customer-facing activity. The result is a possible mismatch between jobs that become available quickly and the experience of workers who have remained outside the region or moved into different economic activities. The firm-level analysis by Le et al. [6] explicitly found heterogeneous adjustment patterns, confirming that the effect of the pandemic varied across industry and enterprise characteristics. This heterogeneity is a reason to avoid applying the same recruitment or training policy to every sector without assessing the relevant occupational needs.

Employment conditions can also differ across formal and informal jobs. An employee with a stable contract and insurance coverage may have more options for maintaining income during a short period of interruption than a worker whose earnings depend on irregular daily opportunities. On the other hand, informal activities may provide a temporary livelihood for individuals who cannot immediately return to factory employment, even if the work is less stable or less remunerative. Hoang et al. [12] identify significant reductions in hours and income among informal workers during the pandemic and examine their contribution to measured inequality. Their work strengthens the case for looking beyond enterprise employment totals. A policy that helps a factory restart might improve production statistics without ensuring that workers formerly dependent on informal services regain adequate incomes.

Migration introduces a further layer of unevenness. A worker living close to an industrial park faces a different set of choices from a worker who must travel between provinces, arrange housing, and support family members remaining elsewhere. During a major health emergency, those costs and uncertainties may change abruptly. Consequently, a common

vacancy announcement or wage offer may produce different responses from prospective employees. This does not mean that the article can infer each individual's motivation from secondary statistics. It means that policy design should recognize several possible constraints and should test them using worker-level evidence. The practical research question is which constraints account for delayed return in specific occupations and districts, rather than assuming that all absent workers made the same decision or faced the same obstacles.

The interaction between firm capacity and worker circumstances is particularly important. An enterprise may wish to restore output rapidly but lack the financial reserves to offer relocation assistance or improved conditions. Another firm may have a more stable revenue base and be able to retain experienced staff throughout a disruption. The study by Nguyen et al. [7] documents the varied financial and strategic coping choices of Vietnamese enterprises, although it does not directly measure the precise effectiveness of local worker-housing programmes. Combined with the labour-market evidence, it suggests that sustainable recruitment strategies should consider employer characteristics alongside workers' earnings and mobility constraints. Uniform administrative targets may otherwise overlook the unequal ability of firms to implement a recommended intervention.

4.8. POLICY INSTRUMENTS, IMPLEMENTATION, AND EVIDENCE OF EFFECTIVENESS

Assessing the government's pandemic response requires an explicit distinction between adopting a policy, delivering support, and observing a labour-market outcome. A resolution's legal text establishes its intended beneficiaries, funding or administrative basis, and general objectives; it does not on its own show the number of people actually reached in a particular industrial district. For example, a financial-assistance programme may be appropriate for mitigating immediate hardship without directly eliminating skills mismatch. Conversely, an employment-service reform may improve matching over time without providing enough short-term protection to prevent a family from leaving an expensive urban area. The measures identified in Table 2 should therefore be evaluated using indicators suited to their own objectives rather than judged against a single regional shortage rate.

Emergency relief is primarily concerned with preventing an immediate collapse in household and enterprise resources. Resolution No. 68/NQ-CP specified assistance for workers and employers affected by COVID-19, while Resolution No. 116/NQ-CP provided support linked to the unemployment-insurance system [15, 16]. Important evaluation questions for such programmes include whether eligible workers received assistance, whether payments arrived during the period of need, and whether administrative conditions excluded groups with precarious employment. These are different questions from whether a later employer was able to recruit technicians after operations resumed. The latter outcome may depend on skills, mobility, remuneration, and regional conditions that emergency benefits were not designed to alter directly.

Safe adaptation and economic recovery constitute a second category. Resolution No. 128/NQ-CP represented a shift toward enabling activities to resume under public-health requirements, whereas Resolution No. 11/NQ-CP and National Assembly Resolution No. 43/2022/QH15 provided broader measures for economic recovery [17–19]. Their effects would need to be evaluated in relation to reopening, business continuity, employment creation, and access to recovery assistance. Because industrial recruitment can remain difficult during an aggregate recovery, national output growth is not sufficient evidence that the problems of worker retention and occupational matching have been resolved. Labour indicators, earnings, and employer vacancy measures should be monitored in parallel with broader measures of economic performance.

A third category addresses long-term structural adjustment. Resolution No. 24-NQ/TW provides an institutional context for the Southeast's development beyond the immediate emergency, including the region's role in economic modernization and coordination [20]. Workforce policies linked to regional planning should be judged against medium-term outcomes, such as the alignment between training and hiring, the durability of employment, and workers' access to affordable services. A regional strategy may be coherent in its objectives yet still require detailed provincial implementation plans and funding arrangements. The empirical question is whether those arrangements produce measurable improvements, not whether the policy statement correctly identifies an important issue.

A stronger policy-evaluation design could exploit differences in programme timing, reach, or eligibility, provided the necessary information is available and the assumptions of the design are defensible. For example, repeated observations of comparable groups might allow researchers to examine how outcomes changed before and after support. However, neither a simple before-and-after comparison nor a correlation between payments and recovery is sufficient to rule out changes in infection rates, restrictions, firm orders, or worker mobility. Evaluation should therefore document selection into programmes, the population eligible for assistance, relevant control variables, and possible differences between participating and nonparticipating areas. These requirements exceed the scope of the present documentary synthesis but establish clear priorities for future research.

4.9. AN INTEGRATED AGENDA FOR VOCATIONAL SKILLS, MOBILITY, AND RETENTION

Vocational development is frequently presented as the answer to shortages, but training programmes differ greatly in content, duration, and direct relevance to an actual vacancy. If the central difficulty is that experienced workers are temporarily outside an industrial region, retraining may not solve the immediate problem. If employers have introduced new machinery or digital production methods, targeted technical training may be highly relevant. If wages are too low relative to relocation and living costs, additional certification may do little to attract workers back. This suggests that a diagnostic stage should precede programme design: firms and local authorities should specify occupations, competencies, work locations, expected compensation, and barriers reported by applicants before selecting a preferred intervention.

The scientific literature points to the need for such alignment. Le and Nhieu [4] analyze post-COVID manufacturing strategies, including digitalization, while the OECD emphasizes the broader importance of raising productivity and investing in digital capabilities [8]. Neither source proves that a universal retraining intervention would resolve every vacancy. Rather, they support a differentiated strategy in which specific technologies and production requirements guide curriculum design. Short courses may be useful when a limited new competency is required, whereas longer apprenticeships and formal vocational qualifications may be necessary for specialist occupations. Employers should participate in specifying competence standards and in assessing whether programme graduates can perform the relevant tasks.

Worker mobility and housing should be considered alongside these measures. A high-quality training course located far from available jobs can have limited practical value when participants cannot afford to relocate. The same is true when care obligations or unreliable transport make attendance difficult. Coordination among sending provinces, industrial host provinces, training institutions, and employers can reduce such barriers. Measures could include transparent information about wages and accommodation, verified vacancies, portable employment records, and support for accessing services in new locations. These are proposed directions rather than interventions independently evaluated in the present study; their effectiveness should be assessed through recruitment, retention, income, and worker-satisfaction outcomes.

Retention also requires attention after hiring. Labour-market stability is not achieved merely because a vacancy is filled once. Employers and public agencies need to understand why workers leave, whether working conditions permit long-term participation, and whether employment provides adequate protection during later shocks. Research on industrial job security and income inequality reinforces the relevance of dependable employment conditions and social protections [11, 12]. An integrated approach should therefore monitor sustained employment, not only successful recruitment, while recognizing that workers' interests and enterprise productivity must both be considered in programme design.

4.10. IMPLICATIONS FOR RESEARCH AND REGIONAL LABOUR-MARKET GOVERNANCE

A useful next step is a regional indicator system capable of distinguishing the economic phases of a shock. During restrictions, the priority indicators might include the number of workers unable to work, reductions in hours, changes in earnings, and the reach of income support. During reopening, relevant measures would include active vacancies, actual recruitment, return migration, and the restoration of production. During medium-term restructuring, attention could shift toward occupations with sustained shortages, training completion, job placement, earnings progression, and employment retention. This sequence would reduce the risk of interpreting a single short-term statistic as evidence of a permanent structural problem or a successful long-term reform.

Equally important is the need to report denominators and definitions transparently. Percentages of affected workers should identify the worker population and survey period; percentages of enterprises experiencing shortages should identify the surveyed firms and the sectoral classification; and unemployment rates should make clear which labour-force definition is used. The national report for the third quarter of 2021 illustrates how these indicators provide complementary information about the same crisis [14]. An integrated reporting system could make the relationships easier to examine without incorrectly merging measures. Publishing comparable series across provinces would also support better analysis of labour movements between industrial centres and workers' home communities.

At the institutional level, a regional governance approach should promote cooperation without eliminating provincial accountability. Local authorities have better information about housing, transport, enterprises, and training institutions in their areas; regional coordination is necessary because workers and supply chains cross provincial boundaries. A practical arrangement could assign clear responsibilities for maintaining job information, coordinating recruitment events, collecting occupational demand data, and evaluating programme outcomes. Government agencies, employers, worker representatives, and educational institutions each have relevant information that cannot be substituted entirely by the others. The aim would be to replace fragmented emergency reactions with dependable arrangements for anticipating and responding to labour-market changes.

The COVID-19 shock provides a strong rationale for this coordinated approach, but the longer-term value of the reforms must be assessed under normal economic conditions as well. Global supply-chain interruptions, changing export demand, automation, and new public-health risks may create future adjustments even without another pandemic of similar scale.

Stronger labour-market information, adaptable training pathways, and stable worker protections are therefore not only mechanisms for recovering from one historical event. They are possible components of a regional economic system that can respond more effectively to a range of disturbances. The present research identifies these elements as priorities derived from the documented pattern of disruption, while acknowledging that their relative effectiveness still requires independent evidence.

Overall, the evidence points toward a distinction between short-term employment recovery and long-term workforce resilience. The former concerns restoring access to work and basic income after a shock; the latter concerns maintaining a labour market that can absorb disruptions while protecting workers, adapting skills, and supporting productivity. Vietnam's Southeast illustrates why these objectives are related but not interchangeable. A labour shortage in a recovering industrial district may coexist with workers who have lost income or moved elsewhere, and neither outcome alone shows whether the policy environment is adequate. The reforms proposed here are therefore evidence-informed priorities for further evaluation, rather than proven interventions whose precise effects have already been estimated.

5. LIMITATIONS AND FUTURE RESEARCH

Several limitations should guide interpretation of the findings. The study is based on secondary statistical releases, policy documents, and published research rather than an original survey or a longitudinal worker-level dataset. Consequently, the analyses do not independently reproduce survey estimates, track individual workers over time, or estimate the causal effects of government resolutions. The principal quantitative evidence refers to particular quarters and reference populations; an enterprise reporting a labour shortage is not directly comparable with a worker reporting unemployment or a reduction in earnings. Differences in definitions, geographic scope, and publication dates further restrict comparison. Some informal workers and workers outside standard administrative reporting arrangements may be insufficiently represented in available sources. Finally, the descriptive evidence cannot isolate the independent influence of migration decisions, wages, housing costs, health concerns, and occupational skill requirements.

Future research should combine harmonized administrative and survey data with longitudinal interviews or panel observations of workers who left, remained in, or returned to the Southeast. Employer studies could assess vacancy duration, offered wages, retention, and occupation-specific skills gaps, while programme evaluations could examine the effects of vocational training, housing support, employment services, and social protection on measurable outcomes. Comparisons across Vietnam's economic regions and with industrializing economies elsewhere would help distinguish general crisis mechanisms from the characteristics of particular regional labour markets. Such work is essential if proposed reforms are to move from plausible priorities to evaluated policy solutions.

6. CONCLUSION

This study examined workforce adaptation and labour-market reform in the Southeast economic region of Vietnam following the COVID-19 pandemic. Using official statistical releases, relevant research, and policy documents focused primarily on 2020–2022, it identified the overlapping effects of employment disruption, falling labour-force participation, income losses, worker migration, and difficulties recruiting staff in industrial enterprises. During the third quarter of 2021, 59.1% of workers in the Southeast reported adverse pandemic effects, the labour-force participation rate declined to 62.8%, and 30.6% of surveyed enterprises reported shortages of workers. These measures capture different aspects of the crisis, but together they demonstrate the extent of the region's labour-market vulnerability [14].

The evidence suggests that reopening production was not sufficient by itself to restore a stable and appropriately matched workforce. Disrupted migration, insecure earnings, uneven social protection, and changing occupational requirements created plausible obstacles to recruitment and retention. Emergency and recovery measures, including Resolutions No. 68/NQ-CP, 116/NQ-CP, 128/NQ-CP, and 11/NQ-CP, responded to different parts of the crisis, while longer-term regional development priorities were addressed through Resolution No. 24-NQ/TW [15–18, 20]. The available descriptive evidence cannot determine the precise causal effects of these interventions; their purposes and implementation should not be confused with formally evaluated policy outcomes.

The principal practical implication is that sustainable labour-market recovery requires complementary measures rather than a single short-term response. Better regional vacancy information and coordination can support matching, enterprise-linked vocational and digital training can improve adaptation to changing production requirements, and affordable housing and dependable worker protections can strengthen the feasibility of remaining in industrial employment. These priorities should be implemented with explicit attention to occupational and provincial differences and accompanied by independent assessment of their effectiveness. The Southeast's experience shows that labour-market resilience depends not only on the capacity of firms to resume production but also on the ability of workers, employers, and public institutions to adjust together. Future research should test these mechanisms using longitudinal data and credible evaluation methods so that employment policy can progress from descriptive diagnosis toward demonstrably effective regional reform.

Author Contributions

Khue Dinh Pham and Phuc The Nguyen contributed equally to the preparation and revision of this manuscript. Both authors reviewed and approved the final manuscript. Specific CRediT roles should be confirmed by the authors before publication.

Conflict of Interest

The authors declare that they have no conflicts of interest relevant to the present study.

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Data Availability

The study uses previously published statistical reports, government documents, and scholarly sources identified in the reference list. No original respondent-level dataset was collected for this article. A consolidated extraction spreadsheet, if retained by the authors, may be made available upon reasonable request, subject to confirmation by the corresponding author.

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