



“Income of workers in industrial parks post-COVID-19 pandemic: The raised issues in Vietnam”

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INCOME OF WORKERS IN INDUSTRIAL PARKS POST-COVID-19 PANDEMIC: THE RAISED ISSUES IN VIETNAM

Abstract

This study aimed to analyze the adaptation of workers in industrial parks in Vietnam post-COVID-19 through fluctuations in their income. Data were collected from a survey of 438 workers working in industrial parks and in-depth interviews with five workers in different positions in industrial parks. The study utilized the ordinary least squares (OLS) method to quantify the factors influencing workers' income. Additionally, the difference test method was applied to assess the income variations among workers based on their professional qualifications and occupational skills. The most significant factor identified is the experience of workers (unstandardized coefficient = 0.271), followed by the education level of workers (unstandardized coefficient = 0.128). Additionally, the study reveals that differences in professional qualifications lead to an income disparity of 1.898 million VND per month, while the variations in complementary skills contribute to an income difference of 0.592 million VND per month. Furthermore, the adaptation of workers in Vietnam's industrial parks post-COVID-19 is at a relatively good level. From there, the study suggests several solutions to enhance workers' income to adapt to new post-COVID-19 conditions.

Keywords

new livelihood, employment, skills, professional qualifications, Vietnam, experience, job position

JEL Classification

O12, D13, J22, O10

INTRODUCTION

The COVID-19 outbreak significantly impacted countries both economically and socially (Suratman et al., 2021; Alessa et al., 2021; Nguyen & Tran, 2021). Vietnam is also not exempt from the negative impacts. According to statistical data from the GSO (2020), during 2020, approximately 86% of enterprises reported being adversely affected by the pandemic, with nearly 58% experiencing a sharp decline in product consumption markets. Among enterprises engaged in export activities, 56.9% were unable to export their goods (Pham, 2020; Pattiruhu & Paais, 2020; Dang & Nguyen, 2021b). These challenges within the business sector have contributed to unemployment and employment difficulties for workers in Vietnam. According to statistics from the General Statistics Office (GSO, 2022), approximately 16.9 million workers were affected by the COVID-19 epidemic in the first quarter of 2022. Of this number, 0.9 million individuals lost their jobs, while 5.1 million were forced to temporarily stop or suspend their production and business activities. Additionally, 5.7 million workers experienced reduced working hours or were required to take a leave of absence or rotational leave. The impact of unemployment and reduced working hours has negatively affected the income of many workers in Vietnam. Statistical data indicate that around 13.7 million workers experienced income reductions. Notably, most of those who lost their jobs or experienced negative effects from the COVID-19 epidemic were relatively young, with the most affected age group being between 25 and 54 years old, accounting for 73.8% of those impacted by the epidemic.

Vietnam has implemented policies to support the labor market and alleviate the pressures caused by the COVID-19 pandemic. These policies aim to assist the production sector in recovering from issues related to unemployment and employment. According to GSO (2022), the labor market has gradually stabilized. In the fourth quarter of 2021, the number of workers in individual production and business establishments reached 16.2 million, while there were 12.7 million workers in enterprises. The recovery continued into the first quarter of 2022, with numbers increasing to 16.8 million in individual establishments and 13.3 million in enterprises. Individual business establishments have been the most successful in attracting workers back, accounting for 55.4% of the increase in employment during this period. Sectors such as industry, construction, and services have also shown rapid recovery. This trend aligns with the expectation that production and service sectors would rebound swiftly to meet societal needs following disruptions in the supply chain caused by the COVID-19 pandemic.

The model for developing industrial parks in Vietnam serves not only as a means to mobilize resources for the country's economic growth but also plays a significant role in addressing employment and social issues. According to statistics from the Department for Economic Zones Management at the Ministry of Planning and Investment (MPI, 2024), by the end of July 2024, Vietnam had 431 industrial parks and export processing zones, covering a total area of approximately 132,300 hectares, with around 89,900 hectares designated for industrial use. These industrial parks have generated numerous jobs for local workers in particular and for the whole country in general. By the end of 2023, they provided jobs for about 4.15 million direct workers, averaging approximately 82 workers employed per hectare of leased industrial land. However, nationwide, about 149 thousand workers have lost their jobs at enterprises, and these are concentrated in provinces with industrial parks located in the area (Linh, 2023). In fact, the outbreak of the COVID-19 pandemic has significantly impacted businesses in industrial parks, leading to a wave of "repatriation" among workers in these areas. This situation creates challenges not only for employers, who face the risk of labor shortages, but also for workers, who may experience unemployment or underemployment, ultimately reducing their income. Given the vital role that industrial parks play in contributing to the country's overall socio-economic development, as well as addressing employment and social issues, it is necessary to analyze the changes in workers' income in industrial parks following the COVID-19 outbreak. Moreover, it is crucial to determine adaptations and livelihood strategies necessary for workers to secure their income, thereby helping to resolve employment and social challenges at both the local and national levels.

1. LITERATURE REVIEW

The COVID-19 pandemic has had significant negative impacts on the entire economy and individual participants in economic activities, including workers. Numerous studies have explored the effects of the pandemic on workers from various perspectives, including policy and research (GSO, 2022, 2021; Bezerra et al., 2020; Qian & Fan, 2020; Nguyen & Tran, 2021). Workers have also exhibited different behaviors to maintain their living standards and income during the pandemic, as well as make changes to ensure adaptation to new conditions when COVID-19 is gradually controlled and life returns to its inherent orbit.

Qian and Fan (2020) examined how various factors influenced workers' income during the outbreak of the COVID-19 pandemic. They employed

a panel model to quantitatively analyze this relationship. The findings revealed a positive correlation between workers' education level and their income. Specifically, the results indicated that higher education levels made workers' income less susceptible to external events. This conclusion was supported by Bezerra et al. (2020), who explored income changes among the Brazilian population during the same pandemic period.

According to GSO (2022), the pandemic has hindered global economic recovery. As a result, the slow recovery from COVID-19 has created significant challenges for employment in the international labor market. The global unemployment rate is estimated to affect 207 million people, significantly higher than the approximately 186 million people recorded in 2019. The global labor force participation rate in 2012 was about 1.2% lower than it was

in 2019 (GSO, 2022). These figures demonstrate the considerable challenges that COVID-19 has posed to the world economy, affecting not only the overall socio-economic landscape but also employment levels. When the pandemic struck, businesses encountered difficulties in production and operations. When production and business activities are halted, it can lead to crises, bankruptcies, reduced working hours, and layoffs. As a result, this has caused increased unemployment and placed further pressure on the labor market (Shen et al., 2020; Obrenovic et al., 2020; Pattiruhu & Paais, 2020).

The COVID-19 pandemic is viewed as a detrimental factor affecting workers' incomes. In fact, prior research has also explored how various factors influence workers' earnings in different contexts. A wide range of factors has been identified, including workers' gender, their level of investment, and participation in social organizations, etc. Despite this diversity, studies consistently highlight that one significant factor influencing workers' incomes is their level of education (Tran, 2013; Jansen et al., 2006; L. Le & T. Le, 2020; Le et al., 2020). Furthermore, these studies highlight the relationship between the quality of human resources and the living standards of workers. The quality of human resources is assessed through criteria such as qualifications, skills, and personal qualities. Tran and Vu (2014) and Nguyen and Bui (2011) noted that the qualifications of workers are reflected in their educational attainment, job position, and skills. These skills include foreign language proficiency, information technology capabilities, adaptability to job roles, and years of experience (Bui & Do, 2021; Le et al., 2021; Dao et al., 2022).

When considering the context as a factor affecting workers' income, there is a consensus that the context significantly affects workers' income, with a positive context enhancing income and a negative context reducing it. The COVID-19 pandemic negatively impacted workers' incomes, while urbanization and industrialization have a two-sided effect on incomes for workers in and around industrial parks (DFID, 1999; Dai et al., 2013; Bury, 2004; Bui et al., 2013; Tran, 2013). Research consistently shows that workers' incomes improve when they adapt to new contexts. Conversely, if they fail to meet the requirements of these changing environments, their incomes may decline, leading to difficult financial situations. Various factors are

examined when assessing the impact on workers' income, including work experience, gender, and education. Some studies have quantified workers' adaptability during context changes to evaluate how these adjustments influence income levels and the ability to cope with difficulties that occur (Vo & Nguyen, 2012; Tu et al., 2015; Le et al., 2020; Dao et al., 2022).

In short, when the COVID-19 pandemic emerged, it significantly affected the income of workers across various economic sectors, including those in industrial parks. In response to these challenges, workers needed to adapt and change their livelihood strategies. Previous studies have identified factors influencing the income of workers within different business groups, economic sectors (such as the private or state sector), or on a national level. However, in the specific context of Vietnam, the labor force in industrial parks plays a crucial role. Therefore, examining the fluctuations in income among workers in this area is theoretically and practically significant. This study focuses on analyzing the internal factors of workers that influence their income in industrial parks.

2. METHODS

2.1. Data collection methods

The objective of this study is to analyze the fluctuations in income among workers in industrial parks in Vietnam following the COVID-19 pandemic. The collected data focus on workers' income and various factors related to the workers themselves that influence their earnings. Based on this analysis, the study aims to assess the level of adaptation among workers and to make recommendations for new livelihood strategies. To achieve these research objectives, a survey was conducted with workers employed in industrial parks in Vietnam, utilizing the GSO (2020) and World Bank (Tan & Tran, 2020) survey questionnaires. The information gathered in the survey includes demographic information related to the survey subjects and information on workers' income in industrial parks from March 2022 to June 2024. This period marks the time when the COVID-19 epidemic was brought under control in Vietnam, allowing production and business

activities to gradually return to a “New Normal.” Consequently, studying how workers have adapted and the changes in their income during this time will provide clearer insights.

This study surveyed workers in industrial zones in Vietnam to gather comprehensive data directly from the research participants regarding fluctuations in their income during the research period. Workers who have been directly affected and are the primary beneficiaries of the study provide an accurate comparison of income changes between the outbreak of the COVID-19 pandemic and the period when the pandemic was under control. This allows for an assessment of the factors influencing workers’ income levels.

The sample size is crucial for the accuracy of results in socio-economic research. According to Nguyen (2014), the required observation size to perform statistical calculations is 100 observations. To meet this requirement, this paper conducted a survey involving 500 workers from industrial parks in Vietnam.

The study involved sending survey forms to workers in industrial zones and collecting their responses one week later. The gathered data were entered into Excel for statistical analysis. Out of 500 collected forms, 62 contained missing or incomplete information. Therefore, these forms were excluded from the analysis, resulting in a final dataset of 438 observations, meeting the minimum sample size requirements to perform statistical calculations. Therefore, the study utilized these 438 observations for statistical analysis.

In addition, during the survey, in-depth interviews were conducted with five workers from industrial parks in Vietnam to gain a multi-dimensional perspective on the changes in workers’ incomes following the Covid-19 pandemic, as well as the factors that affect these incomes (focusing on exploiting the personal factors of employees). The five individuals selected for the interviews include one senior manager, one middle manager, one technical worker, and two general workers. This selection of interviewees, based on their positions and job roles, provides a comprehensive assessment of qualifications, skills, and job positions that contribute to fluctuations in workers’ incomes.

2.2. Data analysis methods

The study employs descriptive statistics to analyze the income of workers in industrial parks in Vietnam and the factors that influence it. Additionally, it utilizes OLS regression to quantify the level of influence of these factors on workers’ income. Table 1 shows the details on the variables.

The study also employs the *T*-test to analyze income differences among workers in industrial parks, taking into account variations in professional qualifications, supplementary skills, and gender. Given the challenges related to labor scale and job shortages, these influencing factors play a crucial role in determining job stability and income levels for workers. Utilizing the *T*-test to assess these differences is essential for developing new livelihood strategies for workers. Additionally, the study processes statistical data using SPSS 20.0 software.

Table 1. Variables

Variables	Symbol	Description
Dependent variable		
Income of workers	Y	This study utilizes the average monthly income scale to assess the earnings of workers; income in the scope of this study is understood as the total earnings of workers, encompassing bonuses, allowances, and any additional income derived from full-time employment in industrial parks. The average monthly income is measured in millions of VND per month. This scale is used based on the findings of Qian and Fan (2020), Bezerra et al. (2020), Nguyen and Bui (2011), Tran (2013), Tran and Vu (2014), Siegel (2005), Le et al. (2020), and Dao et al. (2022).
Independent variables		
Number of working hours per week	X1	It measures the number of hours each worker can use to earn a monthly income. According to the Vietnamese labor law, the maximum number of working hours is 48 hours per week, with no more than 10 hours per day; the overtime work also impacts workers’ income. However, the reduction in working hours and the effects on production and business activities due to COVID-19 have significantly affected the number of working hours, consequently influencing their income. This scale is used based on the results of Nguyen and Vu (2021), Le et al. (2020), and Nguyen and Bui (2011) and developed from the in-depth interview process.

Table 1 (cont.). Variables

Variables	Symbol	Description
Workers' health	X2	The physical strength of workers is a crucial factor when participating in work, as it directly impacts their working capacity and income. Following the regulations set by the Ministry of Health of Vietnam, workers' health is classified on a scale from 1 to 5, corresponding to the level of meeting the requirements of the job from poor to good. The study also utilized this scale to analyze the degree of impact of health on income. This scale is inherited from the research of Nguyen and Vu (2021), Le et al. (2020), and Dang and Nguyen (2021a) and developed from the in-depth interview process.
Education level of workers	X3	Each job position will have different education requirements, inheriting the research of Qian and Fan (2020), Bezerra et al. (2020), Nguyen and Bui (2011), Tran (2013), Le et al. (2021), and Dao et al. (2022). The paper utilized this scale to examine the impact of intellectual ability on workers' income. Education levels are categorized based on the current education system in Vietnam. The scale is coded from 1 to 16, corresponding to different levels of education, from grade 1 to postgraduate level. In Vietnam, general education ranges from grade 1 to grade 12; therefore, the study assigns codes from 1 to 12 for workers at these levels. Workers with intermediate training are coded as 13, those with college-level training as 14, university-level training as 15, and postgraduate-level training as 16.
Workers' skills		These are a necessary condition for workers when working especially in industrial parks. Inheriting the outcomes of Bezerra et al. (2020), Tran (2013), Dao et al. (2022), Dang and Nguyen (2021b) and the results of in-depth interviews, the study used this scale to measure the level of influence of skills on workers' income. The study coded the survey results into 1 for skilled workers and 0 for unskilled workers.
Foreign language skills	X4	This variable determined whether there are foreign language skills demonstrated through the certificates and foreign language abilities that the employee has for assessment. If the employee meets the foreign language requirements for their job position, they are considered to have foreign language skills and will be coded as 1. If they do not meet these standards, they will be coded as 0.
Information technology skills	X5	This variable determined whether there are computer skills demonstrated through the certificates and computer skills that employees can use and demonstrate for assessment. When an employee meets the computer standards according to the job position, the employee has computer skills and is coded as 1, and vice versa, it will be coded as 0.
Complementary skills	X6	These skills refer to employees' communication and problem-solving abilities. During in-depth interviews with the survey subjects, all five interviewees highlighted supplementary skills as crucial for enhancing work efficiency. These skills not only impact employees' productivity but also influence their income and career advancement.
Work experience of workers	X7	This variable measures and evaluates the length of time employees have spent in similar job positions, quantified by the number of years they have worked in those roles. This variable is drawn from Nguyen and Bui (2011), Dang and Nguyen (2021a), Dang and Nguyen (2021b), as well as the findings from in-depth interviews.
Professional qualifications of workers	X8	This variable assessed whether a worker's training major aligns with the requirements of their job position. If the worker possesses the appropriate training major, the value returned is 1; if not, the value is 0. This variable builds upon the analyses conducted by Dao et al. (2022), Nguyen and Bui (2011), Dang and Nguyen (2021a), Dang and Nguyen (2021b), as well as insights gained from in-depth interviews.
Employee spending on education and training	X9	This variable indicates the amount of money that employees invest in their education and training to enhance their skills and qualifications, ultimately contributing to an increase in their income. The expenditure is measured in millions of VND per month. This variable is based on the findings by Huynh and Mai (2011), Dang and Nguyen (2021a), and the results gained from in-depth interviews.

3. RESULTS AND DISCUSSION

Table 2 shows the results of descriptive statistics on the survey subjects.

Table 2. Descriptive statistics about survey subjects

Variables	Mean	Max	Min	Standard Deviation
X7	5.9	18.0	.0	4.6
X3	10.3	15.0	.0	3.8
X9	3.915	9.000	1.000	1.956
X1	44.6	48.0	40.0	3.5
Y	14.4	18.0	11.6	1.9

Regarding the experience of workers (X7), the survey results indicate that the majority are experi-

enced workers who have been working in industrial parks for a relatively long time. The average value of the variable was 5.9 years, with the longest tenure being 18 years and the shortest being less than a year. This finding aligns with insights gathered from in-depth interviews. Most workers express a willingness to remain in industrial parks for the long term and typically do not consider moving unless there are significant changes in the external environment. The outbreak of the COVID-19 pandemic has posed significant challenges for workers, leading many to hesitate in contributing to and continuing their jobs in industrial parks due to concerns about health and safety in their living environments. As a result,

workers tend to migrate back to their hometowns to find other employment opportunities. This trend has negatively affected both the labor scale and the labor quality of the enterprises operating in industrial parks. Additionally, incidents related to the working environment of workers also affect their income.

Regarding the education level of workers (X3), the workforce in industrial parks is divided into two main groups: general labor and skilled technical labor. For general labor positions, a high level of education is not required; workers typically need high school diplomas, and companies will provide training in specific skills and professions relevant to their operations. In contrast, technical positions, which include managerial and skilled roles, necessitate higher educational qualifications. These workers must receive training in a field that aligns with their job responsibilities in order to meet the required competencies. Descriptive statistics indicate that there are workers who have been trained in a specialized field at the university level, and there are workers who have only graduated from high school; this diversity is in line with actual job requirements and the recruitment needs of the companies.

Regarding employee spending to improve professional qualifications and skills (X9), workers in industrial parks are increasingly focused on improving their professional qualifications and skills to meet job requirements. In-depth interviews reveal that they are keenly aware of the pressures associated with their jobs and positions, especially as international integration deepens. Additionally, they face fierce competition within their job positions; if they fail to meet job expectations, they risk being fired or transferred. As a result, workers

are willing to invest in activities that enhance their professional qualifications. Survey findings indicate that they are prepared to spend approximately 3.9 million VND/month for training if they are in a period of training required to improve their professional qualifications.

Considering the number of working hours per week (X1), the survey results indicate that the average number of hours employees work per week is approximately 44.6. This suggests that employees are willing to put in extra hours to enhance their earnings. Additionally, the average working hours exceed the standard limit, and many employees work overtime to boost their income.

Viewing workers' income (Y), survey results indicate that the average income of workers, which includes allowances and overtime pay, is relatively higher in industrial parks compared to the average in Vietnam (approximately 4.96 million VND/month). This higher income fosters a strong attachment of workers to their positions. However, in cases where workers are not allowed to work overtime or do not receive allowances, their income can significantly decrease, negatively affecting their quality of life.

The study quantifies the level of influence of factors belonging to the workers themselves on their income in industrial parks. First, the study tests the suitability of the choice regression model (Table 3).

The results of data analysis show that, with the coefficient R Square = 0.815, the independent variables in the model explain about 81.5% of the dependent variable.

Table 3. Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.903 ^a	.815	.811	.8305

Note: a. Predictors: (Constant), X1, X2, X8, X5, X9, Gend, X6, X7, X4, X3.

Table 4. ANOVA coefficient

Model	Sum of Squares	Df	Mean Square	F	Sig.	
1	Regression	1299.964	10	129.996	188.465	.000 ^b
	Residual	294.530	427	.690		
	Total	1594.493	437			

Note: a. Dependent Variable: Y. b. Predictors: (Constant), X1, X2, X8, X5, X9, Gend, X6, X7, X4, X3.

Table 5. Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics		
	B	Std. Error	Beta			Tolerance	VIF	
1	(Constant)	8.699	.581		14.976	.000		
	Gend	.438	.086	.114	5.090	.000	.856	1.169
	X2	.097	.048	.042	2.034	.043	.992	1.008
	X4	.275	.119	.062	2.306	.022	.603	1.658
	X5	.244	.093	.063	2.614	.009	.750	1.333
	X6	.208	.094	.054	2.214	.027	.718	1.394
	X8	.408	.123	.099	3.307	.001	.481	2.079
	X7	.271	.010	.654	27.033	.000	.738	1.354
	X3	.128	.015	.254	8.328	.000	.464	2.156
	X9	.060	.022	.061	2.773	.006	.888	1.126
	X1	.033	.012	.060	2.791	.005	.946	1.057

Note: a. Dependent Variable: Y.

The ANOVA data (Table 4) show that the coefficient $F = 188.465$ and $Sig = 0.000$; thus, the research model chosen in this study is completely suitable. After testing the suitability of the research model, the paper analyzed the level of influence of factors on workers' income in industrial parks post-COVID-19. Table 5 shows the results.

The research findings show that the variables in the model are statistically significant, with a margin of error of 5%. According to the findings, the variable that has the greatest impact on the income of workers in industrial parks post-COVID-19 is their working experience (X7). The experience considered here refers to the time workers have spent in similar positions or businesses that produce and trade the same type of product. The findings indicate that with a Beta coefficient (B) of 0.271, each additional year of experience leads to an increase in workers' income of approximately 0.271 million VND per month. This supports the views of Nguyen and Bui (2011). Moreover, it aligns with the results of in-depth interviews, which revealed that greater experience correlates with improved skill levels or qualifications, resulting in higher income. Additionally, a portion of the worker's income is associated with their seniority.

The second most important factor influencing workers' income in industrial parks post-COVID-19 is their education level (X3). The standardized coefficient beta for this variable is 0.254, while the B coefficient is 0.128. This indicates that a higher education level correlates with increased income; con-

versely, lower education levels result in lower income. Given the intense competition in the labor market and the high expectations employers have for their employees, the demand for skilled workers in industrial parks is significant. Therefore, enhancing education levels is one effective way for workers to increase their income. The findings of this study fully support the views of Qian and Fan (2020), Bezerra et al. (2020), Nguyen and Bui (2011), and Tran (2013).

Other factors also exert different levels of influence on workers' income. The outcomes align with the findings of Dao et al. (2022), Nguyen and Bui (2011) who indicate that professional qualifications (X8) greatly influence workers' earnings. Workers employed in positions that align with their fields of study generally earn more than those whose jobs do not match their qualifications. The beta coefficient for this variable is 0.408, which clearly shows that. Additionally, the in-depth interviews reveal that workers trained in their respective fields can perform tasks more efficiently and creatively than those without relevant qualifications. As a result, employers in industrial parks tend to prioritize recruiting workers whose skills and training align with the job requirements.

The skill levels of workers have a significant and evident impact on their income. Research findings indicate that the beta coefficient of this variable is as follows: 0.275 for foreign language skills (X4), 0.244 for computer skills (X5), and 0.208 for complementary skills (X6). This result is also completely consistent with reality and supports the point of view of Bezerra et al. (2020), Tran (2013), and Le et al. (2021).

Table 6. Differences in workers' income due to the impact of complementary skills

Group statistics										
		X6	N	Mean	Std. Deviation	Std. Error Mean				
Y	1.0		238	14.658	1.9583	.1269				
	.0		200	14.066	1.8039	.1276				
Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper	
Y	Equal variances assumed	2.151	.143	3.266	436	.001	.5920	.1812	.2358	.9482
	Equal variances not assumed			3.290	432.314	.001	.5920	.1800	.2383	.9457

Additionally, the results of in-depth interviews reveal that workers with more advanced skills tend to have higher incomes, as they are better equipped to solve problems effectively. Consequently, their income is generally higher compared to those without such skills.

The study also examined income differences among workers in industrial parks, which were attributed to variations in skills and professional qualifications.

Firstly, for the difference in the complementary skills of workers. This variable was highlighted as significant based on findings from in-depth interviews. The interview revealed that complementary skills greatly influence employers' decisions during the recruitment of workers and are increasingly valued in the hiring process. Table 6 shows the respective results.

The research findings indicate that complementary skills significantly impact workers' income. The results of the difference test reveal that the income disparity between workers with complementary skills and those without is 0.592 million VND per month. Additionally, in-depth interviews suggest that the production and business processes within companies constantly require adaptation, updates, and the ability to address arising situations. If workers lack the necessary skills to solve problems, it can create difficulties for the company in managing these issues, ultimately affecting its overall business performance. When hiring, candidates with strong complementary skills are prioritized and typically receive higher salaries than those without such skills. The evaluation of these skills is determined by companies and employers and tailored to each specific job position.

Table 7. Differences in income due to differences in professional qualifications

Group Statistics										
		X8	N	Mean	Std. Deviation	Std. Error Mean				
Y	1.0		137	15.692	1.7989	.1537				
	.0		301	13.794	1.6485	.0950				
Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper	
Y	Equal variances assumed	.004	.947	10.853	436	.000	1.8980	.1749	1.5542	2.2417
	Equal variances not assumed			10.504	243.692	.000	1.8980	.1807	1.5420	2.2539

Second, the results of testing the difference in workers' income due to differences in professional qualifications are shown in Table 7.

The research results indicate that differences in professional qualifications significantly affect workers' income. The mean difference value is 1.898, which suggests that individuals with the appropriate professional qualifications for their job positions tend to earn higher incomes than those without the correct qualifications, specifically 1.898 million VND per month.

The COVID-19 pandemic has negatively impacted the income of workers in industrial parks. Research findings indicate that various factors influence workers' pay and ability to adapt to changing circumstances. The paper has proposed several recommendations to mitigate the negative effects of COVID-19 and help workers adjust more smoothly to the new context.

Workers should prioritize acquiring additional knowledge relevant to their job, particularly those in industrial parks who lack specialized training

at the intermediate, college, or university level in their specific field.

Second, workers should engage in specialized training courses to acquire new knowledge and skills that align with their job requirements. Developing additional competencies and the ability to tackle problems flexibly and creatively is essential for workers to establish a strong position and gain an advantage in today's increasingly competitive labor market.

Third, workers need to develop new livelihood strategies and enhance their skills and knowledge to access better job opportunities. Currently, many workers rely heavily on overtime to increase their income. If they encounter difficulties due to external factors that prevent them from working the expected overtime hours, their earnings can be significantly affected. Therefore, investing in learning and expanding their knowledge can help workers create diverse income sources. This diversification can reduce the financial pressure that comes from relying solely on their salary from an employer.

CONCLUSION

This study aimed to assess changes in income due to the COVID-19 impacts targeting workers of industrial parks in Vietnam. The findings indicate that, following the post-COVID-19 pandemic, workers' income in industrial parks shows a more positive trend than during the outbreak. Additionally, the average income of workers in industrial parks is higher than the national average in Vietnam. This observation reflects the current reality, as workers in these industrial parks appear to have adapted quickly and flexibly to the new context, with production and business activities returning to a state of normalcy. In addition, the analysis data revealed that differences in professional qualifications significantly impact workers' incomes, with an estimated monthly difference of approximately 1.898 million VND. Additionally, skills play a crucial role, particularly the presence of complementary skills. In-depth interviews indicated that these complementary skills greatly influence both income and workers' ability to adapt to new contexts, showing a monthly income difference of around 0.592 million VND between workers with these skills and those without.

The study has limitations as it primarily focuses on analyzing the labor force within industrial parks without examining the adaptation of the labor force in production, business sectors, and other labor areas. This represents a research drawback that should be addressed in the future.

AUTHOR CONTRIBUTIONS

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REFERENCES

- Alessa, A. A., Alotaibie, T. M., Elmoez, Z., & Alhamad, H. E. (2021). Impact of COVID-19 on entrepreneurship and consumer behaviour: A case study in Saudi Arabia. *The Journal of Asian Finance, Economics and Business*, 8(5), 201-210. <https://doi.org/10.13106/jafeb.2021.vol8.no5.0201>
- Bezerra, A. C. V., Silva, C. E. M. D., Soares, F. R. G., & Silva, J. A. M. D. (2020). Factors associated with people's behavior in social isolation during the Covid-19 pandemic. *Ciencia & Saude Coletiva*, 25(suppl_1), 2411-2421. Retrieved from <https://www.scielo.org/articulo/csc/2020.v25suppl1/2411-2421/en/#>
- Bui, Q. T., & Do, V. P. A. (2021). Human resource quality and employment of workers in state-owned enterprises in Vietnam. *Journal of Economics and Development*, (288), 54-63. Retrieved from <https://js.ktpt.edu.vn/index.php/jed/article/view/59>
- Bui, T. M. H., Schreinemachers, P., & Berger, T. (2013). Hydro-power development in Viet Nam: Involuntary resettlement and factors enabling rehabilitation. *Land Use Policy*, 31, 536-544. <https://doi.org/10.1016/j.landusepol.2012.08.015>
- Bury, J. (2004). Livelihood in transition: Transnational gold mining operation and local change in Cajamarca, Peru. *The Geographical Journal*, 170(1), 78-91. <https://doi.org/10.1111/j.0016-7398.2004.05042.x>
- Dai, D., Le, N., & Nguyen, T. D. (2013). Difficulties in transition among livelihood under agricultural land conversion for industrialization: Perspective of human development, *Mediterranean Journal of Social Sciences*, 4(10), 259-267. <http://dx.doi.org/10.5901/mjss.2013.v4n10p259>
- Dang, H. A. H., & Nguyen, V. C. (2021a). Gender inequality during the COVID-19 pandemic: Income, expenditure, savings, and job loss. *World Development*, 140, Article 105296. <https://doi.org/10.1016/j.worlddev.2020.105296>
- Dang, H.A.H., & Nguyen, V. C. (2021b). *Did a successful fight against the Covid-19 pandemic come at a cost? Impacts of the outbreak on employment outcomes in Vietnam* (IZA Discussion Paper No. 13958). <https://doi.org/10.2139/ssrn.3751851>
- Dao, Q., Le, T., & Pham, V. (2022). Changes in income distribution during the COVID-19 pandemic: Empirical evidence from Vietnam. *The Journal of Asian Finance, Economics and Business*, 9(1), 241-248. <https://doi.org/10.13106/jafeb.2022.vol9.no1.0241>
- Department for International Development (DFID). (1999). *Sustainable livelihood guidance sheets*. London: Hall International, Inc.
- General Statistics Office (GSO). (2020). *Survey on the impact of Covid-19 on enterprises and labors*. Hanoi, Vietnam: General Statistics Office. Retrieved from <https://www.gso.gov.vn/du-lieu-va-so-lieu-thong-ke/2020/07/toa-dam-danh-gia-tac-dong-cua-dai-dich-covid-19-den-doanh-nghiep-viet-nam/>
- General Statistics Office (GSO). (2021). *Report on the influence on laborers' income and employment*. Hanoi, Vietnam: General Statistics Office. Retrieved from <https://www.gso.gov.vn/du-lieu-va-so-lieu-thong-ke/2021/04/bao-cao-tac-dong-cua-dich-covid-19-den-tinh-hinh-lao-dong-viec-lam-quy-i-nam-2021/>
- General Statistics Office (GSO). (2022). *Report on the impact of Covid-19 pandemic on the labor and employment situation in the first quarter of 2022*. Hanoi, Vietnam: General Statistics Office. Retrieved from https://www.gso.gov.vn/du-lieu-va-so-lieu-thong-ke/2022/04/bao-cao-tac-dong-cua-dich-covid-19-den-tinh-hinh-lao-dong-viec-lam-quy-i-nam-2022/#_ftn1
- Huynh, T. D. X., & Mai, V. N. (2011). Phan tich cac yeu to anh huong den thu nhap cua ho chan nuoi gia cam o dong bang song cuu long [Analysis of factors affecting the income of poultry farmers in the Mekong Delta]. *Scientific Journal*, 17(b), 87-96. (In Vietnamese). Retrieved from <https://ctujsvn.ctu.edu.vn/index.php/ctujsvn/article/view/948>
- Jansen, H.G.P., Pender, J., Damon, A., Wielemaker, W., & Schipper, R. (2006). Policies for sustainable development in the hillside areas of Honduras: A quantitative livelihoods approach. *Agricultural Economics*, 34(2), 141-153. <https://doi.org/10.1111/j.1574-0864.2006.00114.x>
- Le, L.H., & Le, T.N. (2020). Determinants of income diversification among rural households in the Mekong River Delta: The economic transition period. *Journal of Asian Finance, Economics and Business*, 7(5), 291-304. <https://doi.org/10.13106/jafeb.2020.vol7.no5.291>
- Le, T., Dao, Q., & Doan, V. (2021). Effects of the Covid-19 pandemic on employee income: A case study of the Vietnamese aviation industry. *Problems and Perspectives in Management*, 19(4), 186-197. [http://dx.doi.org/10.21511/ppm.19\(4\).2021.16](http://dx.doi.org/10.21511/ppm.19(4).2021.16)

18. Le, T., Pham, V., Cu, T., Pham, M., & Dao, Q. (2020). The effect of industrial park development on people's lives. *Management Science Letters*, 10(7), 1487-1496. <https://doi.org/10.5267/j.msl.2019.12.018>
19. Linh, H. (2023, April 6). *Gan 150 nghìn lao động mất việc tại các khu công nghiệp, khu chế xuất [Nearly 150,000 workers lose their jobs in industrial parks and export processing zones]*. Tai Chinh Doanh Nghiep. (In Vietnamese). Retrieved from <https://taichinhdoanhnghiep.net.vn/gan-150-nghin-lao-dong-mat-viec-tai-cac-khu-cong-nghiep-khu-che-xuat-d38041.html>
20. Ministry of Planning and Investment (MPI). (2024). *Phát triển khu công nghiệp và mô hình khu công nghiệp sinh thái gắn với tăng trưởng xanh, phát triển bền vững, kinh tế tuần hoàn [Developing industrial parks and ecological industrial park models associated with green growth, sustainable development, and circular economy]*. (In Vietnamese). Retrieved from <https://www.mpi.gov.vn/portal/Pages/2024-8-23/Phat-trien-khu-cong-nghiep-va-mo-hinh-khu-cong-ngho0qfsuf.aspx>
21. Nguyen, H. N., & Tran, M. D. (2021). The effect of perceived organizational support on employee engagement during the COVID-19 pandemic: An empirical study in Vietnam. *The Journal of Asian Finance, Economics and Business*, 8(6), 415-426. <https://doi.org/10.13106/jafeb.2021.vol8.no6.0415>
22. Nguyen, Q., & Bui, V. (2011). Các yếu tố ảnh hưởng đến thu nhập của người dân tộc thiểu số ở vùng đồng bằng sông Cửu Long [Factors affecting the income of ethnic minorities in the Mekong Delta]. *Vietnam Journals OnLine*, 18(a), 240-250. (In Vietnamese). Retrieved from <https://sj.ctu.edu.vn/ql/docgia/tacgia-7090/baibao-5497.html>
23. Nguyen, V. (2014). *Giao trình thực hành nghiên cứu trong kinh tế và quản trị kinh doanh [Curriculum of research practice in economics and business administration]*. Vietnam: National Economics University Publishing House. (In Vietnamese). Retrieved from <https://vietbooks.info/threads/giao-trinh-thuc-hanh-nghien-cuu-trong-kinh-te-va-quan-tri-kinh-doanh-nguyen-van-thang-283-trang.96134>
24. Obrenovic, B., Du, J., Godinic, D., Tsoy, D., Khan, M. A. S., & Jakhongirov, I. (2020). Sustaining enterprise operations and productivity during the Covid-19 pandemic: "Enterprise effectiveness and sustainability model". *Sustainability*, 12(15), Article 5981. <https://doi.org/10.3390/su12155981>
25. Pattiruhu, J. R., & Paais, M. (2020). Effect of liquidity, profitability, leverage, and firm size on dividend policy. *The Journal of Asian Finance, Economics, and Business*, 7(10), 35-42. <https://doi.org/10.13106/JAFEB.2020.VOL7.NO10.035>
26. Pham, T. T. V. (2020). *Doanh nghiệp trong bối cảnh dịch Covid-19 Xu hướng hoạt động và chính sách hỗ trợ [Enterprises in the context of Covid-19 pandemic – Trends in operations and support policies]*. National Institute for Finance. (In Vietnamese). Retrieved from https://mof.gov.vn/webcenter/portal/vclvcstc/pages_r/l/chi-tiet-tin-?dDocName=MOFUCM236566
27. Qian, Y., & Fan, W. (2020). Who loses income during the Covid-19 outbreak? Evidence from China. *Research in Social Stratification and Mobility*, 68, Article 100522. <https://doi.org/10.1016/j.rssm.2020.100522>
28. Shen, H., Fu, M., Pan, H., Yu, Z., & Chen, Y. (2020). The impact of the Covid-19 pandemic on firm performance. *Emerging Markets Finance and Trade*, 56(10), 2213-2230. <https://doi.org/10.1080/1540496X.2020.1785863>
29. Siegel, P. B. (2005). *Using an asset-based approach to identify drivers of sustainable rural growth and poverty reduction in Central America: A conceptual framework* (World Bank Policy Research Working Paper 3475). Retrieved from <https://documents.worldbank.org/pt/publication/documents-reports/documentdetail/307691468743185566/using-an-asset-based-approach-to-identify-drivers-of-sustainable-rural-growth-and-poverty-reduction-in-central-america-a-conceptual-framework>
30. Suratman, A., Suhartini, S., Palupi, M., Dihan, F. N., & Muhlison, M. B. (2021). The impact of psychological climate and self-resilience on employee performance during the COVID-19 pandemic: An empirical study in Indonesia. *The Journal of Asian Finance, Economics and Business*, 8(5), 1019-1029. <https://doi.org/10.13106/jafeb.2021.vol8.no5.1019>
31. Tan, S., & Tran, T. (2020). *Impacts of COVID-19 on Firms in Vietnam, Report No. 1: Results from the First Round of COVID-19 Business Pulse Survey*. Washington, DC: World Bank. Retrieved from <https://openknowledge.worldbank.org/entities/publication/5448b11a-35d2-5d48-b597-8226e12dd960>
32. Tran, Q. T. (2013). Livelihood strategies for coping land loss among households in Vietnam's sub-urban areas. *Asian Social Science*, 9(15), 33-46. <https://doi.org/10.5539/ass.v9n15p33>
33. Tran, Q. T., & Vu, V. H. (2014). The impact of land loss on household income: The case of Hanoi's sub-urban areas, Vietnam. *International Journal of Business and Society*, 15(2), 339-358. Retrieved from <https://catalog.ihsn.org/citations/27569>
34. Tu, V. H., Mitsuyasu, Y., Nguyen, T. T., & Huynh Viet, K. (2015). Adaptive capacity assessment of rural out migrants: A case study of An Giang province, Viet Nam. *Journal of the Faculty of Agriculture Kyushu University*, 60, 265-271. Retrieved from https://api.lib.kyushu-u.ac.jp/opac_download_md/1526321/p265.pdf
35. Vo, H. T., & Nguyen, T. T. (2012). Tinh ton thương sinh kế của nông hộ bị ảnh hưởng lũ tại tỉnh An Giang và các giải pháp ứng phó [Vulnerability of farmers affected by floods in An Giang province and response solutions]. *Scientific Journal*, 22(b), 294-303. Retrieved from <https://sj.ctu.edu.vn/ql/docgia/tacgia-78480/baibao-5758.html>