

Post-Covid-19 and the Change in Income of Employees



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Abstract The purpose of this study was to analyze the change in the income of labor in the post-Covid-19 situation. The difference in income is approaching when comparing the two periods: the outbreak period and the period after the epidemic is gradually controlled (based on the field of work and job position undertaken). Data for the study was gathered through a survey of 477 employees working in the aviation and tourism/hospitality sectors in Vietnam. In the study, the multivariate regression method and tests for differences were applied. The employee's income is determined by several factors, such as education level, gender, job position, the field of employment, and personal investment. However, when the context changes, the degree of education and employment position have a significant influence on employees' incomes (The coefficient of management position variable is 1.484136; the coefficient of the graduate education variable is 4.181241). At the same time, the research findings suggest that the income gap between the two groups of workers with management positions and those without manager positions between the two periods of the pandemic is approximately 9.367 million VND per month. The research findings serve as the foundation for developing solutions to boost the adaptability of workers in the new situation.

Keywords Employee · Jobs · Income · Aviation · Tourism/hospitality · Covid-19

1 Introduction

In the process of conducting a survey with research subjects who are workers in the service sector about their experiences during the disease outbreak and the period following Vietnam's gradual adaptation to the "New Context," the economy gradually recovered and safely adapted to the new context, and workers reflected: (1) Workers have never experienced such a difficult period in their lives; when the epidemic broke out, the income of workers in the tourism and aviation sectors dropped by

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approximately 70–90%, and some workers are temporarily unemployed due to the employer's inability to pay wages during the disease outbreak. (2) After March 2022, when the Vietnamese government decided to change its policy in response to the Covid-19 pandemic, all production and business activities recovered, workers' incomes gradually stabilized, and life is less difficult than it was during the Covid-19 pandemic. Workers' incomes had recovered to about 70% of normal levels at the time of the data survey. Workers' opinions have revealed the significant impact of the Covid-19 epidemic on them, and once the epidemic is gradually controlled, workers will face new challenges and will need to safely adapt to ensure the best possible life.

For Supply Chain Operations, if just one link in the supply chain becomes inefficient or disrupted, the entire supply chain suffers. Indeed, when employers face difficulties during an epidemic outbreak, it directly affects workers, who lose their jobs and income, affecting their quality of life. Studies have shown that the negative effects of the Covid-19 outbreak have caused difficulties for actors in the economy (ILO, 2020; World Bank, 2020). In the study of Shen et al. (2020); Pattiruhu & Paais (2020); Obrenovic et al (2020) pointed out the negative impacts of the epidemic on enterprises and Vietnam is no exception, according to the statistical results of GSO (2021a, b), when surveying 126,565 firms on the effects of Covid-19, about 85.7% of enterprises surveyed answered that they were affected by the Covid-19 epidemic; those effects are expressed through the shutdown of activities due to the effects of social distancing, the impact of halting the exchange of goods, limiting international trade activities, etc. Among those surveyed enterprises, the enterprises operating in the field of aviation, tourism, and hotel are the most impacted of the surveyed enterprises, with influence rates of 100% and 97.1%, respectively.

When businesses are affected by the epidemic, workers are also directly affected; workers will experience temporary unemployment, and reduced income, and life will become much more difficult as a result. According to statistical results from GSO (2022a, b), Vietnam had more than 16.9 million people of working age affected by the Covid-19 epidemic in the first quarter of 2022; however, this number has decreased by approximately 7.8 million people compared to the fourth quarter of 2021. There 0.9 million people lost their jobs out of the 16.9 million workers who were negatively impacted by the pandemic; approximately 5.1 million workers lost their jobs temporarily; about 5.7 million workers had their working hours reduced, and roughly 13.7 million workers lost their income. That can be seen as the negative effects that Covid-19 has on workers, and it is also a shock that causes damage to workers.

People's lives in Vietnam have gradually returned to normal since March 2022, when the Vietnamese government decided to adjust policy in response to the Covid-19 epidemic; however, the pressure on workers remains extremely high. According to the actual situation of the employers, some workers were unable to find new jobs, and others were forced to cut unwanted working hours. This forces workers to adapt safely to maintain life stability.

This study will be carried out to examine the change in workers' income in the new environment when the Covid-19 epidemic is under control, as well as safe opening

policies, which will be adopted in Vietnam in the current context in comparison to the previous one. The research will focus on the sectors most affected by the Covid-19 epidemic, which include the tourism, hotel, and aviation sectors to study this change. The change in income will show the ability to respond to the new context of workers. These research findings will serve as the foundation for developing new livelihood strategies for employees in the new situation.

2 Research Overview

According to the DFID research framework (1999), the income of workers is affected by five groups of resources (human resources, physical resources, social resources, financial resources, and natural resources), as well as changing external factors (epidemic, natural disasters, policies). Previous research has also used this sustainable livelihoods analysis framework as a foundation for conducting studies to quantify the impact of factors on people's/employees' incomes when there are external influences.

The group of studies on the effects of changing urbanization and industrialization contexts has been studied by Tran (2013); Tran and Vu (2014); Jansen et al. (2006), these studies have estimated the change in people's income and employment when the context changes. The data used in these studies is gathered from people who are directly affected when the context changes. A multivariate regression model is used to help studies quantify the relationship between factors. According to the findings of these studies, people have income vulnerabilities when the context changes; these damages are caused by job loss and loss of means of production. At the same time, studies have shown that the inability to adapt to the new context has caused vulnerabilities to the income and employment of the research subjects (Cu & Nguyen, 2021; Nguyen & Bui, 2011).

Meanwhile, using the framework of sustainable livelihood analysis and data collected from research subjects, studies focus on calculating adaptive capacity and livelihood vulnerability through indicators VI and ACI to assess people's adaptive capacity when the new context changes (Adger et al., 2001; Nelson et al, 2010; Rohan et al., 2005). These studies use survey data to calculate people's adaptive capacity in relation to each resource group, which includes physical resources, natural resources, human resources, social resources, and financial resources. When calculating the adaptive capacity of each resource, the studies will take into account the general adaptive capacity of the survey participants as well as the vulnerability that they face when the context changes (Cu et al., 2020; Tu et al., 2015). The findings of the research are consistent with the view that people who can respond well and make good use of the new changing context will adapt better, and their lives will be better. However, if they do not adjust to the new environment, life will become difficult, and people will face income and employment issues, lowering their quality of life (Tu et al, 2015; Vo & Nguyen, 2012).

When the Covid-19 pandemic broke out, studies seemed to support the view that the outbreak of the disease as an external shock affects people in general and workers in particular when considering aspects of the epidemic's impact on income and employment (Qian & Fan, 2020; Bezerra et al., 2020). The information was gathered through a survey of people affected by the Covid-19 pandemic in China. According to research findings, the negative impact of the epidemic has damaged people through estimated variables that have a negative relationship with people's income, such as unemployment and epidemics. Furthermore, studies support the view that, during an outbreak, education levels, and gender are also important factors determining employee income when directly affecting employees' ability to maintain jobs (Buheji et al, 2020; Paul et al, 2021; Suratman et al., 2021). The research findings are completely consistent with the studies of Dao et al. (2022); Nguyen and Tran (2021), which argue that workers face significant challenges in terms of employment when the epidemic breaks out, thereby changing workers' income. At the same time, studies have shown that the working sector has a significant impact on workers' employment and income. People in the public sector appear to be more stable and less affected by the Covid-19 pandemic than those in the private sector (Le et al., 2021; Qian & Fan, 2020).

In short, shocks have caused difficulties for workers in particular and people in general; however, when the new context changes, changing methods and behaviors to adapt to new conditions is also a requirement for workers. Thus, it is necessary to execute research on the new context (the period of adaptation to the epidemic), and changes in workers' income are required; from there, it can be observed that workers' adaptability after the Covid-19 pandemic is controlled and nations are progressively adjusting and "living together" with the epidemic is needed.

3 Research Methods

The survey on the impact of Covid-19 on employees of GSO (2021a, b) contains questions directly related to the research team's problem, so, inheriting the survey form of GSO (2021a, b), the research team designed a survey form to assess the effects of Covid on income and employment of workers. Based on those assessments, it will examine the change in workers' income between the two periods when the epidemic broke out and the post-Covid-19 periods.

The design survey form is divided into two sections: (1) The first piece of content is the demographic questions asked of the survey subjects: (2) The second content is the research questions about the change in worker income and employment. This content will be divided into two phases: the period reflecting worker income and employment when Covid-19 breaks out, selected before March 2022, and the period after March 2022, when the Vietnamese government adjusts its policies to adapt to the Covid-19 epidemic in the context of the "New Normal".

Selected survey subjects: Workers working in the tourism and aviation sectors were chosen as survey subjects to collect data for the study both during the outbreak

and after the epidemic was under control. The goal of such a survey is to ensure that changes in income and employment of the same subject can be compared across two different periods of the Covid-19 epidemic.

For employees working in the aviation sector: Research and survey for employees at Vietjet Air, a major airline in Vietnam (This is a group of workers working outside the State sector) and employees of Vietnam Airlines (These are employees working in the State sector).

To ensure a balanced distribution across the country's regions for those working in the tourism and hotel sectors, surveys were administered to workers at popular tourist destinations in Vietnam. Survey locations include: Ha Noi capital; Quy Nhon city—Binh Dinh province; and Ho Chi Minh city. These are all appealing destinations for both domestic and international tourists visiting Vietnam. Employees working at hotels and tourism service providers in the three survey locations were surveyed.

In terms of the survey sample size: The study was carried out and delivered 600 survey questionnaires to two groups of employees working in the aviation and tourism and hotel sectors. Following the survey, the study team made the following observations: For the group of workers working in the aviation sector: 257 survey responses were collected. For the group of workers in the field of tourism and hotel, 220 survey questionnaires were collected. As a result, the total number of survey questionnaires obtained from the study is 477, which corresponds to 477 observations for statistical operations. According to Nguyen (2014), the minimal observation size for statistical procedures is 100. As a result, with 477 observations acquired by the study team, they are qualified to execute statistical operations.

Survey time: The research team carried out the survey from April to May 2022.

To analyze the change in employees' income with the new context, the study selects the scales for analysis. The scales are described as follows as Table 1.

The study used a multivariate regression model to examine the impact of several variables on employee earnings. The estimation is based on data collected post-Covid-19 because this is the time when workers are adjusting to their new surroundings. Additionally, the research makes use of the information it has gathered to examine the differences in employment and income between the two groups of workers to assess the vulnerabilities and adaptability of workers in the context of change.

4 Results

Following an analysis of the income disparity between the two sectors of aviation and tourism/hotels, the findings of a study of the income disparities between these two sectors are as follows as Table 2.

The study's findings demonstrate that the average wage of workers in the two fields of tourism/hotels and aviation differs significantly. Comparison by research phase: When the Covid-19 epidemic came out, worker pay dropped dramatically, especially for those in the aviation sector. This is reasonable when, due to the spread

Table 1 Research variables

Items	Explain	Basis of selection
Dependent variable		
Employee’s income (Y)	This is the variable that represents the employee’s earnings. Income is compared between the two times when Covid-19 broke out and post-Covid-19. Income is calculated according to the amount that the employee actually receives each month, the unit of calculation is: million dong	Tran and Vu (2014), Cu and Nguyen (2021), Dao et al (2022), and Qian and Fan (2020)
Independent variables		
Employee’s gender (Gend)	This is a variable that represents the gender of the surveyed person. The gender is encoded. If the person is male, the code will be 0, and if the person is female, the code will be 1	Qian and Fan (2020), Bezerra et al. (2020), Siegel (2005), and Huynh and Mai (2011)
Education level (Edu)	The level of education indicates the employee’s trained capability. Employees who complete high school will be coded as 1, college completion will be coded as 2, have a university degree coded as 3, and a graduate level will be coded as 4	Tran and Vu (2014), Qian and Fan (2020), and Le et al. (2021)
Employee’s work experience (Exper)	Calculated by years of work of employees in the field of work	Dao et al. (2022), Nguyen and Bui (2011), Le et al (2021), Burki and Abbas (1991), Bhatti (2013), and Vernon (2002)
Working position (Posit)	This is the variable used to consider the effect of the employee’s job position, if the employee is the manager, it will be coded as 1, and if it is an employee, it will be encoded as 0	Brunello et al. (2000), and Campos and Jolliffe (2002)

(continued)

Table 1 (continued)

Items	Explain	Basis of selection
Working area (Work)	The research chose two fields, aviation, and tourism/hotel, to conduct surveys and check the adaptation of workers in these two areas. Aviation workers are coded as 1, and the field of tourism and hotel coded is 0	Qian and Fan (2020), Bezerra et al. (2020), and Dao et al. (2022)
Personal investment (Invest)	This is the scale used to determine the worth of individual employee investments in order to produce additional revenue for employees. Unit is million dong	Qian and Fan (2020), Dao et al. (2022), and Bezerra et al. (2020)
Cost of living (Cost)	This is a scale to measure the monthly living expenses of employees, calculated in millions of VND/month	Qian and Fan (2020) and Bezerra et al. (2020)

Source Author's summary

Table 2 Descriptive statistics of employees' incomes by field of work

Work		N	Mean	Std. deviation	Std. error mean
Y_Post	Avi	257	19.71	8.16	0.51
	Tou	220	15.42	7.00	0.47
Y_Covid	Avi	257	3.78	2.11	0.13
	Tou	220	6.26	4.14	0.28
Y_Post–Y_Covid	Avi	257	15.92	6.21	0.39
	Tou	220	9.17	3.66	0.25

Source Author's data processing results

of the disease, all flights are halted and workers will fall into forced unemployment at the employer's request. During the epidemic, the monthly average pay for workers in the aviation sector was around 3.78 million VND. Meanwhile, the employee group working in the tourist and hotel industries earns more than the aviation sector, earning an average of 6.26 million VND per month. In reality, during an outbreak of the disease, there are times when the pandemic is under control, and tourism activities and domestic hotel services may still take place; therefore, the income for this group of workers is still higher than that of the aviation industry.

When the epidemic is gradually controlled, policies to deal with the Covid-19 pandemic have changed, employees' income has increased, and the salary of the group of workers working in the aviation sector has increased by about 70% compared to the period prior to the outbreak of the Covid-19 epidemic, some workers even have

a stable income and receive additional non-wage income when the aviation sector reopens international routes and passenger demand increases. The average monthly income is expected to be 19.71 million VND per month. Meanwhile, the group of tourist and hotel employees earned around 15.42 million VND per month (Table 3).

The results of examining the income difference between the two groups of workers show that during the outbreak of the Covid-19 epidemic, the difference in the average income of survey respondents for two groups of workers working in the aviation and tourism sectors is estimated to be around 2.47 million VND. However, after the epidemic is under control, the operation of aviation is gradually restored, and the rise in the income of the labor group in the aviation sector is larger, with the average income of the labor group in the aviation sector being roughly 4.28 million dong/month more than the labor group in the tourist and hotel sectors. Meanwhile, the income difference of the two groups during the outbreak of the Covid-19 epidemic and when the epidemic is under control is estimated at about VND 6.76 million.

When workers working in different occupations have differences in income, there are also various differences for workers in different employment positions. As follows as Table 4.

The survey results show that the average value of workers' income after the epidemic is under control is much higher than at the time of the outbreak. As follows:

In terms of the income of employees in management positions, following stabilization, the average manager's salary is about 24.722 million VND per month; however, while during the outbreak of the epidemic, the income of this group of workers is only around 7.826 million VND per month. Moreover, when the epidemic broke out, the income of the group of workers holding staff positions was only about 3.938 million VND per month; however, after the epidemic stabilized, the economy recovered, and production and business activities returned to normal, the income of this group increased significantly, averaging about VND 15.356 million per month.

Examine the difference in income between the two groups of workers in management positions and staff positions (Table 5).

The difference test findings suggest that while the pandemic is controlled, the salary disparity between workers in various occupations is significantly larger. During the epidemic's peak, the income disparity between the two groups was around 3.888 million VND per month. Meanwhile, after the outbreak is under control, the difference between these two groups is expected to be over 9.367 million VND per month.

Reduced working hours, wage cutbacks, and job cuts from businesses owing to financial difficulties in the context of the pandemic all contribute to the shift in workers' income. According to the survey results, the number of employees affected by employment in the context of the pandemic outbreak is as follows as Table 6.

According to research findings, workers have difficulty lowering working hours (approximately 46.75% of the total number of employees); workers have problems with temporary leave and receiving a basic salary (accounting for 31.87%), and workers take unpaid leave. These difficulties have a direct impact on the stability of employees' lives.

Table 3 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_Post	Equal variances assumed	8.00	0.00	6.10	475.00	0.00	4.28	0.70	2.90	5.66
	Equal variances not assumed			6.17	475.00	0.00	4.28	0.69	2.92	5.65
Y_Covid	Equal variances assumed	86.98	0.00	-8.39	475.00	0.00	-2.47	0.29	-3.05	-1.90
	Equal variances not assumed			-8.01	314.08	0.00	-2.47	0.31	-3.08	-1.87
Y_Post-Y_Covid	Equal variances assumed	107.07	0.00	14.17	475.00	0.00	6.76	0.48	5.82	7.69
	Equal variances not assumed			14.71	424.59	0.00	6.76	0.46	5.85	7.66

Source Author's data processing results

Table 4 Income of employees by work position

Position		N	Mean	Std. deviation	Std. error mean
Y_Post	Management	121	24.722	4.488	0.408
	Employee	356	15.356	7.430	0.394
Y_Covid	Management	121	7.826	3.741	0.340
	Employee	356	3.938	2.696	0.143
Y_Post-Y_Covid	Management	121	16.897	4.888	0.444
	Employee	356	11.418	5.966	0.316

Source Author's data processing results

Workers had new livelihood alternatives during this period to meet their income during the challenging period when the epidemic broke out; yet, these livelihood alternatives are maintained until employment is restored, and demonstrating employees' good adaptability in the changing setting.

Estimated level of influence of factors on the income of employees in post-Covid-19 (Table 7).

The results show that the selected model is suitable; the R-Square coefficient is about 0.8487. The regression parameters of the model are as follows as Table 8.

According to the findings of the research, the gender of the employee affects the employee's salary, particularly in the difficult circumstances of the pandemic. Employers are more likely to use male workers. For female workers, the coefficient = -1.036534 also reflects that. Meanwhile, when employees are well-trained and have professional qualifications, stability in jobs will be higher, as does worker flexibility, which has a positive impact on worker's income. The coefficient for employees with a graduate degree is around 4.181241; the coefficient for workers with a university degree is approximately 1.070547. The research findings fully support the views of Qian and Fan (2020) and Le et al. (2021) that the greater the education, the better the job responsiveness, and the higher the employee's earnings. Businesses reviewed and pushed a lot of workers to resign, especially when the pandemic broke out, so having professional qualifications, and skills will help employees secure their positions in difficult times.

Job position also has an influence on an employee's income; the higher the position, the greater the pressure, and the more tasks, hence the income will be larger than in other positions. The coefficient of the variable is 1.484136 reflects this as well. The findings of the study support the viewpoints of Brunello et al. (2000), Campos and Jolliffe (2002), Qian and Fan (2020) and Dao et al. (2022). Along with that, the field of work has a considerable effect on employees' income; workers in the aviation sector, which has a quick recovery rate, have a higher influence on income fluctuations, and the adaptability of workers in this group will be better. The coefficient of this variable is about 1.118245. The research results completely support the views of Qian and Fan (2020); Bezerra et al. (2020); Dao et al. (2022).

Table 5 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_Post	Equal variances assumed	39.436	0.000	13.075	475.000	0.000	9.367	0.716	7.959	10.774
	Equal variances not assumed			16.519	346.160	0.000	9.367	0.567	8.251	10.482
Y_Covid	Equal variances assumed	13.667	0.000	12.337	475.000	0.000	3.888	0.315	3.269	4.507
	Equal variances not assumed			10.540	164.389	0.000	3.888	0.369	3.160	4.616
Y_Post-Y_Covid	Equal variances assumed	2.469	0.117	9.113	475.000	0.000	5.479	0.601	4.297	6.660
	Equal variances not assumed			10.046	250.609	0.000	5.479	0.545	4.405	6.553

Source Author's data processing results

Table 6 Vulnerability to the employment of workers during an epidemic outbreak

Criteria	Quantity (person)	Rate (%)
1. Workers have reduced working hours	223	46.75
2. Workers on leave with minimum wage	152	31.87
3. Workers leave without a salary	102	21.38
Total	477	100

Source Author’s data processing results

Table 7 Results of the model test

Linear regression	Number of obs	=	477
	F(10, 466)	=	521.19
	Prob > F	=	0
	R-squared	=	0.8487
	Root MSE	=	3.1172

Source Author’s data processing results

Table 8 Regression parameters of the model

Robust					
Y_Post	Coef	Std. Err	t	P > t	Beta
<i>Gend</i>					
1. Female	-1.036534	0.4432729	-2.34	0.020	-0.0654198
<i>Edu_Post</i>					
2. College	1.596011	0.5307503	3.01	0.003	0.0643445
3. University	1.070547	0.3022383	3.54	0.000	0.0617889
4. Post Graduate	4.181241	0.7269813	5.75	0.000	0.1394163
<i>Posit_Post</i>					
1. Management	1.484136	0.4918888	3.02	0.003	0.0815134
<i>Work_Post</i>					
1. Avi	1.118245	0.3043209	3.67	0.000	0.0703643
Exper_Post	0.2199327	0.1040973	2.11	0.035	0.1078855
Invest_Post	0.0342722	0.0048338	7.09	0.000	0.2280339
Cost_Post	1.011918	0.1069266	9.46	0.000	0.4170914
Work_invest_Post	0.0192732	0.0053836	3.58	0.000	0.1104369
_cons	4.460743	0.5591726	7.98	0.000	

Source Author’s data processing results

The study findings also suggest that the transition to a new livelihood strategy has had a positive influence on workers in the changing context, as have private investments made by employees in difficult times, which have generated income to serve the life of workers. This demonstrates that workers' flexibility is rather excellent. The research findings also suggest that the coefficient of the private investment variable is around 0.0342722, representing increases in worker adaptability. Employees utilize this investment in financial investments and self-employment investments through Internet platforms for a stable income in that challenging environment. The findings support the views of Qian and Fan (2020), Dao et al (2022) and Bezerra et al. (2020).

5 Discussion

According to research findings, workers' adaptability capabilities in the setting of the epidemic are reasonably excellent. Once the epidemic is under control, workers' income and employment will have improved to satisfy living necessities. Some suggestions are given to respond to changes brought about by the current changing circumstances:

First, research demonstrates that, during the outbreak and the time after the epidemic is under control, competent and qualified workers appear to more successfully secure their positions, earning more consistent income than other workers. This is especially critical when force majeure conditions, such as epidemics or production/business unit challenges, compel the reduction of human resources. As a result, personnel must have the experience, certifications, and abilities to be able to adapt to any circumstance.

Second, diversifying revenue creation sources will assist employees in ensuring a steady living. At the same time, income diversity will assist workers in being able to adjust flexibly to varied circumstances, particularly during the adverse phase caused by the external environment.

Third, employers must have special orientations to help workers meet the needs imposed by the real work of the units. From there, employers will then be proactive in increasing their qualifications, allowing them to adapt securely to any situation.

6 Conclusions

When comparing the change in workers' pay during the outbreak phase and after the epidemic is under control, the research results met the specified target, utilizing data from a survey of 477 people working in the aviation and tourism/hospitality sectors. According to research, workers in the aviation sector are more resilient than those in the tourist and hotel sector. The income gap between these two groups before and after the pandemic is approximately 6.76 million VND/month. When the epidemic first broke out, the difference between employment positions was not

very substantial, but after the epidemic is under control, the difference between job positions becomes relatively large, and the income of the group of workers who are managers is about 9.367 million VND/month higher than average compared to the group of employees who are employees. The study results also demonstrate that once the pandemic is under control, employees' salaries would be consistent and greater provided they have good qualifications, have good adaptability (through the diversification of income-generating options; investment is one of those income-generating channels).

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