Analysis of COVID-19 Pandemic Impact on Labor Force in Thailand

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Abstract
Covid-19 has begun to spread in Thailand since early 2020, and consequently the economy in some industrial divisions contracted while some industrial divisions expanded significantly. This research investigates the impact of Covid-19 pandemic on Thai labor force in the aspect of employment and income. The labor force survey data collected by National Statistical Office during 2019-2020 was categorized into 80 industrial divisions. Descriptive statistics and inferential statistics were utilized to compare between the situation before the Covid-19 pandemic and the situation while Covid-19 spreading. The study found that while Covid-19 spreading, in Thailand, the number of unemployed persons increased 40.35% while the number of employed persons increased 2.51%. The employment in the accommodation division showed the highest decreased by 90,992 persons while the employment in the food and beverage service activities division showed the highest increased by 222,142 persons. The income of the persons in the travel agency and tour operator activities division showed the highest decreased by 66.39% while the income of the persons in the libraries, archives, museums and other cultural activities division showed the highest increased by 316.90%. The government policy maker, the investor, and labor force should learn about the opportunity and threat from this crisis.

Keywords: Covid-19, Labor Force, Industry, Employment, Income

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Introduction

Coronavirus Disease 2019 or COVID 19 is an emerging disease. It was first found in Wuhan, China. It was first reported in December 2019. Coronaviruses are virulent viruses that cause disease in humans and animals. There are several strains of coronavirus, for example, Delta, Omicron, Lambda, Colombia, or Mu. All these strains cause respiratory diseases. With the COVID-19 epidemic situation spreading rapidly and widely in many countries around the world. As a result, there are a large number of infected people and deaths. The World Health Organization has declared the COVID-19 outbreak a pandemic as the number of cases increases. The outbreak has not yet been controlled in many countries in all regions of the world. The outbreak wreaks havoc on both human livelihoods and global health security.

The COVID-19 disease began to spread in Thailand in early 2020. and had a clear impact on the economy Those affected are broad in particular small businesses, restaurants, hotels, retailers and tourism due to the country's lockdown or cancellation of economic activities. It is to control the spread of the coronavirus disease. As a result, there are many workers who are suddenly unemployed and suffer from insufficient income to livelihoods. Entrepreneurs need to adapt to be able to cope with the Coronavirus epidemic situation. Due to declining incomes, the broader economic system has been disturbed, which has had an impact on many workers.

From the aforementioned problems, this research is about comparing the total employment value and the employment of Thai workers in the situation of COVID-19 by comparing 2019-2020. The objective is to study which industry groups are most affected by total employment value and employment impact the most to propose solutions in the future.

Related research

Jakrapat Watanasuk (2007) Study on labor wage differences between genders: a case study of the automotive industry in Wellgrow Industrial Estate, Chachoengsao Province. It was found that during the probationary period, males had higher wages than females by 120.311 baht/month. At the start of work, males were paid 120.040 baht/month which was more than females. At present, males were paid 175 baht/month which was more than females.

Nuanphan Maithongdee (2010) studied discrimination and wage differences between men and women: the case of private employees in higher occupations (including managers, professionals in various fields, and technicians are mainly used in this analysis) had higher wages than female workers.

Kritsana Lertkasetwittaya and Terdsak Chomtosuwan studied the analysis of factors affecting income differences in the Thai labor force and found that the higher the level of education, the higher the income. Higher work experience will increase your income at a reduced rate. Males earn more than female workers. Working spaces in cities earn more than outside cities. The region in Bangkok earns the most. Senior public servant managers have the greatest inequality.

Nipapan Jensantikul (2020) Studying workers in the situation of the spread of the coronavirus (COVID-19, government measures and impacts) found that 1) workers who are at higher risk of termination of employment than other groups are elderly workers 2) The impact on each group of workers differs depending on the nature of their business and occupation. 3) Some workers lack information technology knowledge.

Thananya Wanta, Wannika Sinthornsawat, and Nonglak Jiwju (2022) studied the economic impact assessment of the COVID-19 epidemic situation for the hotel accommodation business in the Tak Special Economic Area, it was found that the overall economic impact is divided into 2 aspects. The overall income is at a high level.

From other literature reviews of relevant research, it was found that specific groups and provinces were studied only.

Objectives

The aim of this research is to study the impact of COVID-19 pandemic on value of employment, number of employment in each industry group and its income inequality.

Research methodology

1. Data collection

In this study, secondary data were used as raw data from the Labor Force Survey in Q4 (2019-2020). In 2019, there were 205,256 samples out of a total of 68,020,986 people or 0.3% and there were 221,185 samples out of a total of 68,152,065 people or 0.3%. The data were collected by the National Statistical Office. They collect data each year and cover the entire country using a random sampling of the Thai population throughout the country. The researcher used a questionnaire to survey the working conditions of the population and interview the respondents.

2. Data analysis

The study uses data on labor income divided by industry groups based on data from the National Statistical Office of 80 industry groups.

3. Research tools

3.1 Change in value of employment

In this research, the rate of change was used to analyze two aspects: employment and value of employment. The calculation formula is as follows:

$$\delta = \left(\frac{\lambda_{2020} - \lambda_{2019}}{\lambda_{2019}} \right) \times 100\%$$

This research used inflation to analyze how increasing or decreasing income of each industry affects the purchasing power of labor. The calculation formula is as follows:

$$PV_{2019} = \frac{FV_{2020}}{\left(1 + \frac{r_{2020}}{100} \right)}$$

Which FV_{2020} is the value of money in 2020 after adjusting for inflation corresponds to its value in 2019, PV_{2019} is the value of money in 2020 after adjusting for inflation corresponds to its value in 2019, and r is inflation rate.

3.2 Change in number of employment

Which δ is the rate of change in number of employment, λ is the employment.

$$\phi = \left(\frac{\mu_{2020} - \mu_{2019}}{\mu_{2019}} \right) \times 100\%$$

Which ϕ is the rate of change in value of employment, μ is the value of employment.

3.3 Income inequality

This research used the Gini Index to measure the income disparity of the Thai workforce. The Gini Index equal to 100 means the most inequality, while the Gini Index equal to 0 means the least inequality or no inequality. The calculation formula is as follows:

$$G = (1 - \sum_{i=1}^{n} (X_i - X_{i-1})(Y_i + Y_{i-1})) \times 100$$

Which G is Gini index, X is the cumulative percentage of the Thai labor force, Y is the cumulative percentage of income of Thai labor force, and n is the number of Thai labor force.

The Gini index used to measure income distribution is calculated differently from the Gini index used by governments to measure income distribution. If it's a government, the average household income is used to calculate the Gini index. However, this research uses Labor Force Survey data for calculations without averaging the number of household members or dividing by the number of household members. We can reflect the person who actually receives the money.

Results

The results of this research show that the change in the total employment value of each industry group can be seen. This analysis was divided into 2 analyses: the change in the total employment value within industry groups and the change in the total employment value of each industry group to the total employment value across all industry groups.

The change in the value of total employment within an industry group as a percentage of each industry group concerning the top 10 percent changing industries and the top 10 worst changing industries were found to be: The 1st best percentage change in total revenue within the industry is libraries, archives, museums, and other cultural activities increased by 3.17 percent. The 2nd place is the treatment and other waste management activities, increased by 2.84 percent. The 3rd place was head office activities and management consulting services increased by 0.87 percent. The 4th place was a waste collection, treatment and disposal increased by 0.83 percent. The 5th place was the care activity that gave accommodation an increased by 0.82 percent. The 6th place was other mining and quarrying increased 0.64 percent. The 7th place was the preparation of computer programs and consulting increased by 0.61 percent. The 8th place was civil engineering increased by 0.55 percent. The 9th place was veterinary services increased by 0.54 percent. The 10th place was film, video, and television production increased by 0.45 percent. The percentage change in total employment value within the top 10 worst industries from the table showed: The 1st place was the activity of travel agents and tour operators

decreased by 0.66 percent. The 2nd place was air transport decreased by 0.65 percent. The 3rd place was accommodation decreased by 0.49 percent. The 4th place was sports activities, entertainment and recreation decreased by 0.43 percent. The 5th place was production of coke and refined petroleum products decreased by 0.42 percent. The 6th place was the production of leather and related products decreased by 0.41 percent. The 7th place was Security Services and Investigations decreased by 0.40 percent. The 8th place was other professional, scientific and technical activities decreased by 0.36 percent. The 9th place was water transport decreased by 0.30 percent. The 10th place was creative arts and entertainment activities decreased by 0.25 percent.

Table 1: The impacts on employment in each industry group

Code	Industry group	Number of employments 2019 (Person)	Number of employments 2020 (Person)	Change in employment (Person)	Change in total employment value before inflation (Million baht)	Change in total employment value after inflation (Million baht)
01	farming and animal husbandry, hunting and other related	832,293	832,072	-221.00	28.94	62.31
08	other mining and quarrying	9,005	10,509	1,503.88	39.40	40.27
10	food production	1,415,517	1,408,139	-7,377.68	-49.53	27.60
11	beverage production	6,619,336	6,822,491	203,155.76	333.54	353.23
12	tobacco production	3,325,291	3,426,327	101,036.17	375.26	404.36
13	textile production	306,462	290,503	-15,959.31	-172.24	-159.54
14	clothing production	1,449,618	1,445,663	-3,954.76	-400.88	-380.14
15	leather and related production	123,300	80,915	-42,384.91	-435.25	-430.35
16	wood and wood products and cork production	215,461	202,185	-13,275.97	3.30	10.43
17	paper and paper products production	130,486	112,575	-17,911.48	84.06	98.69
18	printing and reproduction of storage media production	73,148	79,788	6,640.20	12.62	18.86
19	charcoal and petroleum refining products production	38,682	25,345	-13,336.44	-575.74	-569.30
20	chemicals and chemical products production	171,661	192,221	20,559.17	-99.94	-76.19
21	pharmaceuticals, chemicals, plant/animal products for medicinal purposes production	61,631	68,942	7,311.54	289.28	298.14
22	rubber and plastic products production	464,331	483,339	19,007.83	323.19	365.27
23	other products made from non-metallic minerals production	274,291	279,417	5,126.91	-369.59	-346.44
24	basic metal production	142,439	129,973	-12,466.09	88.21	104.99

Code	Industry group	Number of employments 2019 (Person)	Number of employments 2020 (Person)	Change in employment (Person)	Change in total employment value before inflation (Million baht)	Change in total employment value after inflation (Million baht)
25	fabricated metal fabrication	358,993	358,892	-100.83	-106.94	-81.05
26	electronic computer manufacturing	399,373	399,997	624.68	106.33	162.61
27	electrical equipment manufacturing	174,220	200,840	26,620.23	459.49	485.43
28	manufacture of machinery and tools (Not classified)	152,086	185,940	33,853.59	291.43	316.56
29	manufacture of motor vehicles, trailers and semi-trailers	375,631	383,208	7,577.10	-5.33	52.37
30	manufacture of other transport equipment	54,666	81,457	26,790.24	330.35	339.76
31	furniture production	400,110	401,475	1,365.74	-141.67	-128.30
32	manufacturing other products	485,157	446,471	-38,686.62	-550.19	-534.62
33	repair and installation of machinery and equipment	107,877	130,629	22,752.08	47.84	54.83
35	electricity, gas, steam and air conditioning systems	129,983	137,528	7,544.42	206.25	237.32
36	water storage, water supply and distribution	58,237	67,685	9,448.19	125.56	135.96
37	wastewater management	7,404	10,047	2,643.07	3.70	4.09
38	waste collection, treatment and disposal	27,090	43,471	16,381.14	133.87	136.40
39	other waste treatment and management activities	754	1,391	636.99	25.72	26.02
41	building construction	1,550,106	1,742,225	192,119.25	1,599.02	1,707.34
42	civil engineering	79,920	114,297	34,377.06	479.83	491.52
43	specialized construction work	463,263	458,744	-4,518.88	-138.46	-113.87
45	wholesale and retail, repair of motor vehicles or motorcycles	908,232	901,630	-6,601.62	390.44	447.02
46	wholesale (except vehicles and motorcycles)	1,193,148	1,122,885	-70,263.41	-552.33	-482.25
47	retail trade (except motor vehicles and motorcycles)	4,257,326	4,353,901	96,575.46	-231.61	-128.50
49	land transport and pipeline transport	834,346	860,158	25,811.09	221.24	262.55
50	water transport	20,235	15,083	-5,152.11	-54.67	-53.58

Code	Industry group	Number of employments 2019 (Person)	Number of employments 2020 (Person)	Change in employment (Person)	Change in total employment value before inflation (Million baht)	Change in total employment value after inflation (Million baht)
51	air transport	44,377	28,744	-15,633.11	-1,322.08	-1,316.06
52	warehouse activities and activities that support transportation	245,792	295,364	49,571.95	887.17	930.69
53	postal and parcel delivery activities	139,708	157,556	17,848.44	136.18	154.99
55	accommodation	363,289	272,297	-90,991.63	-2,303.85	-2,283.28
56	food and beverage service	2,487,589	2,709,731	222,141.85	19.42	64.45
58	Publication, distribution or dissemination	26,994	28,320	1,325.99	161.47	167.20
59	Film, video and television production	22,714	28,124	5,410.03	173.31	178.08
60	Program scheduling and broadcasting	19,975	17,128	-2,846.77	-28.12	-25.32
61	telecommunication	98,811	73,082	-25,728.35	-172.78	-153.87
62	computer program preparation and consulting	44,474	69,038	24,564.05	709.05	725.13
63	information service	8,632	10,443	1,811.88	12.77	13.85
64	financial services activities	375,703	379,419	3,715.28	412.01	495.22
65	Insurance and pension fund	93,750	108,914	15,163.58	275.18	295.10
66	financial services and insurance activities	42,161	46,991	4,829.66	79.90	86.07
68	real estate activities	220,871	260,612	39,741.17	532.63	554.16
69	legal and accounting activities	133,142	152,888	19,746.01	111.29	128.27
70	Head office activities and administrative consulting services	19,652	27,657	8,005.43	316.04	321.86
71	Architectural and engineering activities	38,826	52,860	14,033.68	174.87	181.89
72	scientific research and development	29,945	36,610	6,664.25	167.88	173.47
73	Advertising and market research	52,016	59,674	7,658.20	133.14	138.25
74	Other professional, scientific, and technical activities	79,492	68,006	-11,485.49	-269.88	-265.68
75	veterinary service	7,801	10,557	2,755.21	37.18	38.09
77	rental activities	44,119	41,616	-2,503.08	-8.86	-7.13
78	employment activities	176,817	198,417	21,599.58	223.14	243.21
79	Travel agency and tour operator's activities	77,384	48,096	-29,288.42	-685.38	-682.41

Code	Industry group	Number of employments 2019 (Person)	Number of employments 2020 (Person)	Change in employment (Person)	Change in total employment value before inflation (Million baht)	Change in total employment value after inflation (Million baht)
80	Security and investigative services	93,270	60,022	-33,247.76	-444.53	-438.86
81	Service activities for buildings and landscapes	191,650	153,535	-38,115.14	-274.54	-262.24
82	Administrative and operational support services	85,184	76,792	-8,391.75	-136.96	-133.04
84	public administration and national defense	1,556,990	1,625,669	68,678.78	1,250.33	1,517.87
85	education	1,106,037	1,173,816	67,778.67	2,112.95	2,384.35
86	human health activities	550,104	632,490	82,386.45	1,664.67	1,786.89
87	Residential care activities	8,280	18,954	10,674.42	117.93	120.17
88	Social work activities without accommodation	73,389	75,954	2,565.18	-30.18	-23.68
90	Creative arts and entertainment activities	47,069	52,130	5,060.39	-52.50	-51.12
91	Library, archives, museums, and other cultural activities	31,800	86,248	54,447.79	1,139.51	1,152.36
93	Sporting activities, entertainment, and recreation	117,943	72,593	-45,350.23	-463.41	-458.25
94	member organization activities	29,530	35,693	6,162.65	54.36	57.81
95	repair of computers and personal and household items	123,572	124,469	897.03	-35.18	-33.83
96	Other personal services	709,959	664,351	-45,607.87	-225.00	-207.81
97	Employment in private households	223,261	249,617	26,355.35	130.80	149.10
99	International organizations and partners	62,551	75,753	13,201.74	10.28	20.59

The change in the total employment value of each industry group to the total employment value of all industry groups when taken as a percentage of each industry group, of interest to the top 10 industry groups with the best percentage change and the top 10 worst percentage change industries from Table 1 found that The 1st place was education increased by 0.32 percent The 2nd place was human health activities increased by 0.25 percent The 3rd place was building construction increased by 0.24 percent. The 4th place was public administration and defense increased by 0.19 percent. The 5th was libraries, archives, museums and other cultural activities increased by 0.17 percent. The 6th place was warehouse activities and transportation support activities increased by 0.13 percent. The 7th place was computer program and consulting increased by 0.11 percent The 8th place was real estate activities increased by 0.08 percent The 9th place was civil engineering increased by 0.07 percent The 10th place was the production of electrical equipment increased by 0.06 percent. The percentage change in the total

employment value of each industry to the total employment value of the top 10 worst industry groups are: The 1st place was accommodation decreased by 0.34 percent. The 2nd place was air transport decreased by 0.20 percent The 3rd place was activities of travel agents and tour operators decreased by 0.10 percent. The 4th place was the production of charcoal and petroleum refining products decreased by 0.09 percent. The 5th place was Wholesale trade (except motor vehicles and motorcycles) decreased by 0.08percent. The 6th place was the production of other products decreased by 0.07 percent. The 7th place was sports activities, entertainment and recreation decreased by 0.06 percent. The 8th place was Security Services and Investigations decreased by 0.05 percent. The 9th place was production of leather and related products decreased by 0.05 percent. The 10th place was garment production decreased by 0.05 percent.

The Employment Changes found that the top 10 industries whose employment was most negatively impacted were as follows: The 1st place was Accommodation which decreased by 90,992 people The 2nd place was Wholesale (excluding motor vehicles and motorcycles) which decreased by 70,263 people. The 3rd place was other personal service activities which decreased by 45,608 people. The 4th place was Sports Activities, Entertainment, and Recreation which decreased by 45,350 people. The 5th place was Production of leather and related products which decreased by 42,385 people The 6th place was Production of other products decreased by 38,687 people. The 7th place was service activities for buildings and landscapes which decreased by 38,115 people. The 8th place was Security and Investigation Services which decreased by 33,248 people. The 9th place was the activities of travel agencies and tour operators which decreased by 29,288 people. The 10th place was telecommunications which decreased by 25,728 people. The top 10 industry sectors where employment was most positively impacted are as follows: The 1st place was food and beverage services which increased by 222,142 people The 2nd place was the production of beverage production which increased by 203,156 people. The 3rd place was building construction which increased by 192,119 people. The 4th place was the production of tobacco products which increased by 101,036 people. The 5th place was Retail sales (excluding motor vehicles and motorcycles) which increased by 96,575 people. The 6th place was Human Health Activities which increased by 82,386 people. The 7th place was Public Administration and National Defense which increased by 68,679 people. The 8th place was Education which increased by 67,779 people The 9th place was libraries, archives, museums and other cultural activities increased by 54,448 The 10th place was warehousing activities and transport support activities which increased by 49,572 people.

Summary and Discussion

The value of total employment in pre-COVID 19 in 2019 compared to the COVID-19 pandemic in 2020 found that the sectors hardest hit by travel agency and tour operator activities, which decreased by 66.39 percent. The main reason is from the declaration of an emergency decree to prevent COVID-19. As a result, the tourism business has employees to stop or work less. Therefore, the income has decreased as well. The second worst impact was air transport, which dropped 65.32 percent. During the epidemic, many airlines lacked liquidity and had to cancel operations of Nok Scoot and the bankruptcy of Thai Airways. Most operators have accelerated cost cuts such as payroll, staff and fleet cuts and sought government assistance. Therefore, air transport has been hit hard as well.

In contrast, the industry sector that was positively impacted during the COVID pandemic was library, archives and museum and cultural activities, with a 316.90 percent increase. In sub-

sections there will be botanical and zoo activities and nature conservation. During the COVID-19 epidemic in 2020, there were no tourists due to government policies. Therefore, the government takes this opportunity to use the budget for natural restoration projects and zoos, making people earn more. This project will be a short-term project to bring nature back to its beauty and ready to receive tourists after COVID-19 or when the situation is getting better.

However, the revenue increase in each industry group does not reflect the real income. The inflation rate at that time was minus 0.85 percent. Negative effects of inflation have a positive effect on increased income. This indicates that the value of money or income is more valuable and that more goods and services can be purchased.

As for employment during the COVID epidemic situation, it was found that unemployment increased by 40.35 percent and employed workers increased by 2.51 percent. The industry with the biggest drop in employment was accommodation, with a drop of 90,992. The main reason is that hotels and resorts have to reduce costs due to the absence of tourists during the epidemic situation. Hotels and resorts have to cut salaries or have their employees stop working. As a result, employees have to resign and find a new job in order to make himself an income. On the other hand, the industry with the largest increase in employment was food and beverage services with an increase of 222,142. During the epidemic situation, the government has announced the temporary closure of department stores and dine-in restaurants, discouraging people from leaving their homes. It is an opportunity for the food and beverage delivery business that we know as GRAB, LINE MAN, FOOD PANDA. More and more people are ordering food and drinks through apps. Therefore, more and more workers who have lost their jobs from other occupations have turned to work in this sector because the income is quite good.

Regarding the disparity between industry groups, it was found that the Gini Index in 2019 was 62.70 and the Gini Index in 2020 was 63.43. From the figures, it can be concluded that before COVID-19, there was a disparity between industries as high as 62.70. During the COVID-19 pandemic, the disparity between industries increased slightly to 63.43.

Policy suggestions

Thai government must adapt to the people to live with COVID-19 because after the economy has been disrupted quite a lot, the impact is full. There is also a highly erratic and unequal recovery in some sectors. Both domestic and international tourism has been severely affected. Restaurants, night businesses and people employed will be hit hard. SMEs with short cash flow lines and the household sector are also affected. We will see higher leverage across all issues. The government business sector must promote and support employment by maintaining employment conditions in parallel with developing key skills. To increase liquidity during this period, there must be a management plan during the temporary closure, which increases the debt burden. Entrepreneurs need to use costs for their operations without severe impacts. The labor sector must increase their skills and potential to work in many occupations. to accommodate future uncertainties

References

BBC News Thai. (2020). Business upswing during economic downturn, effects of new strain of corona virus. Retrieved on April 4, 2020 from https://www.bbc.com/thai/thailand-52163423

BBC News Thai. (2020). The government announced an emergency decree to contain COVID-19. Retrieved on 24 March 2020 from https://www.bbc.com/thai/thailand-52014435/

Jensantikul, N. (2020). Labor in the Coronary Epidemic Situation (COVID-19): Government Measures and Effects. *Journal of Multidisciplinary in Humanities and Social Sciences, 3(3), 601-612.*

Lerdkasetwittaya, K., & Chomtohsuwan, T. (2015). An Analysis of Factors Affecting Income Differences in the Thai Labor Force. Proceeding of the 3rd National Conference on From Disruptive to Post COVID-19 World : New Landscapes and Sustainable Development for Thailand. Rangsit University, pp. 210-223, Bangkok, Thailand.

Maithongdee, N. (2010). Gender discrimination and wage differentials : the case of private employees in professional occupations. National Institute of Development Administration. Retrieved on 2 March 2023 from: http://repository.nida.ac.th/handle/662723737/616

Thailand Development Research Institute (2020). Turning the COVID-19 Crisis into Opportunities: Reviving Natural Resources and Natural Attractions. Accessed on June 16, 2020. from https://tdri.or.th/2020/06/covid-19-turning-crisis-into-an-opportunity-for-natural-tourism/

Wanta, T., Sinthornsawat, W., & Jiwju, N. (2022). Economic Impact Assessment of the COVID-19 Outbreak for Accommodation Businesses in Special Economic Zones Tak. *Journal of Social Sciences, 5(2), 160-171.*

Watanasuk, J., Sajjanand, S., & Srisawaluk, O. (2007). Gender Wage Differences: A Case Study of Automotive Industry at Wellgrow Industrial Estate in Chachoengsao Province. Proceeding of the The 2nd STOU Graduate Research Conference. Sukhothai Thammathirat Open University, pp. 1-14, Nonthaburi, Thailand.

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