Initial Impact of COVID-19 on Labor Demand in Afghanistan: Evidence from Kandahar Province

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Abstract

The global COVID-19 pandemic, a global threat, has had serious negative impacts on various sectors of the economy around the world. According to the International Monetary Fund (IMF) outlook for October 2020, the world economy was projected to contract by 4.4% in 2020. The global supply chain was disrupted; businesses - particularly small and medium sized enterprises - ceased their operations, which had a severe impact on the labor demand around the world. This study focuses on the labor demand in Kandahar province, Afghanistan, to determine what sectors were most affected and demanded less labor during the COVID-19 pandemic. Based on the theory proposed by Brodeur et al. Paired t-tests were used to analyze the sample data, which includes 57 manufacturing firms, 43 private schools, 96 retailers and 56 farmers. It was found out that the manufacturing, education, and retail sectors demanded less labor compared to the agriculture sector during the pandemic. 30% of employees on average were laid off in manufacturing and education sectors during the pandemic whereas labor demand in agriculture sectors was almost unaffected. It was also found that the laid off employees were not dependent on the skills required for the position: all types of employees whether skilled or unskilled were laid off at similar rates.

Keywords: **Labor demand, COVID-19**

1. Introduction

The world has experienced numerous pandemics in the past decades. Besides posing a serious threat to public health, each of the pandemics severely affected the economies of the countries involved. Some of the past pandemics include the Plague of Justinian, Black Death, Smallpox, Great Plague of Marseille, Spanish flu, and SARS, which killed millions of people worldwide and had severe consequences on demographics, the economy of the nations, and human societies (Lanchimba et al., 2020). n The world faced another pandemic in 2019; COVID-19. It was first reported from Wuhan, China and spread globally, posing various challenges including labor market and supply chain disruptions besides threating public health (Brodeur *et al.*, 2020).

The COVID-19 pandemic struck the economies worldwide, they were hit hard and resulted in unprecedented spikes in employment rates and lower Gross Domestic Product (GDP). A report published by the United Nations Development Program (UNDP) shows that Germany, the United States, and China had a fall of 5% to 10% GDP due to the interruption of business operations, supply chain disruptions, and labor layoffs caused by COVID-19 (UNDP, 2020). In another study by Jena et al., (2021) where they forecasted the GDP of eight countries ;namely, the United States, Mexico, Germany, Italy, Spain, France, India, and Japan, shows that all the eight countries experienced a sharp decline in GDP in April-June quarter of 2020, and it was expected to reach to a double digit negative growth. Moreover, according to the International Monetary Fund (IMF) outlook for October 2020, the world economy was projected to contract by 4.4% in 2020 (Su *et al.*, 2021). Although there was a general contraction in all sectors of the economy, this was most pronounced in the service sectors, including leisure and hospitality, tourism, and education. According to Forsythe et al., (2020), the sectors which were not deemed essential and didn't have work from home capability, such as tourism and hospitality, were hit hard compared to those which were considered essential and/or that were adaptable to a work from home set-up, such as health and education.

As the COVID-19 pandemic struck, governments around the world prioritized health and ordered citizens to close non-essential businesses, resulting in job loss for millions of workers (Crowley *et al.*, 2021). A spike in unemployment rate made disruptions in the labor market which then turned into the main concerns among the

countries. According to the IMF outlook for October 2020, Europe was projected to experience 8% unemployment rate in 2020 (Su *et al.*, 2021). While some of the countries were successful in alleviating the suffering of the labor market (e.g. United Sates, France, China), other countries such as India, Pakistan, Malaysia failed to lessen the suffering of the labor market (Brodeur *et al.*, 2020). According to Kapoor (2020), India was one of the countries that failed to rescue the millions of jobs in the pandemic which later then resulted in an increase in poverty.

Effects of the COVID-19 pandemic on labor market varied across sub-sections of workers. The effects were dependent on workers' age group, gender, education level, occupation, employment type and industry of employment. A study by Kikuchi et al. (2021) tried to ascertain who suffered the most from the COVID-19 pandemic in Japan, and found that those who earned less prior to the pandemic suffered the most. Regular workers were not hit as hard as contingent workers, younger workers were hit harder than older workers, female workers suffered more compared to male workers, and workers who were more socially engaged and who did not have flexible jobs were hit harder compared to those who had ordinary and flexible jobs.

According to a report published by the Asian Development Bank, Afghanistan was hit hard by the COVID-19, which resulted in a contraction of 5.0 % of gross domestic product in 2020 (Asian Development Bank, 2020). Another report published by United Nations Development Program (UNDP) states that the country experienced a change in GDP by -7.8 % due to the fact that the world market collapsed and the major import and export partners of the country demanded and supplied fewer products, also resulting in a catastrophic increase in unemployment (UNDP, 2020).

1.1 Problem Statement

The COVID-19 pandemic shocked the labor markets significantly all around the world, and Afghanistan was no exception. Based on various reports, the COVID-19 pandemic has struck the labor market harder in Afghanistan. According to a report by Tolo News, 2 million Afghans lost their jobs amid COVID-19 (Omid, 2020). Another report by Asian Development Bank reported a 5.0% decrease in GDP of the country which is an indication of an increase in the unemployment rate (Asian Development Bank, 2020). However, there currently lacks a study showing what sectors laid off most employees, and what employee characteristics increased the chance of being

laid off. This study will help policy makers and practitioners to be proactive in developing strategies for labor market suffering if such a pandemic struck once again or if the pandemic alike situation occurs in the country.

1.2 Purpose of the study

This study intends to examine the initial impact of COVID-19 on labor demand in Afghanistan. It will investigate the sectors and workers that were hit hard during the pandemic. The study would help policymakers and practitioners in understanding the extent of the impact of the COVID-19 on labor demand, which could be then used in devising strategies for alleviating labor market sufferings in the pandemics ahead.

1.3 Research Questions

1. Which sectors demanded less labor compared to others during the COVID-19 pandemic?
2. What kind of employees were demanded less compared to others during the COVID-19 pandemic?

2. Literature Review

As explained in the problem statement, the impact of the pandemic was felt differently in various sectors and industries and different kinds of workers were affected. Several authors already did respective research in other countries. According to Estupinan et al. (2020), during the first lockdown in India, among the 116 million workers who were to lose jobs, 104 million were informally employed in unorganized sectors.

Bamieh & Ziegler, (2020) conducted a study to examine responses of labor demand in the initial stage of the pandemic, and found that the number of vacancies announced declined by a third in Austria during the pandemic and stayed the same despite the loosening of restrictions. The author further adds that the decrease in labor demand affected all skills groups the same way. However, the good news is that it was found that teleworking rose unprecedentedly, making the decrease in demand for labor less severe. Teleworking was actually a large-scale switch that made the labor market more competitive, and decreased the commute time, as well as other expenses.

Brinca et al., (2021) measured the labor supply and demand shock during the pandemic in the US by estimating a Bayesian structural vector auto-regression on monthly statistics of hours worked and real wages. They found a 66% fall in the growth rate of hours worked in March and April of 2020, which was attributed to adverse labor supply shocks in the labor market. They also found that most of the sectors in the US economy were subject to labor demand and supply shocks, particularly in leisure and hospitality. It is worth mentioning that the information and retail trade sectors were more resilient, and have experienced quite small labor supply shock and in some cases positive demand shocks were observed for these two sectors (Brinca et al., 2021).

Another study by Kalenkoski & Pabilonia (2020) used a random-effect and difference-in-difference model to examine the impact of the pandemic on employment and working hours of the unincorporated self-employed workers in Germany. The authors found that the pandemic decreased employment of all groups, but fathers of school-age children and single women had experienced less decrease in employment rate compared to single men. The authors add that the pandemic caused teleworking to grow faster and it helped to mitigate the impact of the pandemic by letting employees work from home.

On the supply side of the market, Estupinan et al., (2020) estimated supply shock through labor supply reduction by using two metrics. The authors found that in India the pandemic has put around 116 million and 79 million workers at losing their jobs in lockdowns 1 and 2, respectively; which resulted in a monthly wage loss of INR 33.8 thousand crores (2017-18 prices). The authors added that the reduced labor supply is predicted to bring a 13% to 19% decrease in the Gross Value Added of the country, with states with high rates of infections of COVID-19 being more affected compared to those with fewer infections. The severity of the impact of COVID-19 on workers was also influenced by the sector of employment. In service industries like transport, accommodations, arts, and entertainment, 57.2%, 73.3%, and 59.5% of workers, respectively, were at the edge of losing their jobs.

Kapoor (2020) found that the COVID-19 pandemic had a negative impact on the unemployment rate and the aggregate demand in India. She further adds that this phenomenon not only resulted in the unemployment of millions of Indian workers but

also an increase in poverty. The study also found that the burden of the COVID-19 crisis was disproportionately borne by those who were working in low-paying, precarious and informal jobs, which led to the increase of inequalities in the labor market of India.

Forsythe et al. (2020) analyzed the impact of COVID-19 on the U.S. labor market by examining job vacancy data. What they found was that job vacancies declined tremendously by 40% in all U.S. states, regardless of the timing of stay-at-home policies. The authors further add that while essential industries such as retail were hit less severely by the crisis, the leisure and hospitality industry, and other non-essential industries saw the biggest decrease in posted vacancies. In other words, contraction in posting and spikes in unemployment insurance claims were dependent on whether the industry was considered essential and whether the industry had work from home capability.

Another study by Kurmann et al. (2020), who came up with a real-time estimate of the impact of the COVID-19 pandemic on employment and hours worked in the U.S. found that leisure and hospitality, and retail were the two hardest-hit sectors in the COVID-19 crisis. The study has also found that these two sectors experienced a staggering 60% decline which resulted in 19.8 million unemployed workers which equals 10% of the total working population of the U.S. They further add that one-third of the businesses in these two sectors reduced employment to zero and the average weekly hours of workers who are still employed declined by about 10%.

Middendorf et al. (2021) analyzed the perception of smallholder farmers regarding the impact of COVID-19 on agriculture and livelihoods in Senegal by examining the cropping, livestock, and horticulture farming systems through a survey of 872 farmers in 14 regions covering all agro-ecological zones. They found that the majority of farmers expressed concerns about the accessibility of inputs, ability to plant in all major farming systems, yields reduction, ability to feed and sell livestock, the ability to hire labor, and about food security, as food access was said to be more difficult due to the closed food markets and the disruptions of the supply chain in these markets. Closed and disrupted markets ultimately resulted in an increase of food prices; and most importantly, the farmers who previously sold their food on those markets were not able to do so, making their lives more economically challenging.

1. Theory (Model)

According to Brodeur et al. (2020), the COVID-19 pandemic struck the economy in three major channels. The first channel is the direct impact related to the reduction in consuming goods and services. The social distancing measures and lengthy pandemics may reduce consumer confidence by keeping consumers at home, being pessimistic about long-term economic prospects. The second channel is the indirect impact, which works through financial market shocks and their effects on the economy. The wealth of households will most likely fall, saving will increase, and spending will decrease. The third channel is supply-side disruptions, which keep production halted and will negatively impact supply chains, labor demand, and employment, leading to prolonged periods of layoffs and rising unemployment.

The abrupt increase in unemployment rate around the world were partly attributed to lockdown or social distancing caused by COVID-19 (Brodeur *et al.*, 2020). According to a report by Tolo news, 2 million Afghans lost their jobs amid COVID-19 but it is not specific what kind of jobs were affected and at what sectors (Omid, 2020).

However, to find out what sectors laid off most of its employees as well as what type of employees were laid off the most, t-tests will be used for analysis. We will be testing various hypotheses derived from the literature before answering our research questions. Our study aims to address the following research questions:

Research Question 1. Which sector laid off most of its workers?

H_1: COVID-19 increased unemployment in the education sector.

H_2: COVID-19 decreased number of hours worked in the retail sector.

H_3: COVID-19 increased unemployment in the manufacturing sector.

H_4: COVID-19 decreased number of hours worked in the agricultural sector.

Research Question 2. What type of employees were laid off the most?

H_5: Skilled workers lost their jobs during COVID-19 in education and manufacturing sectors.

H_6: Semi-Skilled workers lost their jobs during COVID-19 in education and manufacturing sectors.

H_7: Unskilled workers lost their jobs during COVID-19 in education and manufacturing sectors.

2. Methods and Procedures

This is a quantitative study, approached deductively, using primary data collected from manufacturing firms, private educational centers, individual farmers, and retailers operating in Kandahar province in four major sectors of the economy namely; education, retail, manufacturing, and agriculture.

The amount of observations for manufacturing and education sectors was decided using Krejcie and Morgan's table (McNaughton and Cowell, 2018). The population for these two sectors were provided by the Directory of Industries and Commerce, and Directory of Education respectively. The same size companies and schools were tried be included in the sample. As populations were not exact and as the sampling frame for individual retailers and individual farmers were not accessible, we used a convenience sampling method for these sectors. According to Saunders et al. (2016), the issue of selecting the sample size for retail and agriculture sectors using non-probability sampling methods is ambiguous and there is no specific rule, but they state that in this case the sample size depends on research questions and objectives. Thus the amount of the sample of this study can respond to the research questions and the results can be generalizable to almost the entire population.

Table 1: Sample size of the study

Sample Size			
Using Krejcie and Morgan's table		Convenience Sampling Method	
Manufacturing	Education	Retail	Agriculture
Population (Firms): 70	Population (Private Educational Centers): 110	Sampling frame is not accessible	Sampling frame is not accessible

Sample: 59	Sample: 86	Sample: 110	Sample: 90
Total: 345			

Source: Directory of Industries and Commerce, Directory of Education, and using convenience sampling method for retail and agriculture sectors

In order to find out what sectors of the economy demanded less labor compared to the rest of the sectors during the pandemic, we apply mean group comparison using t-tests (explained below mathematically).

The t-test compares the mean weekly hours worked before and during the pandemic for all four sectors. We then compare the p-values of these four 4 t-tests. According to Lind et al., (2012) the lower the p-value, the bigger the differences between means. So, any sector with the lowest p-value of the test will be the one which demanded less labor in the pandemic.

$$t = \frac{\overline{x}_1 - \overline{x}_2}{\sqrt{(s^2(\frac{1}{n_1} + \frac{1}{n_2}))}} \qquad [1]$$

$\overline{x}_1$: Mean weekly hours worked before the Pandemic in manufacturing sector

$\overline{x}_2$: Mean weekly hours worked during the Pandemic in manufacturing sector

s^2 : Variance of the average weekly hours worked

n_1 : Sample Size

n_2 : Sample Size

To see what type of labor was more susceptible to job loss, we used mean group comparison between different types of employment, professional, clerk, skilled, semi-skilled, or unskilled. The study then compared the mean amount of each type before and during the COVID-19 pandemic. To do so, we again use t-tests for normally distributed data and the Mann-Whitney U test for non-normally distributed data. So, the type of workers employed with the lowest p-value is the most exposed type of worker to lose a job during the COVID-19 pandemic.

$$t = \frac{\overline{x}_1 - \overline{x}_2}{\sqrt{(s^2(\frac{1}{n_1} + \frac{1}{n_2}))}} \quad [2]$$

$\overline{x}_1$: Mean number of professional workers worked before the Pandemic

$\overline{x}_2$: Mean number of professional workers worked during the Pandemic

s^2 : Variance of professional workers worked

n_1 : Sample Size

n_2 : Sample Size

3. Findings

Due to the abrupt change of power in Afghanistan, we collected fewer data than planned (see table 2). In total our sample included 57 manufacturing firms, 43 private schools, 96 retailers and 56 farmers.

Table 2: Summary Statistics of the Sample

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Manufacturing	57	22.6	22.6	22.6
	Education	43	17.1	17.1	39.7
	Retail	96	38.1	38.1	77.8
	Agriculture	56	22.2	22.2	100.0
	Total	252	100.0	100.0	

As in other parts of the world, the COVID-19 pandemic had devastating effects on labor demand in the second largest city of Afghanistan, Kandahar. While manufacturing, education and retail sectors were hit hard by the pandemic and demanded less labor, the agriculture sector was disrupted less compared to the rest. The only sector that had a relatively stable labor demand during the initial stage of the pandemic was agriculture; the rest of the sectors all have experienced disruptions in operations which resulted to demand less labor and laid off workers.

Based on the data collected, retailers were working 68 hours a week before the pandemic but as the pandemic struck their working hours almost halved and were working 37 hours a week during the pandemic.

First, the difference between the average working hours in the retail sector before and after the pandemic was tested using paired t-test with a 95% confidence interval. The results in table 2 show that the difference is significant at a p-value lower than 0.05, implying that retailers were likely struck hard in terms of a decrease in hours worked, confirming H_2.

Table 3: Paired Samples Test

Retail Sector	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Average Hours Worked per Week – Before (68 Hours) and During (37 Hours) COVID-19	31.57292	17.37254	1.77308	28.052	35.0929	17.807	95	.000

Farmers, on the other hand were struck marginally, only a slight decline in weekly working hours were observed. Farmers were working 40 hours a week before the pandemic and working almost the same during the pandemic; 38 hours a week. The difference between average hours worked per week before and after and pandemic were tested using the paired t-test using 95% confidence interval. The test results shown in table 4 indicated that the difference between the two averages were insignificant which implies that farmers were having relatively stable working hours which supports the hypothesis that COVID-19 made workers in the agricultural sector to work less hours compared to normal.

Table 4: Paired Samples Test

Agriculture Sector	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Average Hours Worked per Week – Before and During Pandemic	2.01786	13.23012	1.7679	-1.5251	5.5609	1.141	55	.259

On the other side of the story, the COVID-19 pandemic had negative impacts on the education sector. Private schools were having 15 staff on average before the pandemic but as the pandemic struck and everyone stayed at home, private schools in Kandahar decreased its demand for employees and laid off around 5 staff members on average per school and were hardly managing to remunerate their staff. The paired t-test was used to see if the difference between the two averages were significant, the test results shown in table 5 indicates that the difference was significant by having a p-value less than 0.05, which is in line with the hypothesis that COVID-19 made workers in the education sector to lose jobs.

Table 5: Paired Samples Test

Education Sector	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Number of Employees Working Before and After the Pandemic	5.927	6.912	1.079	3.745	8.108	5.491	40	.000

Like the education sector, the manufacturing sector struggled to survive: while some companies ceased its operations, others laid off their employees, there were 11 workers employed on average in manufacturing companies before the pandemic but

these manufacturing companies have decreased it demand for labor and laid off 4 workers on average during the pandemic. The paired t-test was used to see if the difference between the two averages were significant using the 95% confidence interval. The test results shown in table 5 indicates that the difference was significant by having a p value less than 0.05 which which supports the hypothesis that *COVID-19 made workers in the manufacturing sector to lose jobs*.

Table 6: Paired Samples Test

Manufacturing Sector	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Number of Employees Working Before and After the Pandemic	3.63158	4.21575	.55839	2.51299	4.75017	6.504	56	.000

It is worth mentioning that the type of employee - skilled or unskilled - did not make a difference in employers laying off employees in education and manufacturing sectors. Paired t-tests were used once again to see if the average number of a certain type of workers working before and during the COVID-19 pandemic were different using 95% of confidence interval. The test results in table 6 shows that the differences for all type of employee were significant which supports the hypothesis that *skilled workers lost their jobs during COVID-19, Semi-Skilled workers lost their jobs during COVID-19 and Unskilled workers lost their jobs during COVID-19.*

Table 7: Paired Samples Test

Education and Manufacturing Sectors	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			

Number of Skilled Employees – Before and After COVID-19	2.612	4.630	.468	1.684	3.540	5.585	97	.000
Number of Semi-Skilled Employees - Before and After COVID-19	1.510	2.602	.263	.989	2.032	5.747	97	.000
Number of Unskilled Employees - Before and After COVID-19	.464	1.931	.196	.075	.853	2.366	96	.020

4. Discussion & Conclusion

The COVID-19 pandemic is one of the most devastating shocks that happened in the last century, affecting economies around the world. The pandemic itself and the subsequent public health response have caused significant disruptions in economies (Brinca et al., 2021). People lost jobs, supply chains were disrupted, living standards went down and global poverty increased. Numerous studies were undertaken to observe the negative impacts of the COVID-19 pandemic on various aspects of our lives. One of the most studied aspect is the labor demand. The respective studies show that the labor demand decreased significantly during the pandemic.

As there was no study conducted for Afghanistan, particularly for Kandahar province, this study focused on the impact of the global pandemic COVID-19 on labor demand, especially on the sectors and type of employment being most affected by analyzing 252 observations that were collected in the sectors; 57 manufacturing firms, 43 private schools, 96 retailers and 56 farmers.

Applying mean group comparisons, the analysis shows, that the manufacturing, retail, and education sectors demanded less labor during the global pandemic COVID-19. One third of the manufacturing and education employees were laid off on average and those working in the retail sector worked fewer hours compared to normal due to a lockdown in the province. However, contrary to other countries, the demand for labor in the agriculture sector remained almost the same throughout the COVID-19 pandemic in Kandahar province (Middendorf *et al.*, 2021). While the manufacturing, education and retail sectors hardly managed to maintain their operations, the

agriculture sector experienced only a slight decrease of average weekly working hours.

Other than expected from the results of other studies (e.g. Kappor, 2020), the results of our study show that, for Kandahar province, the decline in labor demand or job losses were not dependent on the type of employment. Each type of employee whether it was skilled or unskilled, experienced job loss in the manufacturing and education sectors.

This is in line with the results for Austria, where job loss was the same for all types of workers, independent of the skills a worker possesses (Bamieh and Ziegler, 2020).

5. Limitations/Problems

Kandahar is one of the major provinces of the country. But, the security of the province is not at its best nowadays. Therefore, our study was limited to only including workers working in the city and in a couple of the districts, namely Arghandab, Dand, Arghasan, Shawali Kot, and Maiwand. The statistical tests used for retail and agriculture sectors were also exposed to some limitations, while probability sampling method should have been used but due to unavailability of a specific sampling frame, a non-probability sampling method was used which affect results of the tests. However, future researches may involve workers working in other districts of the province as well and if there was a sampling frame for these two sectors, a probability sampling method might be used.

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