How to Cite:

Sharma, P. K. (2022). Impact of COVID-19 on gross value added of Indian service sector. *International Journal of Health Sciences*, 6(S3), 6972–6983. https://doi.org/10.53730/ijhs.v6nS3.7624

Impact of COVID-19 on gross value added of Indian service sector

Dr. Priyanka Kaushik Sharma

Associate Professor, Department of Commerce Rajdhani College, University of Delhi, Postal Address: A-58/127, Street No.4, North Ghonda, Near GBSS School and Post office, Delhi 110053, India ORCID ID 0000-0003-3451-0693

Abstract---This paper attempt to analyze the Covid -19 pandemic impact on the gross value added of the Indian service sector. The purpose of present study is to examine the relationship between the number of Covid -19 confirmed cases in India and gross value added of service sector and sub-service sector of India. The results of the study suggest that number of Covid -19 confirmed cases have a negative impact on the gross value added of the service sector and sub-service sectors of India. However, the negative impact of Covid -19 confirmed cases on the gross value added of the service sector and sub-service sectors of India is not statistically significant. This study also suggests what steps the government can take to revitalize the service sector. The present study is quantitative. For the purpose of study data collected from FY 2019 to the first quarter of FY 2021-22. The study is based on secondary data. The database of the Ministry of Statistics and Programme Implementation was the source of information for the Indian Service Sector GVA and the Ministry of Health and Family Welfare (MoHFW) was the source of information for the number of confirmed Covid -19 cases in India. The present study uses charts, tables, correlation coefficient to analyzing and interpreting the data.

Keywords---coefficient of correlation, gross value added (GVA), number of COVID -19 cases, service sector, sub-sectors.

Introduction

On March 11, 2020, the World Health Organization declared Covid -19 a pandemic that originated in Wuhan, Hubei Province, China, in December 2019. The first case of Covid -19 was reported in India on January 30, 2020 and as on September 24, 2021, the Ministry of Health and Family Welfare (MoHFW) has confirmed a total of 3,35,94,803 cases, 3,28,48,273 recoveries and 4,46,368

International Journal of Health Sciences ISSN 2550-6978 E-ISSN 2550-696X © 2022.

Manuscript submitted: 27 March 2022, Manuscript revised: 18 April 2022, Accepted for publication: 9 May 2022 6972

deaths in the India. To slow down the spread of coronavirus, almost all nations have imposed various measures such as lockdown, restrictions on mobility and social distancing. These measures are slowing down the spread of coronavirus, but are having negative impacts on economies around the world. The service sector had significant negative impact from the Covid -19 pandemic, particularly the hotels and tourisms sub-sector, as it is a contact-intensive service sector. The services sector is the largest sector in India. Service sector generates more than half of the India's gross Value Added. It contributes 53.89% of total GVA of India in 2020-21 (table 1). In this paper we will examine and analyze the economic impact of the Covid -19 on the Indian service sector. The study aims to analyze the relationship between the gross value added (GVA) of service sector of India and number of Covid -19 confirmed cases in India. Gross value added (GVA) is the total value of goods and services produced by an industry or sector of an economy. It is sector specific. Relationship between GDP and GVA:

GDP = GVA + Taxes on products - Subsidies on products

Service Sector broadly classified into following three (3) sub-sectors:

- Trade, communication, transport, hotels, and broadcasting service;
- Real estate, financial, & professional services;
- Defense, public administration and other services;

Review of Literature

Gunaya, S. & Kurtulmuş, B.E. (2021) studied the impact of social distancing due to Covid -19 on the four industry including hotels, entertainment, restaurants and airlines with the help of Iterated Cumulative Sums of Squares (ICSS) tests. They find the pandemic mainly affects the entertainment and airlines sector with gradual drop in the hotel industry and no negative impact found on the restaurant industry. Kumudumali, S.H.T. (2020) studied the impact of Covid -19 on tourism Industry and find the negative impact of the corona virus outbreak on the tourism industry and its supporting sectors such as air travel and hospitality industry. Asif, J. (2020) found transport, tourism and hospitality are most affected in services sector due to Covid -19. The lockdown situation will create jobs at risk and layoffs are expected in all provinces of Pakistan. This paper suggests that entrepreneurship programs be effective in creating jobs, particularly by promoting information technology and electronic commerce. Sahoo, P. Ashwani. (2020) examined the impact of Covid -19 from worst scenario to best case scenario to on micro, small and medium enterprises (MSME) sector, growth, manufacturing and trade. They found that the impact is severe and economy is going towards a recession. The expected impact on manufacturing sector may contract by 5.5% to 20% in 2020, exports from 13.7% to 20.8%, imports from 17.3% to 25% and the net value added (NPV) of MSMEs will contract from 2.1%to 5.7% in 2020. They suggest aggressive and specific fiscal-monetary policy stimulus measures to revive the affected sectors.

Tanrıvermiş, H. (2020) investigated the impact of the Covid -19 outbreak on real estate and found that the Covid -19 pandemic is having a negative impact on project development in the real estate sector, existing real estate, costs estimates,

values and rates of return of existing real estate sector. Travel bans and restrictions on domestic and foreign tourists caused decline in revenue of tourism sector. It is also concluded in the study that measures taken by Turkish government to revive the real estate markets are inadequate. Tomal, M. (2021) has examined the impact of Covid -19 pandemic waves on real estate equity returns and their volatility in the Turkey, US, Poland, Australia, Jordan and Morocco using the GJRGARCHX model and shows that the Covid -19 pandemic has only limited impact on real estate's company stocks. The first wave of pandemics only in the US caused a tumble in stock returns. Same occurred in Jordan and Poland during the second wave. Ashraf, B.N. (2020) examined the economic impact of government measures to curb the spread of Covid -19 in the financial markets of 77 countries and found that social distancing measures have a negative impact on the profitability of the stock market, but also have a positive impact, that is, a reduction in Covid -19 confirmed cases. On the other hand, government measures, such as public awareness programs and income support packages, generate positive market benefits.

Demirgüç-Kunt, A. et.al. (2021) examined the impact of financial sector policy announcements of 52 countries on 896 commercial banks' stocks during the outbreak of the Covid -19 crisis and found that borrower support programs, liquidity support, and monetary easing have mitigated the negative effects of the Covid -19 crisis, but their effects have varied significantly between banks and countries. Cambaza1, M.G. & Gabriel, C.V. (2021) analyze the relationship between confirmed cases of Covid -19, the number of tests and Gross Domestic Product (GDP) of 13 African countries and found positive correlation between the number of tests and the number of cases. Further, study concluded that GDP per capita determines the volume of tests in a country, and the highest number of Covid -19 tests represents the highest number of confirmed cases. Finally, higher GDP per capita leads to a higher number of confirmed Covid -19 cases. Maital, S. et al. (2020) argue major impact of Covid -19 is on the supply side of the economy and remedies are on the demand side.

Objective of the study

The objective of the study is to analyze the relationship between gross value added (GVA) of the service sector of India and the number of Covid -19 cases in India.

Hypotheses

The present study attempts to test the validity of the following hypotheses through a detailed and systematic investigation.

- First H_0 There is no relationship between the number of Covid -19 cases and the GVA of the Indian service sector.
- Second H_0 T There is no relationship between the number of Covid -19 cases and the GVA of the trade, communication, transport, hotels, and broadcasting service sectors.
- Third H_0 There is no relationship between the number of Covid -19 cases and the GVA of the real estate, financial, & professional services.

• Fourth H_0 There is no relationship between the number of Covid -19 cases and the GVA of the defense, public administration and other services.

Research Methodology

The present study is quantitative. For the purpose of study data collected from FY 2019 to the first quarter of FY 2021-22. The Study is based on secondary data. The database of the Ministry of Statistics and Programme Implementation was the source of information for the Indian Service Sector GVA and the Ministry of Health and Family Welfare (MoHFW) was the source of information for the number of confirmed Covid -19 cases in India. The present study uses charts, tables, correlation coefficient to analyzing and interpreting the data.

Summary statistics of COVID -19 cases and GVA of service sector

The Indian service sector has grown exponentially over the past decades and has become the leading economic segment. Today, with more than 50 percent, it has the largest share of the GVP. The effects of Covid -19 on this sector are shocking. Covid -19 pandemic hit hard to hotel and tourism sectors. Domestic tourism has recovered slightly in the last three months (after the second wave of Covid -19), but international tourism is totally closed, resulting in a drastic loss of revenue for the hotel and tourism sector and related sectors. The aviation sector and its sub-sectors linked to aviation sector are also severely affected by the restriction of domestic and international flights due to the Covid -19 pandemic. The construction and real estate industries are equally affected by the Covid -19 pandemic. In contrast, the information technology and IT-related services segment, as well as e-commerce, reaping during the pandemic. In Table 2 it can be seen that:

- As the number of Covid -19 cases increases, GVA of the Indian service sector decreased until the third quarter of FY 2020-21, but after that, it increases and the reason could be that the government takes many measures like unlocking of many sectors, vaccination derives at large-scale, favorable fiscal and monetary policy, Atmanirbhar Bharat Package and government relief packages to stimulate the economy.
- The Covid -19 pandemic hit hard to trade, communication, transport and hotels sector through movement restrictions, isolations, the "stay at home" policy, travel restraints and bans to slow down the spread of the coronavirus. The Covid -19 pandemic has caused irreversible damage to the transportation industry. In addition, hotels and tourism and other related sectors also had a significant negative impact of Covid -19, as it is a contact-intensive service sector. As other sectors such as media, education, healthcare and hospitality reopen after the Covid -19 SOPs, the travel and tourism sector is stagnating due to its vulnerability to the vagaries of the virus. The GVA of trade, communication, transport, hotels, and broadcasting service decreased till Q4 FY21. It is also observed that GVA decreased dramatically in the first quarter of FY 2020-21.
- The real estate sector was under pressure because of migration of workers from urban area that stopped construction activities in urban areas. The financial services sector is also no exception. The financial sector has been

greatly affected by its connection to the activities of all other sectors, from finance to spending and saving. The GVA of the real estate, financial, & professional services was negative until the second quarter of FY 2020-21, after which the growth in the GVA of the real estate, financial, & professional services is positive.

- GVA of public administration, defense and other services sector was negative until the third quarter of FY2020-21, after which GVA growth is positive.
- As can be seen in table 2, the number of Covid -19 cases had increased considerably in the second quarter of FY2020-21. Thereafter, the percentage change in the number of cases of Covid -19 decreases in the third and fourth quarters of FY2020-21. The first quarter of FY2021-22 saw another sharp increase of over 840% in Covid -19 cases.

Figure 1 shows the change in the GVA of the services sector and sub-sectors from 2019 (before Covid) to the first quarter of 2021 (amid Covid). The reason for this change was the Covid -19 pandemic. In FY 2020-21 GVA growth in the services sector and its subsector is negative. As the charts show, trade, communication, transport, hotels, and broadcasting service are the sectors most affected by the Covid -19 pandemic. The real estate, financial, & professional services as well as defense, public administration & other services sector have also come under pressure from the Covid-19 pandemic. But on the positive side, GVA growth in the Indian service sector and sub-sectors is positive in the first quarter of FY22 and the reason could be that the government of India has taken various measures to curb the spread of the coronavirus, such as vaccination drive and social distancing campaigns. Such measures build confidence in public to fight against the coronavirus. Furthermore, the government of India has taken many measures to revitalize the economy, such as government relief package, tax relief, cut down stamp duty rates in real estate sector in some states, Atmanirbhar Bharat Package, cut in repo/reverse repo rates, 1% cut in cash reserve ratio (CRR) by RBI result in positive market returns.

Result and Analysis

In the following paragraphs, we investigate the correlation between number of Covid -19 cases and gross value added (GVA) of the service sector and sub-sectors of India.

First H_0 There is no relationship between the number of Covid -19 cases and the GVA of the Indian service sector.

To check the relationship between the percentage change in the number of Covid -19 cases in India in each quarter (independent variable (Y)) and the quarterly growth of the services sector GVA (dependent variable (X)), we calculate correlation coefficient (data source table 2).

| x-x | y-ÿ | (x-x) ² | (y- y) ² | (x-x)(y-y) |
|--------|-----------|---------------------------|------------------------------------|--------------|
| -17.36 | 33058.104 | 301.3696 | 1,092,838,240.07 | -573888.6854 |
| -7.26 | -7794.476 | 52.7076 | 60,753,856.11 | 56587.8958 |
| 2.94 | -8704.576 | 8.6436 | 75,769,643.34 | -25591.4534 |

| 6.14 | -8725.386 | 37.6996 | 76,132,360.85 | -53573.87 |
|-------|-----------|----------|---------------|--------------|
| 15.54 | -7833.666 | 241.4916 | 61,366,323.00 | -121735.1696 |
| 0 | 0 | 641.912 | 1366860423 | -718201.2828 |

R calculation: $r = \sum ((x - x)(y - \bar{y}) / \sqrt{(\sum (x - \bar{x})^2 \sum (y - \bar{y})^2)}$ $= -718201.2828 / \sqrt{(641.912 * 1366860423)}$ = -0.7667The calculated value of r is -0.7667.

The relationship between the movements of two variables is generally considered strong when their r-value is greater than 0.7. Given that the calculated r-value is 0.7667, this suggests a strong and negative correlation between the percentage change in the number of Covid -19 cases in India and the GVA growth of the Indian service sector. The r-value of 0.7667 suggests that the GVA of India's service sector decreases as the number of Covid -19 cases increases. To check whether the negative correlation is statistically significant or not we compared the calculated r value with the critical value of r.

Sample size (n) = 5; Degree of Freedom = n-2 = 3Critical value of r @ 0.05 level of significance is 0.878.

Calculated value of r = -0.7667 < critical value of r 0.878.

We accept our first null hypothesis because the calculated value of r is less than the critical value of r and conclude that negative correlation between the percentage change in the number of Covid -19 cases in India and the GVA of India's services sector is not statistically significant.

Second H_0 T There is no relationship between the number of Covid -19 cases and the GVA of the trade, communication, transport, hotels, and broadcasting service sectors.

To check the relationship between the percentage change in the number of Covid -19 cases in India in each quarter (independent variable (Y)) and the quarterly growth of the trade, communication, transport, hotels, and broadcasting service sector GVA (dependent variable (X)), we calculate correlation coefficient (data source table 2).

| x-x | y-ÿ | (x-x) ² | (y-y) ² | (x-x)(y-y) |
|-------|-----------|---------------------------|--------------------|--------------|
| -39.3 | 33058.104 | 1544.49 | 1,092,838,240.07 | -1299183.487 |
| -7.9 | -7794.476 | 62.41 | 60,753,856.11 | 61576.3604 |
| -0.2 | -8704.576 | 0.04 | 75,769,643.34 | 1740.9152 |
| 5.4 | -8725.386 | 29.16 | 76,132,360.85 | -47117.0844 |
| 42 | -7833.666 | 1764 | 61,366,323.00 | -329013.972 |
| 0 | 0 | 3400.1 | 1366860423 | -1611997.268 |

R calculation:

 $\mathbf{r} = \sum ((\mathbf{x} - \mathbf{x})(\mathbf{y} - \mathbf{y}) / \sqrt{(\Sigma(\mathbf{x} - \mathbf{x})^2 \Sigma(\mathbf{y} - \mathbf{y})^2)}$

= -1611997.268 /√(3400.1*1366860423)

= -0.7477

The calculated value of r is -0.7477.

The relationship between the movements of two variables is generally considered strong when their r-value is greater than 0.7. Given that the calculated r-value is 0.7477, this suggests a strong and negative correlation between the percentage change in the number of Covid -19 cases in India and the GVA growth of the trade, communication, transport, hotels, and broadcasting service sector. The r-value of 0.7477 suggests that the GVA of the trade, communication, transport, hotels, and broadcasting service sector. The r-value of 0.7477 suggests that the GVA of the trade, communication, transport, hotels, and broadcasting service sector decreases as the number of Covid -19 cases increases. To check whether the negative correlation is statistically significant or not we compared the calculated r value with the critical value of r.

Sample size (n) = 5; Degree of Freedom = n-2 = 3Critical value of r @ 0.05 level of significance is 0.878.

Calculated value of r = -0.7477 < critical value of r 0.878.

We accept our second null hypothesis because the calculated value of r is less than the critical value of r and conclude that negative correlation between the percentage change in the number of Covid -19 cases in India and the GVA of trade, communication, transport, hotels, and broadcasting service sector is not statistically significant.

Third H_0 There is no relationship between the number of Covid -19 cases and the GVA of the real estate, financial, & professional services.

To check the relationship between the percentage change in the number of Covid -19 cases in India in each quarter (independent variable (Y)) and the quarterly growth of the real estate, financial, & professional services sector GVA (dependent variable (X)), we calculate correlation coefficient (data source table 2).

| x-x | y-ÿ | (x-x) ² | (y-y) ² | (x-x)(y-y) |
|-------|-----------|---------------------------|--------------------|--------------|
| -5.78 | 33058.104 | 33.4084 | 1,092,838,240.07 | -191075.8411 |
| -8.58 | -7794.476 | 73.6164 | 60,753,856.11 | 66876.6041 |
| 6.22 | -8704.576 | 38.6884 | 75,769,643.34 | -54142.4627 |
| 4.92 | -8725.386 | 24.2064 | 76,132,360.85 | -42928.8991 |
| 3.22 | -7833.666 | 10.3684 | 61,366,323.00 | -25224.4045 |
| 0 | 0 | 180.288 | 1366860423 | -246495.0034 |

R calculation: r = $\sum ((x - \bar{x})(y - \bar{y}) / \sqrt{(\sum (x - \bar{x})^2 \sum (y - \bar{y})^2)}$ = -246495.0034 / √(180.288*1366860423) = -0.4965 The calculated value of r is -0.4965.

The relationship between the movements of two variables is generally considered moderate when its r-value is between 0.3 and 0.7. Since the calculated r-value is 0.4965, it shows a weak negative correlation between the percentage change in the number of Covid -19 cases in India and the GVA growth of the finance, real estate and professional services sectors. To check whether the negative correlation is statistically significant or not we compared the calculated r value with the critical value of r.

6978

Sample size (n) = 5; Degree of Freedom = n-2 = 3Critical value of r @ 0.05 level of significance is 0.878. Calculated value of r = -0.4965< critical value of r 0.878.

We accept our third null hypothesis because the calculated value of r is less than the critical value of r and conclude that negative correlation between the percentage change in the number of Covid -19 cases in India and the GVA of the real estate, financial, & professional services sector of India is not statistically significant.

Fourth H_0 There is no relationship between the number of Covid -19 cases and the GVA of the defense, public administration and other services.

To check the relationship between the percentage change in the number of Covid -19 cases in India in each quarter (independent variable (Y)) and the quarterly growth of the defense, public administration and other services GVA (dependent variable (X)), we calculate correlation coefficient (data source table 2).

| x-x | y-ÿ | (x-x) ² | $(y-\bar{y})^2$ | (x-x)(y-y) |
|-------|-----------|---------------------------|------------------|--------------|
| -6.98 | 33058.104 | 48.7204 | 1,092,838,240.07 | -230745.5659 |
| -8.88 | -7794.476 | 78.8544 | 60,753,856.11 | 69214.9469 |
| 1.12 | -8704.576 | 1.2544 | 75,769,643.34 | -9749.1251 |
| 5.62 | -8725.386 | 31.5844 | 76,132,360.85 | -49036.6693 |
| 9.12 | -7833.666 | 83.1744 | 61,366,323.00 | -71443.0339 |
| 0 | 0 | 243.588 | 1366860423 | -291759.4474 |

R calculation:

 $\mathbf{r} = \sum ((\mathbf{x} - \mathbf{x})(\mathbf{y} - \mathbf{y}) / \sqrt{(\Sigma(\mathbf{x} - \mathbf{x})^2 \Sigma(\mathbf{y} - \mathbf{y})^2)}$

= -0.5056

```
The Calculated value of r is -0.5056.
```

The relationship between the movements of two variables is generally considered moderate when its r-value is between 0.3 and 0.7. Since the calculated r-value is 0.5056, it shows a weak negative correlation between the percentage change in the number of Covid -19 cases in India and the GVA growth of India's public administration, defense and other service sectors. To check whether the negative correlation is statistically significant or not we compared the calculated r value with the critical value of r.

Sample size (n) = 5; Degree of Freedom = n-2 = 3Critical value of r @ 0.05 level of significance is 0.878. Calculated value of r = -0.5056< critical value of r 0.878

We accept our fourth null hypothesis because the calculated value of r is less than the critical value of r and conclude that negative correlation between the percentage change in the number of Covid -19 cases in India and the GVA of public administration, defense and other services sector is not statistically significant.

6980

Conclusion and Suggestions

This paper analyzed the economic impact of Covid -19 on the Indian service sector. The results are based on data collected from data sources of the Ministry of Statistics and Program Implementation and the Ministry of Health and Family Welfare (MoHFW). The study find that there is a negative correlation between the percentage change in the number of Covid -19 cases in India and the growth of the GVA of the Indian service sector and its sub-sectors. The negative impact of Covid -19 cases is more severe on the GVA of the trade, hotels, transport, communication and broadcasting sub-sectors as compared to the financial, real estate & professional services sector and public administration, defense and other services sector in India. However, all the null hypotheses of the study are accepted and it is concluded that the negative impact between the percentage change in the number of Covid -19 cases in India and the GVA of the Indian services sector and sub-sectors is not statistically significant and reason could be that India imposed various measures to slow down the spread of coronavirus such as vaccination drive and social distancing campaigns. Such measures build confidence in public to fight against coronavirus. In addition, the Government of India has taken many measures such as government relief package, tax relief, cut down stamp duty rates in real estate sector in some states, Atmanirbhar Bharat Package, cut in repo/reverse repo rates, 1% cut in cash reserve ratio (CRR) by RBI to stimulate the economy.

Suggestions

Although economic recovery of the service sector will depend on the suppression of the virus. However, the government can take the following measures to revitalize the service sector:

- Introduce technological and digital innovations and IT infrastructures such as robot-based cleaning services to reduce person-to-person contact, virtual tourism, contactless reception to revitalize the hotel and tourism sector.
- Covid -19 vaccination drive at large scale and special vaccination drive for poor people;
- Resettle migrant worker in urban areas to increase economic activities in the country;
- Encourage banks to lend more to MSMEs, small scale businesses and individuals;
- The government should help those industries that have many forward and backward linkages such as real estate sector. Real estate sector can be revive by reducing stamp duty, circle rates, home loan at cheaper rate, help builders to complete their incomplete project;
- Cut down taxes to ease the pressure on companies facing a sudden decline in demand;
- Cut in personal taxes, it will improves purchasing power of consumer;
- Support indigenous manufacturing and Remission of duties and taxes on export to encourage export;
- Cuts in VAT of aviation fuel;
- Infrastructural development to boost economic activities;

- Provide short term working scheme to generate employment to compensate loss of income because of lockdown and social distancing;
- Short-term fiscal assistance to most affected by the pandemic in the form of food rations and Direct Benefit Transfer (DBT). It helps in improve consumption demand.

Tables

Table 1 Share of service sector in total GVA of India

| | 2020-21 |
|---|--------------|
| | (Share in |
| | India's GVA) |
| Trade, communication, transport, hotels, and broadcasting | 16.42 % |
| service | |
| Real estate, financial, & professional services | 22.05 % |
| Defense, public administration and other services | 15.42 % |
| Total service sector share in India's GVA | 53.89 % |

Source: Ministry of Statistics and Programme Implementation

Table 1 Quarterly growth (%) in GVA of service sector & sub-sectors and no. and % change in COVID -19 confirmed cases

| | Q1 FY21 | Q2 FY21 | Q3 FY21 | Q4 FY21 | Q1 FY22 |
|--------------------|----------|---------|---------|---------|----------|
| Service sector | -21.5 | -11.4 | -1.2 | 2 | 11.4 |
| Trade, | -47.0 | -15.6 | -7.9 | -2.3 | 34.3 |
| communication, | | | | | |
| transport, hotels, | | | | | |
| and broadcasting | | | | | |
| service | | | | | |
| Real estate, | -5.3 | -8.1 | 6.7 | 5.4 | 3.7 |
| financial, & | | | | | |
| professional | | | | | |
| services | | | | | |
| Defense, public | -10.3 | -12.2 | -2.2 | 2.3 | 5.8 |
| administration and | | | | | |
| other services | | | | | |
| No. of Covid -19 | 584395 | 5724475 | 3976062 | 1934340 | 18189908 |
| confirmed cases in | | | | | |
| India in each | | | | | |
| quarter | | | | | |
| % change in no. of | | | | | |
| Covid -19 cases in | | | | | |
| each quarter | 41732.14 | 879.56 | -30.54 | -51.35 | 840.37 |

Growth at 2011-12 Constant prices

Source: Ministry of Statistics and Programme Implementation and Ministry of Health and Family Welfare (MoHFW)

Figure



Growth at 2011-12 Constant prices Source: Ministry of Statistics and Programme Implementation Figure 1. Services sector and sub-sectors GVA (2019 to 2021 Q1)

Bibliography and References

- 1. Ashraf, B.N. (2020). Economic Impact of Government Actions to Control COVID-19 Pandemic: Evidence from Financial Markets. http://dx.doi.org/10.2139/ssrn.3628693
- Asif, J. (2020). Impact of COVID-19 on Pakistan's services sector. Jurnal Inovasi Ekonomi, 5(03), pp. 107-116. DOI: https://doi.org/10.22219/jiko.v5i03.12194
- 3. Cambaza1, M.G., & Gabriel, C.V. (2021). COVID-19: Correlation between gross domestic product, number of tests, and confirmed cases in 13 African countries. Journal of Public Health and Epidemiology, Vol. 13(1), pp. 14-19. https://doi.org/10.5897/JPHE2020.1300
- 4. Data source of Ministry of Statistics and Programme Implementation and Ministry of Health and Family Welfare (MoHFW).
- Demirgüç-Kunt, A., et.al. (2021). Banking sector performance during the COVID-19 crisis. Journal of Banking & Finance. Article in Press. https://doi.org/10.1016/j.jbankfin.2021.106305
- 6. Gunaya, S., & Kurtulmuş, B.E. (2021). COVID-19 social distancing and the US service sector: What do we learn?. Research in International Business and Finance, Volume 56. https://doi.org/10.1016/j.ribaf.2020.101361
- Kumudumali , S.H.T. (2020). Impact of COVID-19 on Tourism Industry: A Review. MPRA Munich Personal RePEc Archiv. https://mpra.ub.unimuenchen.de/102834/

- Kumar, S. (2022). A quest for sustainium (sustainability Premium): review of sustainable bonds. Academy of Accounting and Financial Studies Journal, Vol. 26, no.2, pp. 1-18
- 9. Allugunti, V.R. (2019). Diabetes Kaggle Dataset Adequacy Scrutiny using Factor Exploration and Correlation. International Journal of Recent Technology and Engineering, Volume-8, Issue-1S4, pp 1105-1110.
- 10. Viswanatha KKRC, Reddy A, Elango N M (2019). Diabetes Kaggle Dataset Adequacy Scrutiny using Factor Exploration and Correlation, International Journal of Recent Technology and Engineering (IJRTE) Vol. 8.
- Maital., S., & Barzani, E. (2020). The Global Economic Impact of COVID-19: A Summary of Research. National Policy Research, Samuel NeamanInstitute, 1-11.
- Sahoo, P., & Ashwani. (2020). COVID-19 and Indian Economy: Impact on Growth, Manufacturing, Trade and MSME Sector. Global Business Review, Volume -21 Issue, 5, pp. 1159-1183. https://doi.org/10.1177/0972150920945687
- 13. Ramachandran, S. (2021) Services sector in need of revival package. The Tribune. Aug 04, 2021.
- 14. Tanrivermiş, H. (2020). Possible impacts of COVID-19 outbreak on real estate sector and possible changes to adopt: A situation analysis and general assessment on Turkish perspective. Journal of Urban Management, Volume 9, Issue 3. pp. 263-269. https://doi.org/10.1016/j.jum.2020.08.005
- 15. Tomal, M. (2021). Modelling the Impact of Different COVID-19 Pandemic Waves on Real Estate Stock Returns and Their Volatility Using a GJR-GARCHX Approach: An International Perspective. Journal of Risk Financial Management, Volume 14, Issue 8, https://doi.org/10.3390/jrfm14080374