



THE IMPACT OF COVID-19 ON THE INTERNAL SERVICES SECTOR ECONOMY IN DKI JAKARTA PROVINCE

Hestin Astuninggar, Shanty Oktavilia*

Faculty of Economics, Universitas Negeri Semarang, Semarang, Indonesia

*Corresponding author: oktavilia@mail.unnes.ac.id

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ABSTRACT

This study aims to assess the impact of the Covid-19 pandemic on the internal service sector in DKI Jakarta Province. The research utilizes data from the 2016 DKI Jakarta Input-Output Table, which provides comprehensive information on economic transactions within the region. The analysis focuses on understanding the extent to which the pandemic has affected the output contribution, export and import structure, and overall performance of the internal service sector. The findings indicate that the corporate services sector is the sixth largest contributor to the overall economic output in DKI Jakarta, highlighting its significant role within the region. Furthermore, the financial services sector is identified as the most substantial contributor to the trade balance, with high levels of exports and imports despite the pandemic's challenges. These results underline the resilience and importance of the service sector in maintaining economic stability in DKI Jakarta during the pandemic. The study provides valuable insights into how the internal service sector has adapted to the pandemic's pressures and its implications for future economic policy and planning.

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1. INTRODUCTION

The service sector significantly contributes to the economy of DKI Jakarta Province. According to Hoekman & Shepherd (2017), there is a positive relationship between service sector productivity and the development of the manufacturing sector. By DKI Jakarta's vision and mission, which carries the principle of a service city, the service sector dramatically contributes to Indonesia's Gross Domestic Product (GDP). Table 1 on the next page explains that the service sector dramatically contributes to Indonesia's GDP. The service sector contributes approximately 24% to 75% of GDP, with the corporate services sector reaching the highest at 74.96%. This aligns with research by Nur & Rakhman (2019), which states that the corporate services sector is the primary sector in increasing DKI Jakarta's GRDP, with the most significant location quotient (LQ) index, 4,32 percent.

Table 1. Percentage of DKI Jakarta's GRDP to Indonesia's GDP by Business Field in 2019 (%)

| No. | Business Field | % of DKI Jakarta's GDP to Indonesia's GDP |
|-----|---------------------------------------|---|
| 1 | Financial Services and Insurance | 44,93 |
| 2 | Service Company | 74,96 |
| 3 | Education Services | 24,95 |
| 4 | Health Services and Social Activities | 24,02 |
| 5 | Other Services | 35,23 |

Source: BPS (2019)

In 2019, the world was shocked by the emergence of Covid-19, which caused a slowdown in the economic system. Some sectors showed a rebound trend, including the services sector. Almost all service sectors other than information and communication, financial, and health services experienced a slowdown. In the third quarter of 2020, the financial services, corporate services, and other services sectors showed growth with a negative trend, which amounted to -4,52 percent, -2,74 percent, and -4,56 percent, respectively.

Table 2. DKI Jakarta GRDP by Business Field Year (%)

| Business Field | Q3 2020 against Q2 2020 (q-to-q) | Q3 2020 against Q3 2019 (y-on-y) | Q1-3 2020 against Q1-3 2019 (c-to-c) | Source of Growth Q3-2020 (y-on-y) |
|--|--|--|--|---|
| Company Services | 6,02 | -2,74 | -2,14 | -0,23 |
| Education Services | 6,13 | 3,01 | 3,81 | 0,14 |
| Health Services and Social Activities | 23,52 | 32,69 | 17,64 | 0,54 |
| Other services | 8,60 | -4,56 | -3,22 | -0,18 |

Source: BPS (2019)

Table 2 shows that the service sectors with the most significant growth slowdown require human mobility and interaction. Judging from the service sector's contribution to GRDP and labour absorption, the service sector has a vital role in DKI Jakarta's economy (Putri & Hisyam, 2014). So, it is necessary to know more about the contribution of the service sector to the economy. An enormous contribution indicates a significant role in the service sector, and the development of the service sector will encourage other economic sectors, including the service sector itself. By using the analysis of the Input-Output Table of DKI Jakarta Province in 2012, it can be seen which sectors are the leading sectors, potential sectors, developing sectors, and lagging sectors, which sectors can encourage the growth of other economic sectors so that the economy will grow as a whole. Based on the problems described above, the author is interested in conducting research by analyzing the performance of the service sector and the impact of Covid-19 on the service sector in the DKI Jakarta Province economy using Input-Output analysis.

2. RESEARCH METHODS

This research uses a quantitative research type which includes problem formulation, model construction, data acquisition, solution search, result analysis, and result implementation (Kuncoro, 2007). The data used in this research is secondary data, namely the 2016 Input-Output Table data of DKI Jakarta Province obtained from BPS DKI Jakarta Province (BPS, 2016) which can be seen in the table 3 on the next page. Input-output analysis is an appropriate model to determine the performance and impact of the service sector (Blake et al., 2003; Fletcher, 1989; Permana & Asmara, 2010; Yan & Wall, 2002). This is in line with research by Anas et al. (2015), which states that input-output analysis has been widely applied in studies to estimate the economic impact of a sector on the economy. Furthermore, the input-output approach is relatively more straightforward, according to Dwyer et al. (2004) and Chang et al. (2015). It is considered more appropriate when calculating the economic impact of a sector.

Table 3. Illustration of Input-Output Table

| Input Structure | Output Allocation | Demand Between Production Sectors | | | Final Demand | Output Quantity | |
|-----------------|-------------------|-----------------------------------|-----------------|-----------------|-----------------|-----------------|----------------|
| | | 1 | 2 | 3 | | | |
| Output Quantity | Output Quantity | 1 | X ₁₁ | X ₁₂ | X ₁₃ | F ₁ | X ₁ |
| | | 2 | X ₂₁ | X ₂₂ | X ₂₃ | F ₂ | X ₂ |
| | | 3 | X ₃₁ | X ₃₂ | X ₃₃ | F ₃ | X ₃ |
| Primary Input | | V ₁ | V ₂ | V ₃ | | | |
| Input Quantity | | X ₁ | X ₂ | X ₃ | | | |

Source: BPS (2019)

In this research there are several analyses. The first analyses is output contribution analysis. This analysis is used to see the contribution of a sector's output to the overall output. The analysis of output contribution to overall output can be formulated as follows:

$$i = \frac{X_i}{\sum X_i} \dots \dots \dots (1)$$

Where X_i is the output of sector i and $\sum X_i$ is the total output of all sectors.

The second analyses is export and import structure analysis. This analysis evaluates the export and import contributions of each economic sector. This analysis uses net exports obtained from the value of exports minus the value of imports. The third analyses is multiplier impact analysis. One of the main objectives of i-o is to analyze the economic impact of changes in exogenous variables in the I-O model. Several calculations deriving the Leontif inverse matrix (I-A)⁻¹ are usually used to analyze the impact and are called Input-Output multipliers. The impact multipliers used in this study are “the output multiplier” is the overall output created in the economy due to changes in the final demand of an economic sector. The output multiplier can be obtained from the sum of each column of the Leontief inverse matrix in Firmansyah (2006), formulated as follows:

$$O_j = \sum_{i=1}^n \alpha_{ij} \dots \dots \dots (2)$$

Where O_j is the output multiplier of sector j and α_{ij} is the Leontif inverse matrix element (I-A)⁻¹.

Then, the income multiplier is the change in household income due to changes in the final demand for a sector of the economy. The household income multiplier is a specific sector that shows the change in household income generated by an increase in final demand, formulated as follows:

$$H_j = \sum_{i=1}^n \alpha_{n+1} + 1'j \alpha_{ij} \dots \dots \dots (3)$$

Where H_j is the household income multiplier of sector j, $\alpha_{n+1} + 1'j$ is the household income coefficient of sector j, and α_{ij} is the Leontif inverse matrix element (I-A)⁻¹.

The fourth analyses is shock impact analysis. This analysis was conducted to see the changes in output and income that occurred in the service sector due to the growth of the service sector due to the spread of COVID-19. The shock is 0.63 percent for corporate services, 4.98 percent for financial services, 3.41 percent for education services, 22.12 percent for health services and -3.45 for other services.

Impact on output formation : $\Delta X = (I-A^d)^{-1} \Delta Y \dots \dots \dots (4)$

Impact on household income : $\Delta I = \alpha_{n+1} (I-A^d)^{-1} \Delta Y \dots \dots \dots (5)$

Where ΔX is the impact on output formation, ΔI is the impact on household income, (I-A^d)⁻¹ is the closed Leontief inverse matrix, while α_{n+1} is the income coefficient.

3. RESULTS AND DISCUSSION

Output Contribution

Output is the entire production value of goods and services produced by each economic sector in a region. The output contribution analysis aims to provide an overview of which sectors can significantly contribute to DKI Jakarta Province's economy.

Table 4. Output Contribution of DKI Jakarta Economic Sectors (Million Rupiah)

| Code | Sectors | Output | Contribution(%) | Rank |
|--------|--|-------------|-----------------|------|
| 41 | Machinery and Equipment Repair and Installation Services | 13.557.613 | 0,32 | 47 |
| 60 | Bank | 119.232.674 | 2,8 | 13 |
| 61 | Insurance and Pension Funds | 79.617.342 | 1,87 | 17 |
| 62 | Other Financial Services | 22.240.290 | 0,52 | 41 |
| 63 | Financial Support Services | 9.423.685 | 0,22 | 56 |
| 65 | Company Services | 188.079.583 | 4,42 | 6 |
| 66 | Government Administration, Defence and Social Security | 165.351.932 | 3,88 | 8 |
| 67 | Education Services | 122.221.115 | 2,87 | 12 |
| 68 | Health and Social Services | 54,629,607 | 1,28 | 20 |
| 69 | Private Arts, Entertainment and Recreation | 38,926,636 | 0,91 | 34 |
| 70 | Other Personal Property Repair | 2.016.395 | 0,05 | 67 |
| 71 | Personal Services Serving Households | 43.076.651 | 1,01 | 32 |
| Amount | | 858.373.523 | | |

Source: Processed data (2020)

In Table 4, you can see each service sector's contribution to DKI Jakarta Province's economy in forming the total output. The corporate services sector has the highest output value, amounting to IDR 188,079,583 million. The government administration, defense, and social security sectors follow, contributing IDR 165,351,932 million or 3.88% of the total output.

The total output produced by the service sector is IDR 858,373,523 million. The output produced by the company's service sector is ranked at the top compared to other service sectors, namely IDR 188,079,583 million or around 4,42 percent of the total output produced by all sectors in the DKI Jakarta economy. The results of this research show conformity with previous research by Nur & Rakhman (2019) entitled GRDP Analysis of Leading Sectors of DKI Jakarta Province, which concluded that the corporate services sector states that the corporate services sector has relatively stable performance in DKI Jakarta producing high GRDP values in the elements industrial mix of IDR 26,171.2 billion and as a base sector with an index value of 4,32.

The significant output contribution from the corporate services sector is attributed to the concentration of company headquarters in DKI Jakarta. The service sector of companies is involved in producing goods, which ultimately has a material output and a service interpretation. The company's service sector has a valuable function as a complementary sector to other sectors because the usefulness of the service sector's functions can be transferred to other service products or tangible wealth. The service sector can be an intermediary to increase output from producers of other goods or services. The function of the service sector is basically to complement other outputs because the utility produced in output would not exist without the service sector, which is a complement or substitute for other goods or services.

The large contribution of the service sector today is also a manifestation of the transformation of the Indonesian economy, especially DKI Jakarta, over the last few decades. There are two ways in which the service sector can drive economic transformation. First, the service sector's intermediary role directly impacts the economy in general, which is in line with a study conducted by Hoekman (2015) which shows a positive relationship between service sector productivity and manufacturing development. Both transformations towards the service sector can increase labor productivity. The movement of labor from the agricultural sector to the service sector can directly increase labor productivity in a region. Productivity is higher in export-oriented service companies than in non-export-oriented ones (Balchin et al., 2016).

Export and Import Structure Analysis

In general, services play an increasingly important role in international economic relations. Exports and imports of services are essential to internationalization because global markets are becoming more important for economic relations. The internationalization process requires several transformations in economic infrastructure, especially through service activities so that a region can show declining economic recovery and a significant increase in employment opportunities (Warf & Wije, 1991). The total net exports of DKI Jakarta Province is IDR -409,559,170 million. A negative net export value identifies a trade deficit in the DKI Jakarta economy. Table 5 shows the contribution of each service sector's exports and imports to the DKI Jakarta Province economy.

Table 5. Exports and Imports of the Services Sector of DKI Jakarta Province

| Code | Sector | Export | | Import | |
|------|-----------------------------|------------|---------|-----------|--|
| | | Amount | Percent | Amount | |
| 60 | Bank | 46.942.096 | 6,2 | 5.252.680 | |
| 61 | Insurance and Pension Funds | 26.658.491 | 3,52 | 9.518.272 | |
| 62 | Other Financial Services | 15.012.622 | 1,98 | 0 | |
| 63 | Financial Support Services | 4.035.737 | 0,53 | 143.587 | |

Source: Processed data (2020)

Based on Table 5, it can be seen that the service sector that makes the largest contribution to DKI Jakarta's net exports is the banking sector (financial services), with a contribution value of IDR 41,689,416, consisting of imports of IDR 5,252,680 million and exports of IDR 46,942,096 or the banking sector contributed -10,18 percent of the total trade deficit of DKI Jakarta Province. Second, is the education services sector, with a net export value of IDR 37,627,277 or around -9.19 percent of the total net exports of DKI Jakarta Province. Furthermore, the insurance and pension funds (financial services) sector is in third place with a value of IDR 17,140,219 (-4,19 percent).

The banking sector is the service sector with the highest net export value. Innovations from the banking sector cause a large net export value in the banking sector. Banking developed as a complement to international trade through export credit. Banks in DKI Jakarta are also developing digital banking products and services to increase competitiveness. Digital services enable customers to access the e-form application anytime and anywhere, thus providing convenience.

Output Multiplier

The output multiplier is a crucial concept in economic analysis. It represents the total output produced by the economy as a result of a change in one unit of money in the final demand of an economic sector. Changes in final demand within a sector not only increase output within that sector but also have a broader impact on increasing overall output. The amount of change in output caused by a change in the final demand of a sector is known as the expenditure multiplier.

Table 6. DKI Jakarta Economic Sector Output Multiplier

| Code | Sector | Multiplier Output |
|------|--|-------------------|
| 41 | Machinery and Equipment Repair and Installation Services | 1,6262 |
| 60 | Banks | 0,1201 |
| 61 | Insurance and Pension Funds | -0,5877 |
| 62 | Other Financial Services | -0,0979 |
| 63 | Financial Support Services | 1,0462 |
| 65 | Company Services | -0,1352 |
| 66 | Government Administration, Defence and Social Security | -7,8421 |
| 67 | Education Services | -0,5621 |
| 68 | Health and Social Services | -1,3687 |
| 69 | Private Arts, Entertainment and Recreation | 0,4802 |
| 70 | Other Personal Property Repair | 3,2529 |
| 71 | Personal Services Serving Households | -3,2328 |

Source: Processed data (2020)

Based on Table 6 on the previous page, the service sector with the largest multiplier value in DKI Jakarta Province is the repair sector for other personal goods (other services), namely with an output value of 3.2328, which means that every increase in final demand for rupiah units will result in an increase in the output of the entire economy by 3.2328 units of rupiah. In other words, the repair sector for other personal goods becomes a service sector that plays an important role in increasing the output of all economic sectors. In second place is the repair and installation services sector for machines and equipment (other services), with an output multiplier value of 1.6262. This value means that if the final demand for output in the repair and installation of machinery and equipment services sector increases by one rupiah unit, this will be followed by an increase in output in all economic sectors of 1.6262 rupiah units and then followed by the financial supporting services sector (financial services) with an output multiplier value of 1.0462.

The results of the output multiplier found that the repair sector for other personal goods was the sector with the largest value compared to other service sectors. The other private goods repair sector can only produce output with input from other economic sectors. The output produced by other private goods repair sectors will produce additional output from input from other economic sectors that use its services. This shows that the repair sector for other personal goods is becoming a service sector that can maintain and increase regional output, pushing DKI Jakarta Province's economic growth to a better level.

Tarigan (2010) states that the multiplier effect occurs when an economic sector experiences an increase in demand from outside the region due to linkages between sectors, resulting in other sectors also increasing production so that, in the end, output production will increase several times compared to the increase in demand from that one economic sector. In the production process, the other personal goods repair sector requires input from other sectors, so an increase in final demand in the other personal goods repair sector will cause an increase in demand for sectors related to the other personal goods repair sector. The effect arising from a series of increases in sector demand related to the repair sector for other personal goods is called the multiplier effect, referred to as the output multiplier. So, the development of the repair sector for other personal items will cause the economy to grow.

Income Multiplier

The income multiplier is the change in total household income in the economic sector due to an increase in one unit of final demand. Income in the Input-Output Table refers to household wages and salaries, including bank interest and dividends.

Table 7. Income Multiplier for DKI Jakarta Economic Sectors

| Code | Sector | Output Multiplier | Income Multiplier |
|------|--|-------------------|-------------------|
| 41 | Machinery and Equipment Repair and Installation Services | 1,6262 | 0,9793 |
| 60 | Banks | 0,1201 | 0,8595 |
| 61 | Insurance and Pensions | -0,5877 | -1,4464 |
| 62 | Other Financial Services | -0,0979 | -0,3836 |
| 63 | Financial Support Services | 1,0462 | 0,4412 |
| 65 | Company Services | -0,1352 | -0,5914 |
| 66 | Public Administration, Defence and Social Security | -7,8421 | -3,5024 |
| 67 | Education Services | -0,5621 | -4,0748 |
| 68 | Health and Social Services | -1,3687 | -4,9205 |
| 69 | Private Arts, Entertainment and Recreation | 0,4802 | -0,1455 |
| 70 | Other Personal Property Repair | 3,2529 | 6,8789 |
| 71 | Personal Services Serving Households | -3,2328 | 0,6944 |

Source: Processed data (2020)

According to the income multiplier analysis calculation in Table 7, you can see the income multiplier value for each service sector in the economy of DKI Jakarta Province. The highest income multiplier value in the services sector is occupied by the repair sector for other personal goods (other services), with a value of 6,8789. This value means that if there is an increase in the final demand of one unit of rupiah in the repair sector for other personal goods, it will increase household income in the economy by 6.8789 units of rupiah. The second largest ranking is occupied by the machinery and equipment repair and installation services sector (other services), with an income multiplier value of 0,9793. Next, in third place is the banking sector (financial services) with an income multiplier value of 0,8595, which means that if the final demand in the banking sector increases by one rupiah unit, it will be followed by an increase in household income in all economic sectors by 0.8595 rupiah units.

On the other hand, several service sectors have negative income multiplier values, one of which is the health services and social activities (health services) sector, with an income multiplier value of -4,9205. This value means that if the final demand in the health services and social activities sector is one unit of rupiah, it will reduce household income in the economy by 4,9205 units of rupiah.

The repair sector for other personal goods stands out as a key player in potential income growth, with the capacity to significantly boost community, economic sector, and regional income. This underscores the urgent need for the government to strategically allocate final demand funds towards this high-income sector. The goal is to maximize economic income growth, thereby enhancing the standard of living for the people of DKI Jakarta and breaking the cycle of poverty.

Analysis of the Shock Impact of the Spread of Covid-19

This analysis is crucial in understanding the far-reaching impact of Covid-19, particularly on certain service sectors. By examining the scenario of DKI Jakarta's GDP growth rate from 2019 to 2020 in the financial services sector, corporate services, educational services, health services, and other services, we can clearly see the sectors that bore the brunt of the pandemic. The assumption of constant changes in the contribution of the service sector to the economy of DKI Jakarta Province and other sectors, as shown in Table 8, further underscores the severity of the situation.

Table 8. Service Sector Growth Rate After the Pandemic (percent)

| No | Sector | Growth Rate |
|----|--------------------|-------------|
| 1 | Corporate Services | 0,63 |
| 2 | Financial Services | 4,98 |
| 3 | Education Services | 3,41 |
| 4 | Health Services | 22,12 |
| 5 | Other Services | -3,45 |

Source: Processed data (2020)

From the results of this shock, the author found that changes in the output and income multiplier numbers caused a decrease in the multiplier values in several sectors, but this was not significant, as shown in Table 9 below. The decrease in the multiplier value is the impact of the spread of Covid-19, which has caused the economy to weaken.

Table 9. Shock Results After the Spread of Covid-19

| Code | Sector | Output Multiplier | Income Multiplier |
|------|--|-------------------|-------------------|
| 41 | Machinery and Equipment Repair and Installation Services | 16.060 | 10.331 |
| 60 | Bank | 0,215972222 | 5,686111111 |
| 61 | Insurance and Pension Funds | -0.4645 | -12.068 |
| 62 | Other Financial Services | -0.0710 | -0.5016 |
| 63 | Financial Support Services | 10.605 | 2,763194444 |
| 65 | Company Services | -0.1407 | -0.7082 |

| Code | Sector | Output Multiplier | Income Multiplier |
|------|--|-------------------|-------------------|
| 66 | Government Administration, Defence and Social Security | -71.792 | -17.727 |
| 67 | Education Services | -0.2192 | -38.257 |
| 68 | Health and Social Services | -15.118 | -53.014 |
| 69 | Private Arts, Entertainment and Recreation | 3,459722222 | -0.1177 |
| 70 | Other Personal Property Repair | 29.775 | 63.750 |
| 71 | Personal Services Serving Households | -36.148 | 2,464583333 |

Source: Processed data (2020)

The impact of Covid-19 on the service sector has been profound, causing significant changes in the multiplier value, as shown in Table 9. The personal goods repair sector remains in first place with a multiplier value of 9.3525 consisting of an output multiplier of 2.9775 and an income multiplier of 6.3750. However, the most affected sector is the health services sector, where the multiplier value shows a negative number.

Health services grew 22.12 percent in 2020, a growth related to increased spending on goods and social spending to combat the spread of Covid-19. This pushed up demand for health, causing a slowdown in all expenditure components, especially household consumption. As shown in table 4.8, the health services sector shows an income multiplier value of -5.3014, meaning that every time there is an increase in final demand by one unit in the health services sector, it will be followed by a decrease in household income of 5.3014 rupiah units. The decline in household income was primarily due to the lockdown policy, which significantly hampered economic activity. Companies experienced a decline in performance due to this policy, leading to various survival strategies, including reducing production levels, cutting wages, and even laying off workers.

Meanwhile, the financial services sector (banking, insurance and pension funds, other financial services, and financial support services) is still under control, even though it is under pressure. Banking performance faces significant challenges due to the impact of the spread of Covid-19, but in general, it remains under control. This is supported by maintained capital and liquidity conditions. Although conventional banking is faced with declining credit quality, this is reflected in the increasing non-performing loan (NPL) ratio of 2,40 percent (project location) or 3,01 percent (bank location). The economic slowdown is one of the factors that causes delays in debtors' ability to pay.

4. CONCLUSION

The Covid-19 pandemic has significantly impacted DKI Jakarta's internal service sector, with the health service sector emerging as the most affected. The corporate services sector, while resilient, has experienced a notable decline in its contribution to the region's economic output. Meanwhile, the financial services sector has shown stability, maintaining its position as a key contributor to the trade balance despite the challenges posed by the pandemic.

The negative income multiplier effect observed suggests that increased demand in certain sectors may lead to a decrease in household income, highlighting the need for targeted economic policies. Future research should focus on identifying strategies to bolster the most affected sectors, particularly health services, while ensuring the resilience of others like financial services. Policymakers must consider these findings to support sustainable economic recovery in DKI Jakarta, prioritizing sectors that are both vulnerable and vital to the region's economic stability.

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