

## Analysis of Factors Affecting Inflation in Indonesia during The Covid-19 Pandemic

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### ABSTRACT

*The Covid-19 pandemic that hit the world today impacts various community activities in Indonesia, one of which is household consumption related to the price of goods/services. One indicator that can describe information about price changes in a region is to look at the development of inflation, where inflation is calculated from the Consumer Price Index (CPI) figures. Therefore, this study aims to determine the picture of Indonesian people's spending patterns through CPI spending groups and which dominant variables affect inflation during this pandemic. This study focused on the CPI of 90 cities in Indonesia in March 2020-August 2021 based on the Commodity Cost of Living Survey (SBH) 2018, using a literature review supported by quantitative descriptive analysis and factor analysis of secondary data. This study showed that the personal care and services group was the spending group that always occupied the top CPI position. In contrast, the information, communication, and financial services expenditure group rank lowest compared to other spending groups. As for the factor analysis results, of the 16 variables obtained, five factors can explain the variation of 58.833 percent against inflation.*

*Keywords: consumer price index, core inflation, covid-19, expenditure, factor analysis*

### INTRODUCTION

The Covid-19 virus has been coming into Indonesia since March 2020 after being officially announced by the Government. Until now, cases of Covid-19 transmission are increasing and difficult to control. According to the National Committee on Covid Handling and Economic Recovery (2021), until September 10, 2021, the number of people who confirmed positive for Covid-19 was 4.1 million people. In this case, of course, the Government has made various efforts to overcome the problem. This pandemic affects various activities in the community. Implementing a healthy lifestyle, health protocols, physical distancing appeals, and the Enactment of Restrictions on Community Activities (PPKM) are alternative ways the Government deals with this situation. One of the written evidence in implementing these restrictions can be seen from the Regulation of the Minister of Health of the Republic of Indonesia Number 9 of 2020 on guidelines for large-scale social limits in the framework of handling Covid-2019.

As a result of the Covid-19 pandemic, economic instability in various regions happens, especially at the beginning of a pandemic. Economic instability causes price changes in trade (Toamain, 2020). Another thing as a result of the Covid-19 pandemic is the occurrence of Job Cuts (layoffs), Purchasing Manager Index (PMI) Manufacturing Indonesia, a decrease in imports, an increase in the price of a goods/service, and losses in the tourism sector, resulting in a decrease in occupancy (Yamali & Putri,

2020). Furthermore, in the medium term, the Covid-19 pandemic has an impact on consumer behavior such as hoarding goods, improvisation, demanding, shops are at home and cooperate with digital technology, removing the limits of life at work, and reunion/meeting with friends/family without having to face to face (Rohmah, 2020). In addition, the restriction of people's wiggle room resulted in a change in consumption patterns (Adiwijaya & Ningrum, 2020).

An indicator is needed to measure the economic stability of a region. One such hand is to use inflation numbers. In general, inflation is defined as a condition of continuous price increases in a region. Inflation is calculated from the Consumer Price Index (CPI) figures. CPI describes the level of consumption of goods and services in the community that can reference inflation value (Zahara & Sugianto, 2021). Through the development of CPI, we can see an increase/decrease in the price level of goods and services purchased by the community. CPI is also helpful to know the increase in revenue and price and can be used as a benchmark of production costs (Sumantri & Latifah, 2019).

Another impact of the Covid-19 pandemic is the increasing demand for goods, including health products, personal care, groceries, household appliances, entertainment, and online media, digital ordering of food products or other products, growing, and reading books or magazines (Tripalupi, 2021). Yuniati & Amini (2020) stated that the Covid-19 pandemic resulted in a decrease in the purchasing power of the people of West Nusa Tenggara Province, judging by the CPI value and farmers' exchange rate (NTP), which tends to decrease.

Another study conducted by Pratiwi (2018) states that two factors affect the national inflation rate: the primary and complementary factors. The main factors formed from CPI consist of foodstuffs, health, transport, communication, and financial services. The complementary elements obtained from the study consisted of the expenditure of finished foods, beverages, cigarettes, and tobacco; housing, water, electricity, gas, and fuel; sanding; education; recreation, and sports. A similar study was conducted by Rifani (2017), where the results of the study stated that Inflation in Indonesia is influenced by a group of factors consisting of food, beverages, cigarettes, and tobacco; health expenditures; education, recreation, and sports; expenditure of housing, water, electricity, gas and fuel; foodstuffs; transport, communication, and financial services; and the production of clothing.

To the best of the author's knowledge, research on this problem is minimal, especially at the national level. This study is different from previous studies because it uses the latest CPI data, namely the 2018 base year CPI based on commodities in the Cost of Living Survey (SBH) 2018. The analysis used is descriptive analysis and factor analysis in the CPI expenditure group in March 2020-August 2021. In addition, this study also conducted tests with a complete number of variables than the previous research variables, which are as many as 43 variables in 90 cities in Indonesia.

This study aims to determine the picture of Indonesian people's spending patterns through CPI spending groups and which dominant variables influence inflation during this pandemic. This issue is crucial to be studied because CPI is one of the factors that play an essential role in calculating inflation, which also affects the state of the Indonesian economy. Hopefully, the results of this study will be helpful in government decision-making, especially in controlling the stability of the price of goods and services.

## METHODOLOGY

This study uses descriptive analysis and inference analysis in factor analysis. The data used in this study is secondary data taken from the BPS website, namely CPI data of 90 cities in Indonesia from March 2020 to April 2021. There are 11 spending groups in CPI data divided into 43 subgroups. Each group and cpi expenditure is depicted in Table 1. The expenditure subgroup was used as a variable in the study.

Table 1. Group Data and Expense Subgroups

| Groups<br>(1)  | Sub Groups<br>(2)   |
|--|---|
| Food, Drink, and Tobacco                                     | Non-alcoholic beverages, alcoholic beverages, and cigarettes and tobacco.   |
| Clothes and Footwear   | Clothes, and Footwear.  |
| Housing, Water, Electricity, and Home Fuel                   | Rent and House Contract; Maintenance, Repair, and Security of Residences/Housing; Water Supply and Other Housing Services; Electricity, and Household Fuels.  |
| Equipment, Equipment and Routine Maintenance of Households   | Furniture, Fixtures, and Carpets; Household Textiles; Household Appliances; Glassware and Drinking Utensils; Housing and Garden Equipment and Supplies; Goods and Services for Routine Household Maintenance. |
| Health   | Medicines and Health Products; Outpatient Services; Inpatient Services; Other Health Services.  |
| Transportation   | Purchase of vehicles; Operation of Personal Transportation Equipment; Passenger Transport Services; Freight Forwarding Services.  |
| Information, Communication and Financial Services            | Information and Communication Equipment; Information and Communication Services; Insurance; and Financial Services.   |
| Recreation, Sports and Culture of Durable Recreational Goods | Other Recreational Goods and Sports; Recreation and Sports Services; Cultural Equipment; Cultural Services; and newspapers, books, and school supplies.   |
| Education  | Primary education and early childhood; Secondary Education; Higher Education; and other education.  |
| Food and Beverage/Restaurant Provision                       | Food and Beverage Services.   |
| Personal Care  | Personal Care; Other Personal Care; Social Protection; and other services.  |

Source: BPS (2021), data processed.

In general, the calculation of CPI by BPS (2020) is spelled out as a modified Laspeyres index formula, with the following formula:

$$IHK_n = \frac{\sum_{i=1}^k \frac{P_{ni}}{P_{(n-1)i}} P_{(n-1)i} Q_{0i}}{\sum_{i=1}^k P_{0i} Q_{0i}} \times 100 \quad (1)$$

Where:

- $IHK_n$  : Consumer Price Index month- $n$   
 $P_{ni}$  : Price of goods/services  $i$  in the  $n$  month  
 $P_{(n-1)i}$  : Price of goods/services  $i$  in the  $(n-1)$  month  
 $\frac{P_{ni}}{P_{(n-1)i}}$  : Relative price of goods/services  $i$  in the  $n$  month  
 $P_{(n-1)i} Q_{0i}$  : Value of consumption of goods/services  $i$  in  $(n-1)$  month  
 $P_{0i} Q_{0i}$  : The value of consumption of goods/services  $i$  in the base year  
 $k$  : The number of types of goods/services covered in the CPI commodity package

CPI expenditure subgroup index is obtained by dividing the consumption value of the subgroups concerned in the current month against the consumption value of the same subset in the base year, then multiplied by 100. Then, to obtain a group index value, the consumption value of the group concerned in the current month is divided by the consumption value of the same group in the base year, then multiplied by 100.

After descriptive analysis, inferential analysis is carried out using factor analysis, which extends the study of the main components. Factor analysis identifies several relative factors that can explain many correlated variables. In factor analysis, the number of samples required is at least five times more than the observation, or with a ratio size of 10:1, or preferably a minimum of 100 pieces (Hair, 2014). The software used to analyze in this study is SPSS 25.

The use of factor analysis in this study is based on the number of spending groups that affect monthly inflation. These spending groups can be interrelated, so those spending groups can be reduced to one or more factors by using factor analysis. These factors are further analyzed for their effect on inflation. In other words, through factor analysis, we can find out the relationship between groups of expenditures in the same factor.

In this study, there are several methods to test the feasibility of variables in order to conduct factor analysis, including:

### Bartlett Test of Sphericity

The Bartlett test needs to be done to determine whether variable dimension reduction is meaningful for the analysis of major components. Multivariate analysis can be used using the primary component method and factor analysis when the p-value < 0.05 (Gujarati, 2003).

$$X_{obs}^2 = - \left[ (N - 1) - \frac{(2p+5)}{6} \right] \ln |R| \quad (2)$$

where:

- N : Number of observations  
P : Number of worships  
|R| : determination of the correlation matrix

### Kaiser-Meyer-Olkin (KMO) test

$$KMO = \frac{[\sum \sum r_{ik}^2]}{[\sum \sum r_{ik}^2 + \sum \sum \alpha_{ik}^2]} \quad (3)$$

$r_{ik}$  : simple correlation coefficient between variables  $i$  and  $k$

$\alpha_{ik}$  : partial correlation coefficient between variables  $i$  and  $k$

The Bartlett test needs to be done to determine whether variable dimension reduction is meaningful for the analysis of major components. Multivariate analysis can be used using the primary component method and factor analysis when the p-value < 0.05 (Gujarati, 2003).

Table 2. Kaiser-Meyer-Olkin (KMO) Measure

| KMO size    | Recommendations |
|-------------|-----------------|
| (1)         | (2)             |
| $\geq 0,80$ | Meritorious     |
| $\geq 0,70$ | Middling        |
| $\geq 0,60$ | Mediocre        |
| $\geq 0,50$ | Miserable       |
| $< 0,50$    | Unacceptable    |

Source: Hair et al. (2014).

Once both conditions are met, then a factor analysis can be done. Here is a model of factor analysis:

$$\begin{aligned} X_1 - \mu_1 &= \lambda_{11}F_1 + \lambda_{12}F_2 + \cdots + \lambda_{1q}F_q + \varepsilon_1 \\ X_2 - \mu_2 &= \lambda_{21}F_1 + \lambda_{22}F_2 + \cdots + \lambda_{2q}F_q + \varepsilon_2 \\ &\vdots \\ X_p - \mu_q &= \lambda_{p1}F_1 + \lambda_{p2}F_2 + \cdots + \lambda_{pq}F_q + \varepsilon_q \end{aligned}$$

in the matrix can be written as follows:

$$X_{(p \times 1)} = \mu_{(p \times 1)} + L_{(p \times m)} + F_{(m \times 1)} + \varepsilon_{(p \times 1)} \quad (4)$$

where :

- $X_{(p \times 1)}$  : independent variable vector with component p
- $\mu_{(p \times 1)}$  : average of independent variable X
- $L_{(p \times m)}$  : matrix of loading factors
- $\lambda_i$  : loading for the  $i^{th}$  variable
- $F_{(m \times 1)}$  : common factors
- $\varepsilon_{(p \times 1)}$  : specific factors

## RESULTS AND DISCUSSION

In general, inflation is an increase in the price of goods and services that occurs continuously, where the goods and services are the basic needs of society. According to its disaggregation, inflation can be divided into two groups, namely core and non-core inflation. According to BPS (2020), core inflation is an inflation that has a component whose price movements tend to remain (persistent). Activities typically to remain are influenced by several fundamental factors, such as demand-supply interactions, external environmental influences, such as exchange rates, international commodity prices, trading partner inflation, and inflation expectations from traders and consumers.

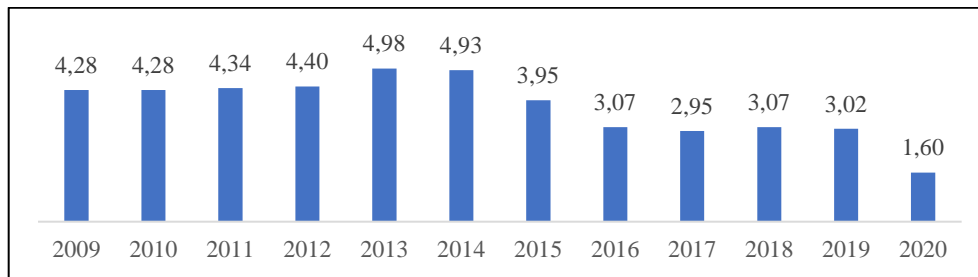


Figure 1. Indonesia's Core Inflation, 2009-2020

Source: BPS (2021), data processed.

Core inflation is an indicator of people's purchasing power. Figure 1 shows that in 2020, core inflation will be 1.60 percent. The number is the lowest core inflation figure since BPS released inflation data (Fauzia, 2021). This phenomenon happened due to the Covid-19 pandemic that still overshadows the economy in many countries, including Indonesia. According to Bank Indonesia (2021), the continuous decline in domestic demand is due to low economic activity because of the large-scale Social Restrictions (PSBB) in some regions. The existence of activity restrictions due to the Covid-19 pandemic has caused financial losses nationally (Hadiwardoyo, 2020).

Graph 2 illustrates the pattern of National CPI by spending group in March 2020-August 2021. In that period, it was seen that the CPI of the Personal Care and Other Services group consistently ranks highest compared to other spending groups. This pattern shows that other Personal Care and Services groups experience more significant price changes than other spending groups. The highest CPI occurred in August 2021. One of the commodities in this subgroup of personal care and other services expenditure is gold jewelry, where for most of the research period (March 2020-August 2021) has always been one of the dominant commodities in contributing/contributing inflation with a range of 0.01 to 0.12 percent (BPS, 2020-2021). The Covid-19 pandemic that has not subsided raises market participants' concerns about restrictions on economic activity, causing people to shift their assets to gold. Among various investment instruments, precious gold metals are an investment option with a safe

category despite the lack of competitive returns (Anita, 2016). In addition, gold can be a vital haven for Indonesian mining stocks when there is extreme uncertainty in the stock market (Yuliana & Robiyanto, 2021).

The CPI of food, beverage, and tobacco expenditure groups is a CPI that fluctuates compared to the CPI of other spending groups, with the most significant decrease in September 2020. Fluctuation in CPI is due to the decline in prices of some commodities that were the dominant part of deflation in September 2020. These commodities include chicken meat and eggs, onions, tomatoes, watermelon, and cayenne pepper (BPS, 2020). The Center for The Assessment of Domestic Trade of the Ministry of Trade and Development of the Ministry of Trade of the Republic of Indonesia (2020) stated that the decrease in the price of consumer-level chickens in September 2020 was due to the demand for chicken meat which tends to decrease slower compared to chicken supply. However, this month's collection of chickens has been reduced compared to the previous period caused by the Covid-19 pandemic. During the Covid-19 pandemic, a decrease in the consumption of chili and onions indicated a decrease in the commodity's price, so people's incomes decreased (Susilowati & Gunawan, 2020).

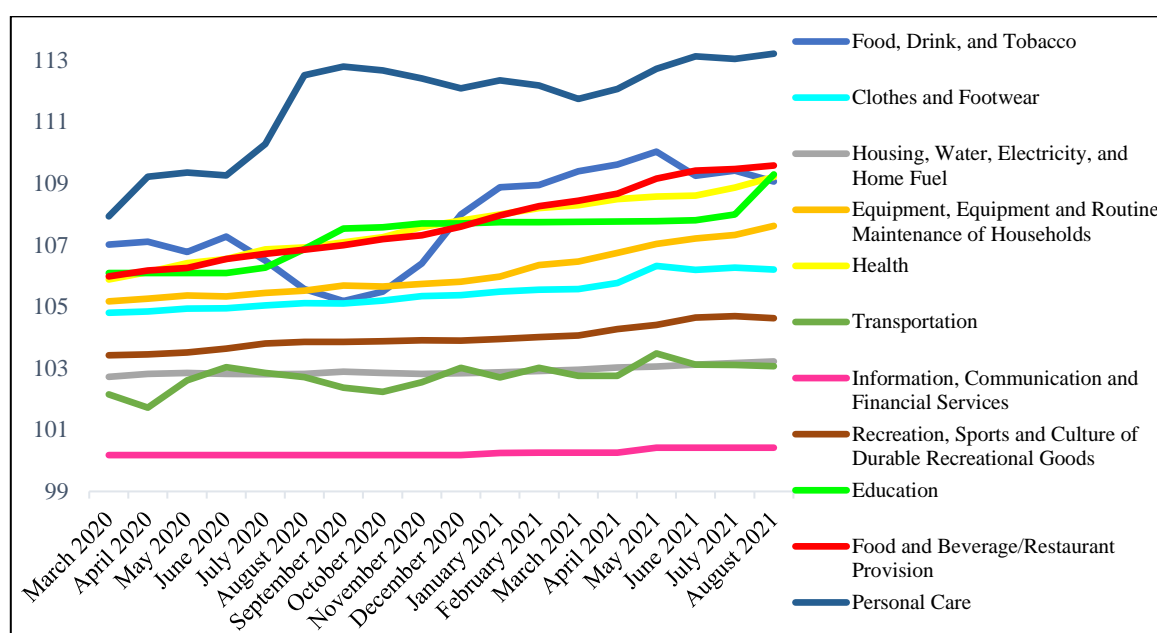


Figure 2. National Expenditure Group CPI, March 2020-August 2021

Source: BPS, data processed, 2021.

The information, communication, and financial services spending group ranks lowest compared to other spending groups. However, this spending group is classified as having a stable movement compared to others. The information, communications, and financial services spending group throughout the research period did not contribute to national inflation, except in March 2020. One component forming this spending group index is the cost of internet subscriptions. During this pandemic, the increasing need for the internet makes various internet providers vying to offer their products at affordable prices.

The following is factor analysis, technical analysis of a study's grouping of factor variables. This analysis will be obtained from the dominant variable from several variables selected by the researcher based on existing rankings. In other words, the results of this factor analysis can be used to distinguish components or variables of priority based on current ratings. Several conditions must be done before conducting factor analysis; we need to do the Kaiser-Meyer-Olkin (KMO) and Bartlett tests. Furthermore, to see which variables are feasible for factor analysis can be seen from variables that have a strong correlation with values greater or equal to 0.5. The correlation can be seen from the Measure

Sampling Adequacy (MSA) value in the Anti-Image Correlation of the Anti-Image Matrices table. If the value is greater than or equal to 0.5, then all the factors forming the variable are valid, and no elements will be reduced/excluded from the study.

This study conducted four KMO and Bartlett tests because some variables were considered unfit for factor analysis in the previous two stages. Only some variables were obtained worthy of factor analysis in the third stage. Variables are not worth being excluded from the study, so there is a difference in the number of tested variables at each stage. The first test was conducted on 43 variables, 23 had an MSA of less than 0.5, so those variables were excluded from the study because they were ineligible. Furthermore, the second retest of 20 variables was obtained, where one variable was obtained with an MSA of less than 0.5, so there were three variables excluded from the study. The third test was conducted on 17 variables and got one variable with an MSA of less than 0.5. Until the fourth retest of 16 variables, it was only obtained that all variables were qualified for factor analysis. The fourth test also got the most considerable KMO value compared to the previous test. As for the first to fourth tests, p-value results are obtained (Approx). The Chi-Square) Bartlett test already has less significance than 0.5 (Table 3). The fourth test obtained a KMO test value of 0.748 and a Bartlett test p-value of 0.000, which means that the selected variables are worthy of factor analysis.

Table 3. KMO and Bartlett's Test

| <b>Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy.</b> |                    | <b>Uji 1</b> | <b>Uji 2</b> | <b>Uji 3</b> | <b>Uji 4</b> |
|---|--------------------|--------------|--------------|--------------|--------------|
|   |                    | 0,495        | 0,691        | 0,730        | 0,748        |
| Bartlett's Test of Sphericity                                 | Approx. Chi-Square | 29.458,057   | 7.609,618    | 6.666,658    | 6.241,142    |
|   | df                 | 903          | 190          | 136          | 120          |
|   | Sig.               | 0,000        | 0,000        | 0,000        | 0,000        |

Source: Data processing result

Table 4 shows five factors formed from 16 food subgroup variables in the CPI, with eigenvalues worth more than one. The amount of diversity that can be explained by Factor 1 is 23.778 percent, Factor 2 is 12.466 percent, Factor 3 is 8,656 percent, Factor 4 is 7,378 percent, and Factor 5 is 6.555 percent. When the five factors are combined, the magnitude of variance/diversity that these factors can explain is 58.833 percent, while the remaining 41.167 percent is explained by other factors that are not studied, such as the level of credit distribution and rupiah exchange rate (Asmadina, 2020).

Table 4. Total Variance Explained

| Com-<br>ponent | Initial Eigen-values |               |              | Extraction Sums of Squared Loadings |               |              | Rotation Sums of Squared Loadings |               |              |
|----------------|----------------------|---------------|--------------|-------------------------------------|---------------|--------------|-----------------------------------|---------------|--------------|
|                | Total                | % of Variance | Cumulative % | Total                               | % of Variance | Cumulative % | Total                             | % of Variance | Cumulative % |
| 1              | 3,805                | 23,778        | 23,778       | 3,805                               | 23,778        | 23,778       | 3,079                             | 19,245        | 19,245       |
| 2              | 1,995                | 12,466        | 36,244       | 1,995                               | 12,466        | 36,244       | 1,954                             | 12,212        | 31,457       |
| 3              | 1,385                | 8,656         | 44,900       | 1,385                               | 8,656         | 44,900       | 1,543                             | 9,641         | 41,098       |
| 4              | 1,180                | 7,378         | 52,278       | 1,180                               | 7,378         | 52,278       | 1,524                             | 9,525         | 50,623       |
| 5              | 1,049                | 6,555         | 58,833       | 1,049                               | 6,555         | 58,833       | 1,314                             | 8,210         | 58,833       |
| 6              | 0,987                | 6,170         | 65,003       |                                     |               |              |                                   |               |              |
| 7              | 0,878                | 5,488         | 70,492       |                                     |               |              |                                   |               |              |
| 8              | 0,779                | 4,867         | 75,359       |                                     |               |              |                                   |               |              |
| 9              | 0,716                | 4,472         | 79,831       |                                     |               |              |                                   |               |              |
| 10             | 0,677                | 4,234         | 84,065       |                                     |               |              |                                   |               |              |
| 11             | 0,612                | 3,826         | 87,891       |                                     |               |              |                                   |               |              |
| 12             | 0,485                | 3,033         | 90,924       |                                     |               |              |                                   |               |              |
| 13             | 0,452                | 2,827         | 93,751       |                                     |               |              |                                   |               |              |

| Com-<br>ponent | Initial Eigen-values |               |               | Extraction Sums of Squared Loadings |               |               | Rotation Sums of Squared Loadings |               |               |
|----------------|----------------------|---------------|---------------|-------------------------------------|---------------|---------------|-----------------------------------|---------------|---------------|
|                | Total                | % of Variance | Cumu-lative % | Total                               | % of Variance | Cumu-lative % | Total                             | % of Variance | Cumu-lative % |
| 14             | 0,381                | 2,380         | 96,131        |                                     |               |               |                                   |               |               |
| 15             | 0,316                | 1,975         | 98,106        |                                     |               |               |                                   |               |               |
| 16             | 0,303                | 1,894         | 100,000       |                                     |               |               |                                   |               |               |

*Extraction Method: Principal Component Analysis.*

Source: Data processing result

After rotation (in the Rotation Sums of Squared Loadings column), it is seen that the proportion of data diversity described by each component becomes more evenly distributed than before rotation. In factor 1, the data diversity with the most significant proportion, which is 23.778 percent according to the extraction method with factor analysis (before rotation) and factor analysis (after rotation), the diversity of preliminary data can be explained at 19.245 percent. The next factor, namely factor 2, describes the variance or variety of the initial data with a proportion of 12.466 percent according to the extraction method with factor analysis (before rotation) and with factor analysis (after rotation), the diversity of the initial data can be explained by 12.212 percent. In Factor 3, the variance/diversity of the initial data is described with a proportion of 8.656 percent according to the extraction method by factor analysis (before rotation). With factor analysis (after rotation), the diversity of the initial data can be explained by 9.641 percent. Similar to factors 4 and 5, with analysis of factors after rotation, the initial variance can be described at 9.525 percent and 8.210 percent, respectively. Thus, with rotation, the proportion of data diversity becomes more evenly distributed so that the initial data variance described by each factor becomes maximum.

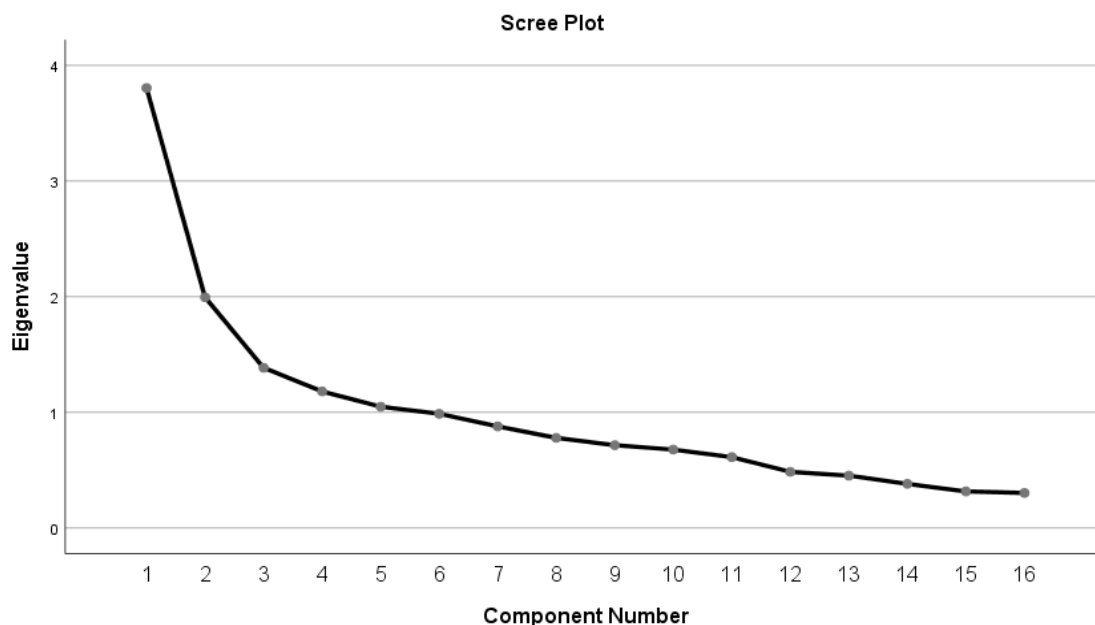


Figure 3. Scree Plot Determining the Number of Factors

Source: Data processing result

A Scree plot is a graph that shows the eigenvalue on the y-axis and the number of factors formed on the x-axis. The formation of 5 factors in this study is also evidenced by the results of the Scree Plot in Graph 3. In the initial six components, the plot continued to drop sharply, but after the seventh to eighteenth components, the plot suffered a less significant decline.



Table 5. Final Results of Factor Analysis

| Name of Factor<br>(1) | Name of CPI expenditure subgroup<br>(2)   |
|-----------------------|---|
| 1                     | Inpatient Services; Medicines and Health Products; Purchase of vehicles; Financial Services; Newspapers, Books and School Supplies        |
| 2                     | Unsanitary alcoholic beverages; Food and Beverage Services; Personal Care   |
| 3                     | Maintenance, Repair, and Security of Residences/Housing; Furniture, Fixtures, and Carpets; Operation of Personal Transportation Equipment |
| 4                     | Clothes; Passenger Transport Services   |
| 5                     | Water Supply and Other Housing Services; Household Appliances; Durable Recreational Items   |

Source: Data processing result

Table 5 shows the factors formed from the results of the factor analysis. Based on the analysis of exploratory factors that have been done, six factors were obtained that grouped 16 of the 43 variables of the CPI expenditure subgroup. In contrast, the rest (27 variables) were not classified into factors. Following exploratory factor analysis, each member of the variable has a correlation relationship with fellow members of the elements but has no correlation relationship with the variable member in other factors. For example, factor 3 consists of maintenance, repair, and safety variables; furniture, fixtures, and carpets; and the operation of personal transport equipment has the same characteristics, namely the group of expenditures for household and vehicle purposes. Meanwhile, factor 4, consisting of clothing and passenger transportation services, also has the same spending group of clothing and transportation needs. However, the spending group on factor 3 had no relation to the spending group on factor 4 and vice versa.

In this study, factor 1 contributed 19.245 percent in the variation in the monthly inflation amount in Indonesia from March 2020 to August 2021. Factor 1 consists of 5 subgroups: inpatient services, medicines and health products, purchase of a vehicle; financial services; and newspapers, books, and school supplies. There are similarities in meeting health needs from these five subgroups, especially in preventing Covid-19 transmission. Since the pandemic outbreak, many recommendations from various parties to consume vitamins, endurance enhancement supplements, tubs, herbs, herbal medicines, and other medicines. In addition, people become more concerned about their health, health, and families. The increase in consumption of health products is in line with Herianto et al. (2021) research which states that purchases of health equipment and yields increased by 11.8 percent.

Psychological, economic behavior that affects people to buy goods in the form of health products or food to maintain health during a pandemic causes demand for health products (Wahyuni, 2020). High demand will increase the price if not followed by the availability/supply of a product. The increased demand for health products during Covid-19 even resulted in panic buying. About 11.6 percent of people in Indonesia panic about buying in the form of vitamins (Wahyu et al., 2021). The subgroup of inpatient services affecting inflation is suspected due to the increase in Covid-19 cases every day, resulting in the number of inpatients growing. The Ministry of Health stated an increasing trend of inpatients due to Covid-19 in hospitals lately, reaching 1.28 percent in 30 days (Catherine, 2021).

The Covid-19 pandemic has changed many things, including the way people use transportation. The use of public transit has dropped dramatically, so people are turning to purchase private vehicles to protect themselves and their families from the transmission. For example, in Jakarta, based on data from the Transportation Department, the decrease in the use of all public transportation reached more than 50 percent. At the same time, Ipsos data showed that the use of private cars increased almost 2-fold because personal vehicles were considered safer and more awake from Covid-19 transmission

(Putra, 2021). The exciting thing is that most car purchases are made in cash, whereas many bought on credit in previous years. The Covid-19 pandemic caused financing or leasing institutions not just to give credit, so new vehicle buyers must make cash purchases (Ray, 2020). Psychological, economic behavior that affects people to buy goods in the form of health products or food on the grounds of maintaining health amid a pandemic indirectly causes demand for health products (Wahyuni, 2020). High demand will increase the price if not followed by the availability/supply of a product. The high demand for health products during Covid-19 even resulted in panic buying. About 11.6 percent of people in Indonesia panic about buying in the form of vitamins (Wahyu et al., 2021). The subgroup of inpatient services affecting inflation is suspected due to the increase in Covid-19 cases every day, resulting in the number of inpatients growing. The Ministry of Health stated an increasing trend of inpatients due to Covid-19 in hospitals lately, reaching 1.28 percent in 30 days (Catherine, 2021).

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Financial services subgroups contribute to reducing the risk of Covid-19 transmission, where transactions do not need to be done in cash but electronically. This subgroup includes electronic money cards, credit cards, or money transfers. During the Covid-19 pandemic, there was also an upward trend towards electronic money transactions (Ginting & Indradewi, 2021). In subgroups of newspapers, books, and school supplies, in this case, it also correlates with financial services subgroups, where electronic money transactions and book purchases occur, both for hobbies and school purposes.

Factor 2 contributed 12.212 percent in the variation in the magnitude of inflation in Indonesia in the period March 2020 to August 2021. Furthermore, Factor 2 consists of 3 subgroups: non-alcoholic beverages, food and beverage services, personal care. These three variables have similarities in meeting primary (food) and secondary needs. During the pandemic, there was a high demand for food products, especially fast food, thus making the company flood orders that resulted in a set price (Chusnah, 2020). Work and daily activities are often done from home increasingly encourage people to shop for skincare products efficiently and quickly online. Kantar Indonesia study research shows that the total growth of consumer spending in the beauty and personal care segment in the early days of the pandemic to date grew by 3 percent (Amanda, 2021). In addition, there is public awareness of health, making the demand for personal care products, for example, for sanitation, continue to increase. These products include hand washing soap and mouth cleaning fluids.

Factor 3 consists of the maintenance, repair, and safety of the residence/ housing; furniture, fixtures, carpets; and the operation of personal transport equipment. The three spending subgroups have something in common regarding housing and transportation improvements. Factor 3 contributed 9.641 percent in the variation in the magnitude of inflation in Indonesia. Work From Home (WFH) activities make the existence of workspaces for the home necessary. Some people clean up and renovate their workspaces and homes to be more at home and work spirit. In addition, some people spend their time at home, so they have time to repair and maintain a place to live. In addition to renovating the house, some people also make purchases of furniture, fixtures, and carpets, especially online. This condition makes the community increase their comfort at home by redecorating and adding home furniture amid social restrictions (Adlin, 2021). On the variables of the operation of private transportation equipment,

physical limitations also result in many people feeling unsafe when in public places; therefore, most choose to operate personal transportation equipment.

Factor 4 consists of clothing and passenger transport services. Factor 4 contributed 9.525 percent in the variation in the magnitude of inflation in Indonesia. The two variables have similarities in meeting the needs of clothing and means of transportation. MarkPlus' research on e-commerce in Indonesia during the Covid-19 pandemic concluded that the most purchased products by consumers during the third quarter of 2020 were clothing or fashion products (Santia, 2020) because of the promotion of each e-commerce ranging from discounts cashback to free postage. As we know, there is an increase in prices in the subset of passenger transportation services. For most of the research period, the subgroup of passenger transport services contributed to inflation, particularly air freight rates.

Furthermore, factor 5 consists of 3 variables: the provision of water and other housing services, household appliances, and durable recreational items. These three variables have similarities in terms of meeting household needs. Factor 5 contributed 8,210 percent in the variation in the magnitude of inflation in Indonesia. The need for clean water increased along with changes in people's behavior during the Covid-19 pandemic (Bayu, 2021). Over time, behavior and preferences for buying household devices have also changed, with people increasingly aware of hygiene. Good, clean, and healthy household appliances are essential because health always starts.

## CONCLUSION AND RECOMMENDATION

Based on the analysis that has been done, it can be concluded that the personal care and services group is a spending group that always occupies the top CPI position. In contrast, the information, communication, and financial services expenditure group rank lowest compared to other spending groups. The CPI of food, beverage, and tobacco expenditure groups is a CPI that fluctuates compared to the CPI of other spending groups. As for the factor analysis results, five factors were obtained to explain the variation of 58.833 percent against inflation; the rest was explained by other factors that have not been included in this research model.

More in-depth research is needed on commodity analysis in CPI. In this study, SBH 2018 did not include some commodities often used during pandemics, such as masks and hand sanitizers, because SBH 2018 was formed before the pandemic and is valid for the last five years. There need to be other studies with different analyses, such as linear regression analysis, autoregressive univariate analysis, and others. On the other hand, the Government needs to pay attention to the subgroups of expenditures covered on the formed factors. Then, the Government should maintain the stability of the prices of commodities covered by these six factors.

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