TITLE: PURCHASING AND PROCUREMENT PROJECT

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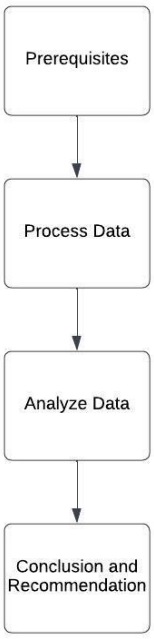
BEGIN – END DATE: 18-24 DECEMBER 2023

OUTPUT: PDF DOCUMENT

FRAMEWORK

To complete this project, I have developed a framework for myself to ensure a more organized workflow. The following are the steps:



Flowchart 1 Framework

1. Prerequisites: In this stage, the background and variables within the data are described. Additionally, this stage outlines the objectives or goals to be achieved.
2. Process Data: In this stage, mathematical operations using Excel formulas are performed to create new variables for data analysis. Data merging is also conducted using Excel formulas to enhance the depth of analysis.
3. Analyze Data: In this stage, data exploration and visualization are carried out.
4. Conclusion and Recommendation: In this stage, conclusions are drawn from the data analysis, and appropriate recommendations are provided based on the analysis results.

PURCHASING AND PROCUREMENT PROJECT

PREREQUISITES

ABOUT DATA

This dataset is the dataset of goods purchases throughout the year 2022. This dataset includes the approval form date, approval form number, fulfillment date, PO date, and proof of delivery date. It also provides information on the division that placed the order, the ordered items, the brand of the ordered items, the quantity of items, and the name of the vendor.

This dataset also comes with a glossary of data containing division names, vendor names, and brand names. The glossary data will be used to complete the existing dataset.

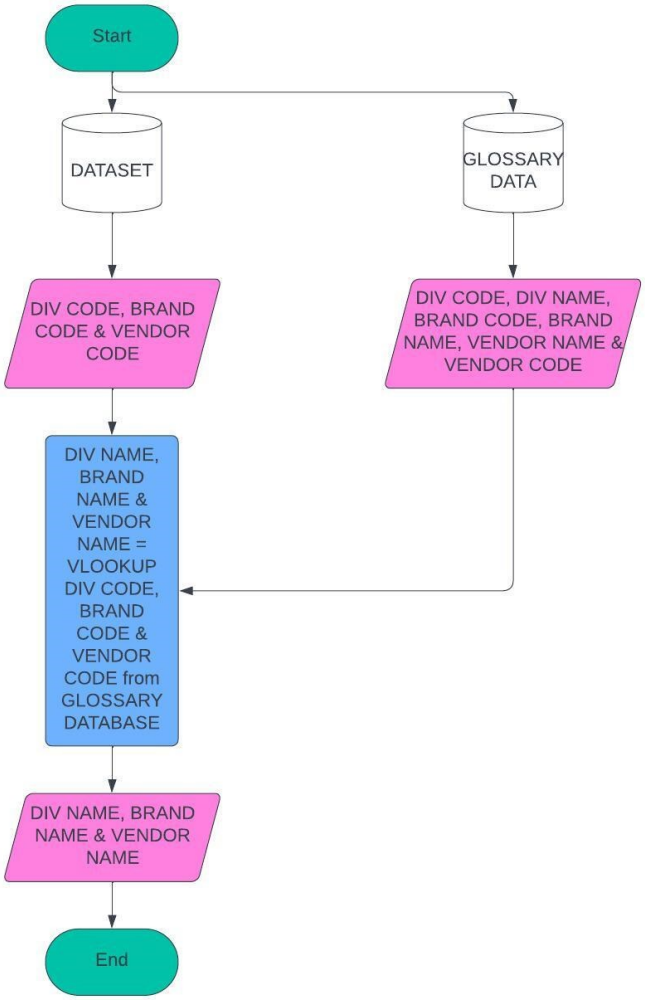
GOALS

The goals to be achieved are as follows:

- Analyze the total of FPP Numbers and Total Amount per month in the year 2022.
- Determine Order Fulfillment (orders that can be fulfilled or delivered in the same month as the proof of delivery date).
- Analyze the total of FPP Numbers and Total Amount per division that requests the purchase of goods.

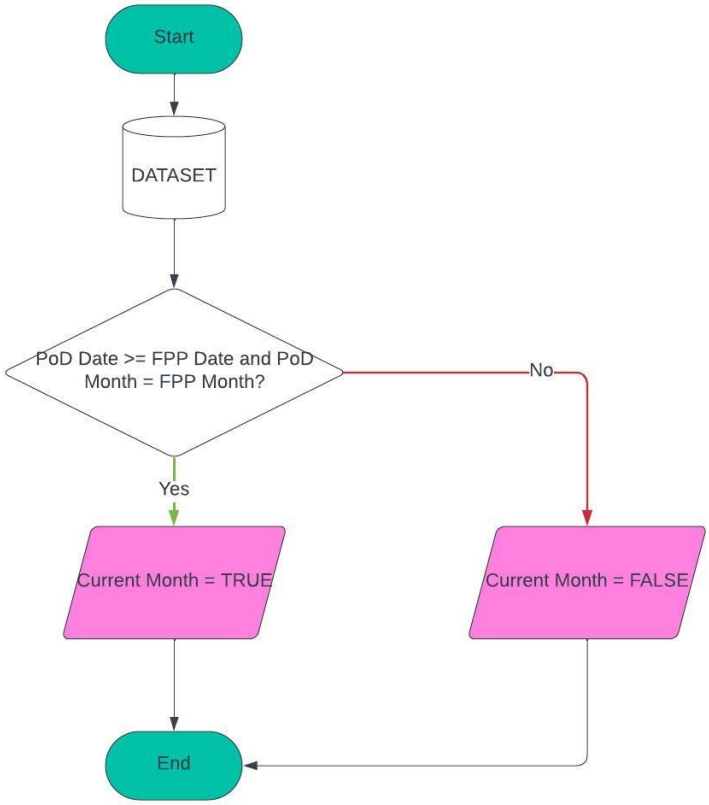
PROCESS DATA

By utilizing the existing glossary data, new variables are created, namely division name, vendor name, and brand name. This will help in analyzing the data.



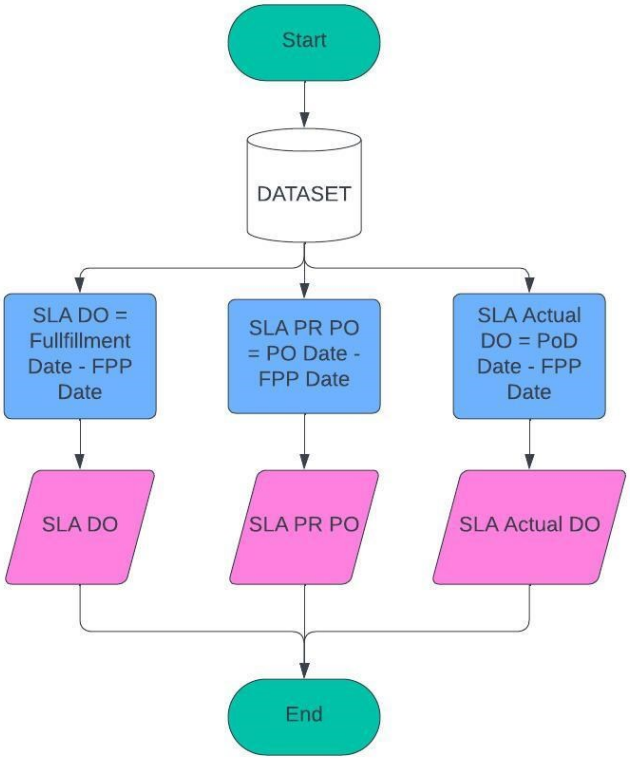
Flowchart 2 Create New Variable "DIV NAME, BRAND NAME, & VENDOR NAME"

An operation was conducted to generate a new variable to determine whether the item arrived in the same month as its shipment month.



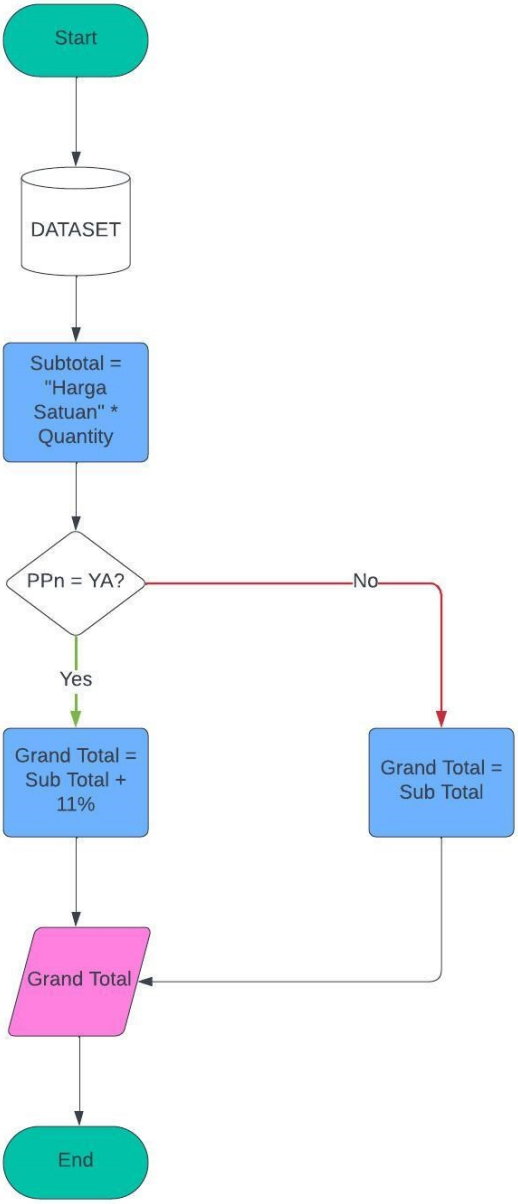
Flowchart 3 Create New Variable "Current Month?"

A new variable was also created, containing the number of days between the Approval Form date to the Fulfillment date, the Approval Form date to the Pre-Order date, and the Approval Form date to the Proof of Delivery date.



Flowchart 4Create New Variable "SLA-DO, SLA PR-PO, SLA Actual DO"

A new variable was also created, the purchase price of the goods. In transactions, some include Tax while others do not. The Tax rate is 11%.



Flowchart 5 Create New Variable "Grand Total"

There are several abbreviations or alternate terms that need to be known,

- PPn = Tax
- FPP = Form Persetujuan Pembayaran
- DP = Delivery Orders
- PO = Purchase Orders
- PoD = Proof of Delivery

ANALYZE DATA

TOTAL ORDERS AND TOTAL AMOUNT PER MONTH

The Total Amount or total transaction value in 2022 shows a rising trend. August has the highest transaction value compared to other months, while January has the lowest transaction value.

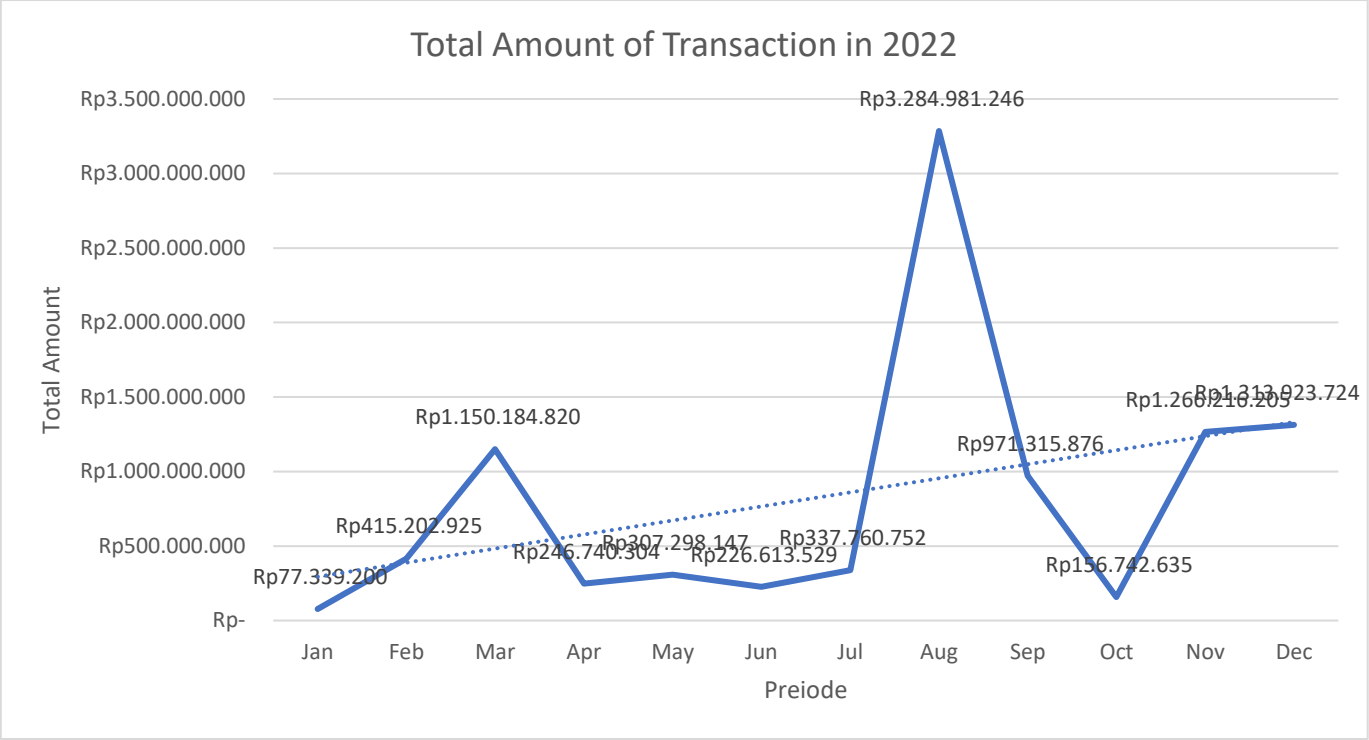


Figure 1 Total Amount of Transaction in 2022

Several other months have total transactions above average, March, September, November, and December. As for the total number of orders, the trend tends to decline. June has the highest total number of orders, while January and November have the lowest number of orders compared to other months in 2022.

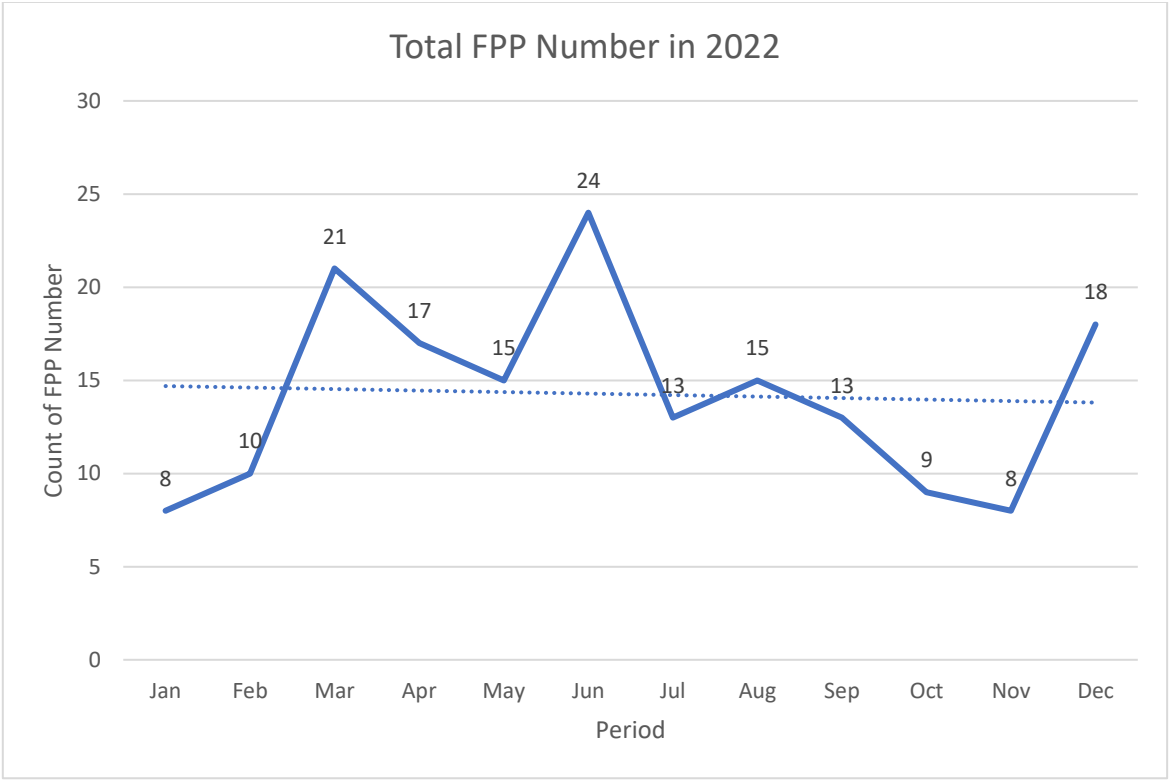


Figure 2 Total FPP Number in 2022

Several other months have total orders above average, March, April, May, August, and December. Based on the two graphs above, the transaction value does not always depend on a large number of orders. This is because, if we observe, the highest values for both the total transaction value and the total number of orders do not fall in the same month. This is due to each item having a different unit price. This can be substantiated by the unit price having a high correlation with the total transaction value.

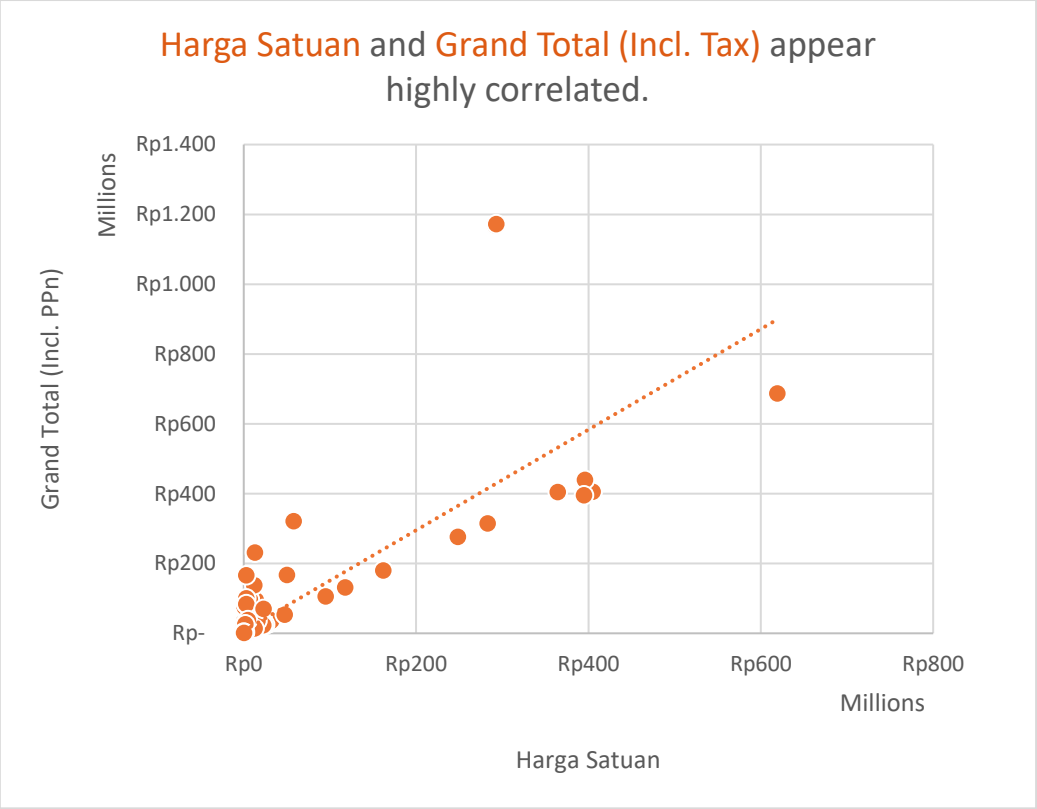


Figure 3 Correlation between "Harga Satuan" and "Grand Total"

ORDER FULLFILLMENT PER MONTH

The order is categorized as fulfilled if the delivery month and the receiving month fall within the same month, and the proof of delivery date is later than the FPP date. In the year 2022, only 55% of orders are categorized as fulfilled, while the remaining can be classified as delayed orders.

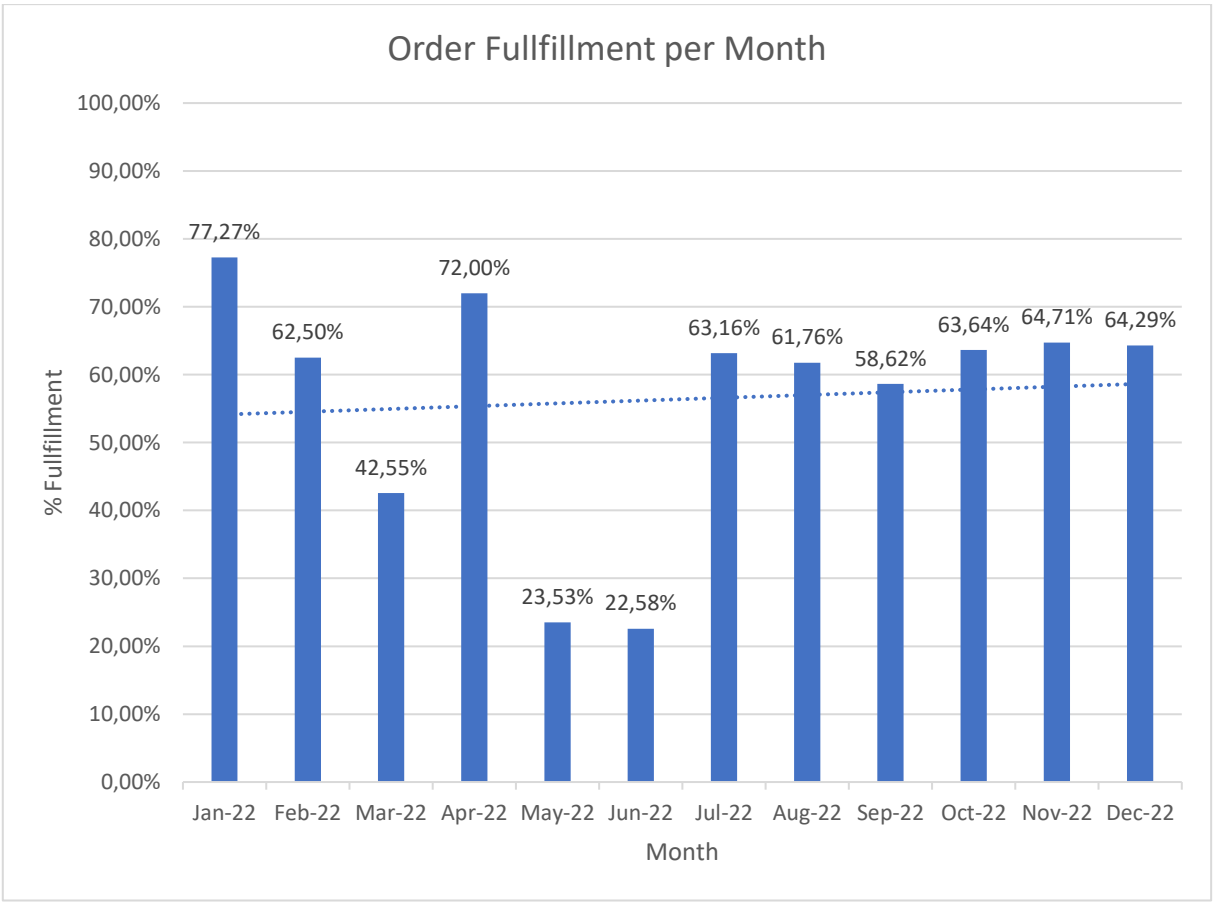


Figure 4 Order Fullfillment per Month

January has the highest number of fulfilled orders, while June has the lowest number compared to other months. These delayed orders also occur not only at the end of the month but aslo from the beginning to the middle of the FPP order month.

Table 1 Unfulfilled orders from the beginning to the middle of the month

Month	Unfullfilled Order	Fullfilled Order	Grand Total
Jan	3	17	20
Feb		10	10
Mar	2	16	18
Apr	2	16	18
May	3	4	7
Jun		2	2
Jul	1	8	9
Aug	3	15	18
Sep		17	17
Oct		3	3
Nov		11	11
Dec	2	18	20
Grand Total	16	137	153

TOTAL ORDERS AND TOTAL AMOUNT PER DIVISION

The quantity of requested item orders by Division A is the highest throughout the year 2022, while Divisions I, J, K, and L have low item order quantities.

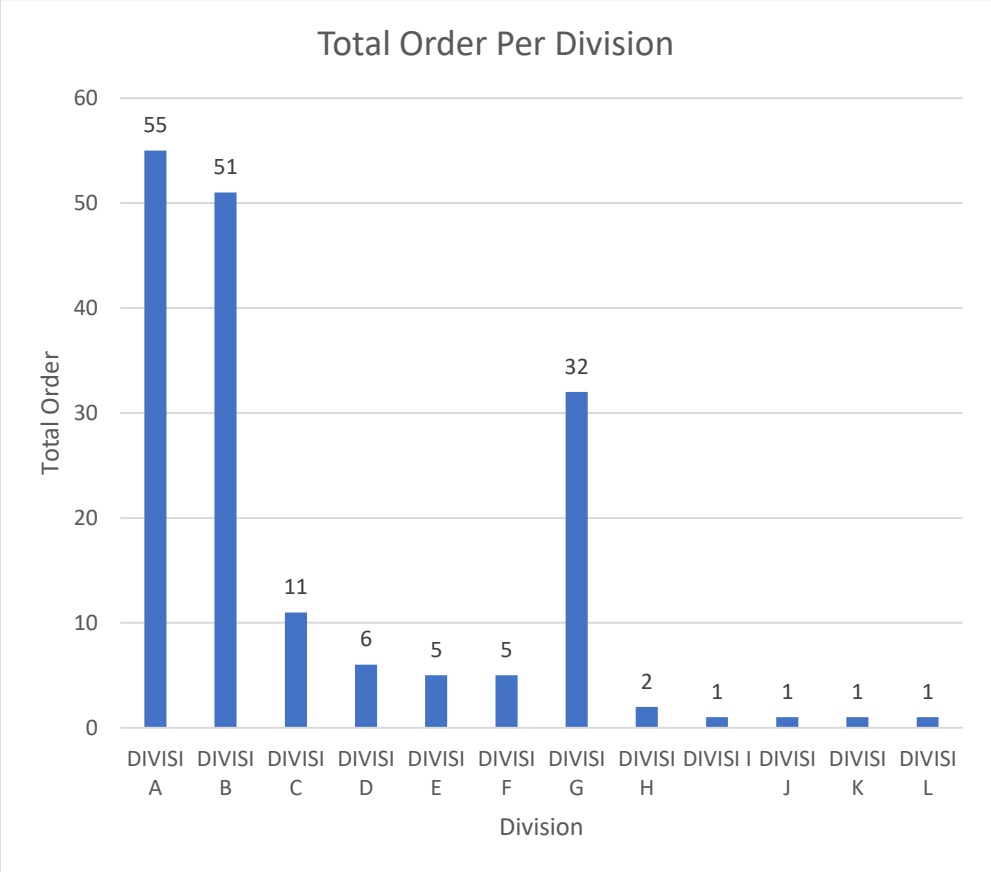


Figure 5 Total Order Per Division

The previous analysis has revealed that the Total Order does not have a significant correlation with the total amount or transaction value.

Table 2 Grand Total Amount per Division

Division	Grand Total (Incl. Tax)	
DIVISI A	Rp	1.749.845.893
DIVISI B	Rp	1.586.667.532
DIVISI C	Rp	247.464.752
DIVISI D	Rp	2.220.293.699
DIVISI E	Rp	25.556.590
DIVISI F	Rp	95.011.501
DIVISI G	Rp	3.719.403.078
DIVISI H	Rp	2.781.216
DIVISI I	Rp	2.879.000
DIVISI J	Rp	47.452.500
DIVISI K	Rp	25.024.000
DIVISI L	Rp	31.939.600
Grand Total	**Rp**	**9.754.319.361**

It can be observed that Division G does not have the highest number of orders but generates the highest transaction value compared to other months. Meanwhile, Divisions H and I have the lowest transaction values compared to other months.

CONCLUSION

Based on the analysis, the following conclusions can be drawn:

- The Total Amount or overall transaction value in 2022 shows an increasing trend. August has the highest transaction value compared to other months, while January has the lowest. However, the trend for the total number of orders tends to decrease. June has the highest total number of orders, while January and November have the lowest compared to other months in 2022. The transaction value does not always depend on a high number of orders. This is evident when comparing the highest values of total transaction value and total number of orders; they do not occur in the same month. This discrepancy is due to the different unit prices of each item.
- In 2022, only 55% of orders are categorized as fulfilled, while the remaining orders are considered late. January has the highest number of fulfilled orders, while June has the lowest among other months.
- Division A has the highest quantity of ordered items throughout 2022, while Divisions I, J, K, and L have relatively low quantities of ordered items. Previous analysis indicates that the Total Order does not have a significant correlation with the Total Amount or overall transaction value. Notably, Division G does not have the highest number of orders, but it generates the highest transaction value compared to other months.

RECOMMENDATION

There are recommendations that I can provide related to standardized procedures in the procurement of goods. Based on the analysis of the data and information provided by the dataset, I observed that the FPP Date represents the date the form is submitted. Next, the PO Date indicates the date the goods are ordered, and finally, the PoD Date represents the date the goods arrive. In the goods request form, there is also a Fulfillment Date column. The Fulfillment Date is the date by which the requested goods must arrive. From this explanation it can be said that,

$$FPP\ Date\ \leq PO\ Date\ \leq PoD\ Date \ldots\ldots\ldots (Equation\ 1)$$

$$Fullfillment\ Date = PoD\ Date \ldots\ldots\ldots (Equation\ 2)$$

Ideally, all dates should adhere to the specified procedures. However, some discrepancies have been identified, and all relevant data is presented in the three tables below. The label "False" indicates that the corresponding dates do not align with the logic of Equation 1.

Table 3 Orders with FPP Date greater than the PO Date

Nomor FPP	Tanggal FPP	PO Date	PO>= FPP
00028/FPP/III/2022	09-Mar-22	14-Feb-22	FALSE
00045/FPP/III/2022	30-Mar-22	25-Mar-22	FALSE
00045/FPP/III/2022	30-Mar-22	25-Mar-22	FALSE
00045/FPP/III/2022	30-Mar-22	25-Mar-22	FALSE
00045/FPP/III/2022	30-Mar-22	25-Mar-22	FALSE
00045/FPP/III/2022	30-Mar-22	25-Mar-22	FALSE
00045/FPP/III/2022	30-Mar-22	25-Mar-22	FALSE
00045/FPP/III/2022	30-Mar-22	25-Mar-22	FALSE
00110/FPP/VII/2022	04-Jul-22	14-Apr-22	FALSE
00113/FPP/VII/2022	11-Jul-22	09-Jul-22	FALSE
00113/FPP/VII/2022	11-Jul-22	09-Jul-22	FALSE
00113/FPP/VII/2022	11-Jul-22	09-Jul-22	FALSE
00128/FPP/VIII/2022	08-Aug-22	14-Jan-20	FALSE
00128/FPP/VIII/2022	08-Aug-22	14-Jan-20	FALSE

Table 4 Orders with FPP Date greater than the PoD Date

Nomor FPP	Tanggal FPP	PoD Date	PoD >= FPP
00028/FPP/III/2022	09-Mar-22	19-Feb-22	FALSE
00045/FPP/III/2022	30-Mar-22	29-Mar-22	FALSE
00045/FPP/III/2022	30-Mar-22	29-Mar-22	FALSE
00045/FPP/III/2022	30-Mar-22	28-Mar-22	FALSE
00110/FPP/VII/2022	04-Jul-22	28-Apr-22	FALSE
00128/FPP/VIII/2022	08-Aug-22	26-Jan-20	FALSE
00128/FPP/VIII/2022	08-Aug-22	24-Jan-20	FALSE

If the PO Date is issued before the FPP date, it can be confirmed that the goods were ordered beforehand without going through the existing process. This also happens if the PoD Date is issued before the FPP date.

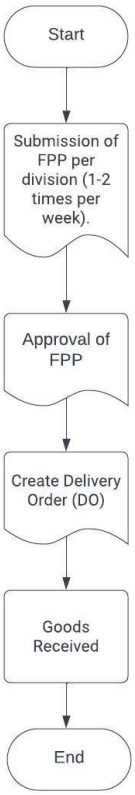
Table 5 PoD Date & Fullfillment Date Cateogry

Category	Count of PoD & Fullfillment Category
EARLY	16
LATE	289
TRUE	5
Grand Total	**310**

The PoD Date and Fulfillment Date should be the same and marked as 'TRUE'. If the Fulfillment Date comes before the PoD Date, it is categorized as 'LATE'. If the PoD Date comes before the Fulfillment Date, it is categorized as 'EARLY'. From the data in table 5 above, only 5 orders are compliant and 16 orders arrive before the Fulfillment Date. If they arrive before the Fulfillment Date, then the order meets the request. However, the issue is that 93% of the orders are late or categorized as 'LATE'. This should be further discussed with the vendor, as it may hinder company operations.

It is recommended to coordinate with the vendor before placing an order. This way, we can determine the availability of the goods and the delivery time. In my opinion, if the order is late, we should request compensation for the order. This can also be done if the company can always pay orders on time.

Based on the presented data in Table 3 and Table 4, there are instances where FPP Date > PO Date and FPP Date > PoD Date. This occurrence may be attributed to the absence of standardized procedures or recording inaccuracies. Hence, I recommend implementing a new procedure to address these issues. The proposed procedure is outlined below:



Flowchart 6 New Procurement Procedure

It is advisable to limit FPP submissions per division to 1-2 times per week, with designated days, such as Mondays and Thursdays, or days agreed upon by each division and th procurement team. This practice is intended to allow the procurement team to search for items at the most favorable prices and minimize errors. Alternatively, if an agreement is reached that FPP submissions should occur only once a week or twice a month (it is up to the result of the discussion), a meeting between each division and the procurement team is necessary to finalize the arrangement. This ensures effective communication and coordination in the procurement process.