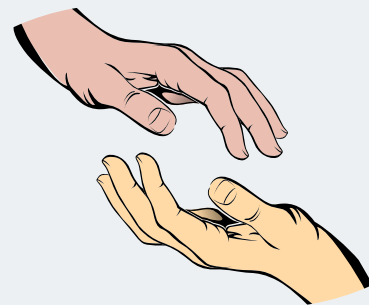




Dataset and Modelling Online Mizan Amanah



By Hepta Scientist Group



Hepta Scientist Group



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Siti Hamidah
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Universitas Padjadjaran



Taqiyuddin Yazid
Zaidan
Teknik Elektro
Universitas Pendidikan Indonesia

Data Understanding

Online Mizan Amanah



Data Understanding

Data Online Mizan Amanah merupakan Data yang berisikan informasi mengenai riwayat transaksi para Donatur yang melakukan aktivitas Berdonasi maupun Berzakat melalui Platform Mizan Amanah.

Dataset Online Mizan Amanah

- Donasi Guest
- Donasi User
- Zakat Guest
- Zakat User



Data Understanding

Masing-masing dataset terdiri dari beberapa features, diantaranya:

Dataset Donasi Guest/User:

- id
- nama_lengkap/name
- platform
- judul
- tanggal
- total_donasi
- status
- metode_pembayaran

Dataset Zakat Guest/User:

- id
- nama_lengkap/name
- platform
- category
- tanggal
- total_zakat
- status
- metode_pembayaran



Data Analysis

Online Mizan Amanah



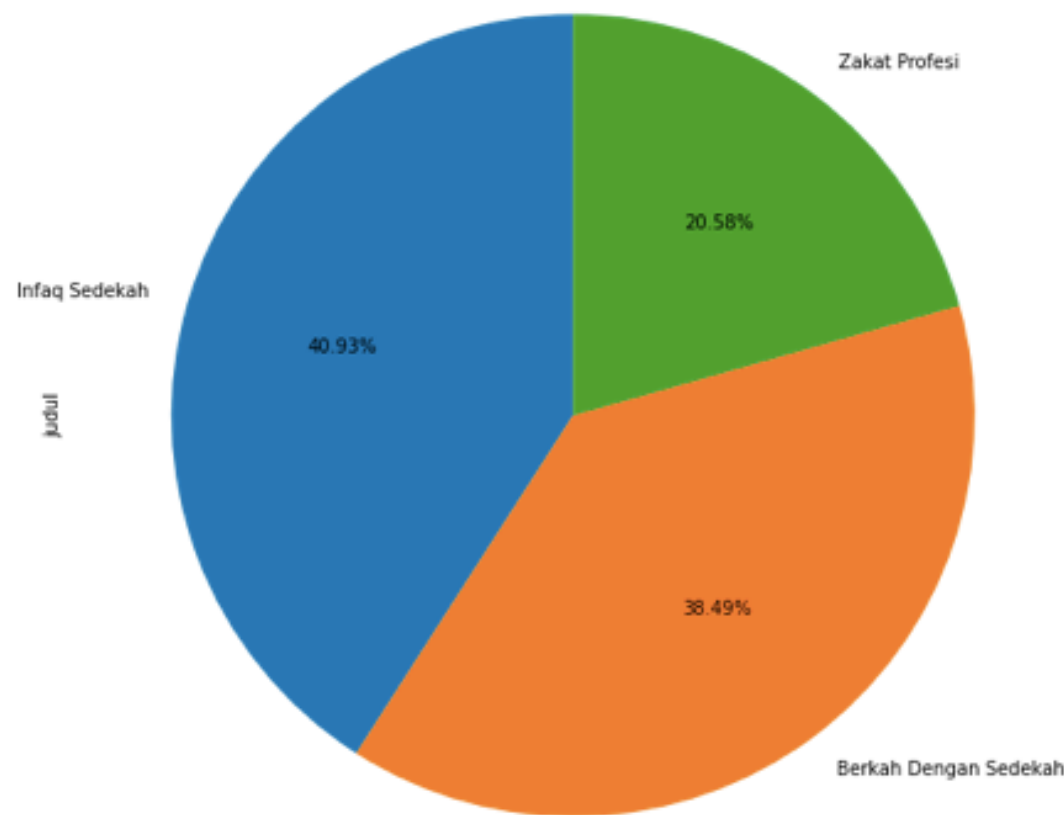


Donation of Guest



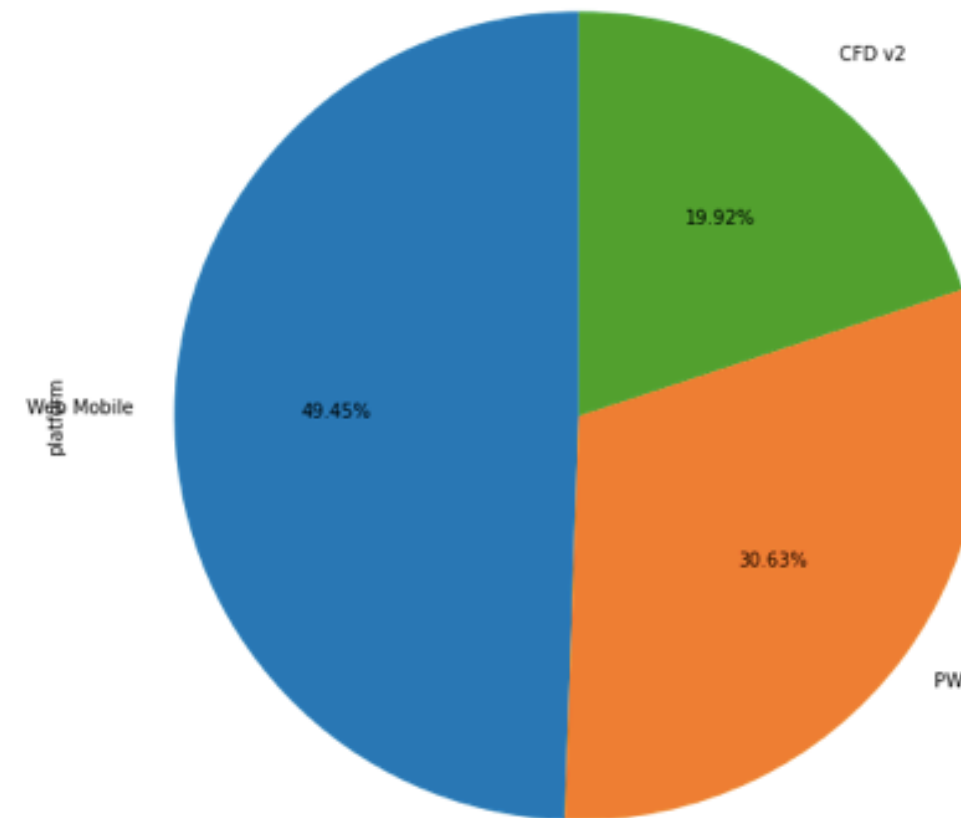
Distritibusi Dari Dataset Donasi Guest

Pie Chart of 3 frequently used judul from donasi guest



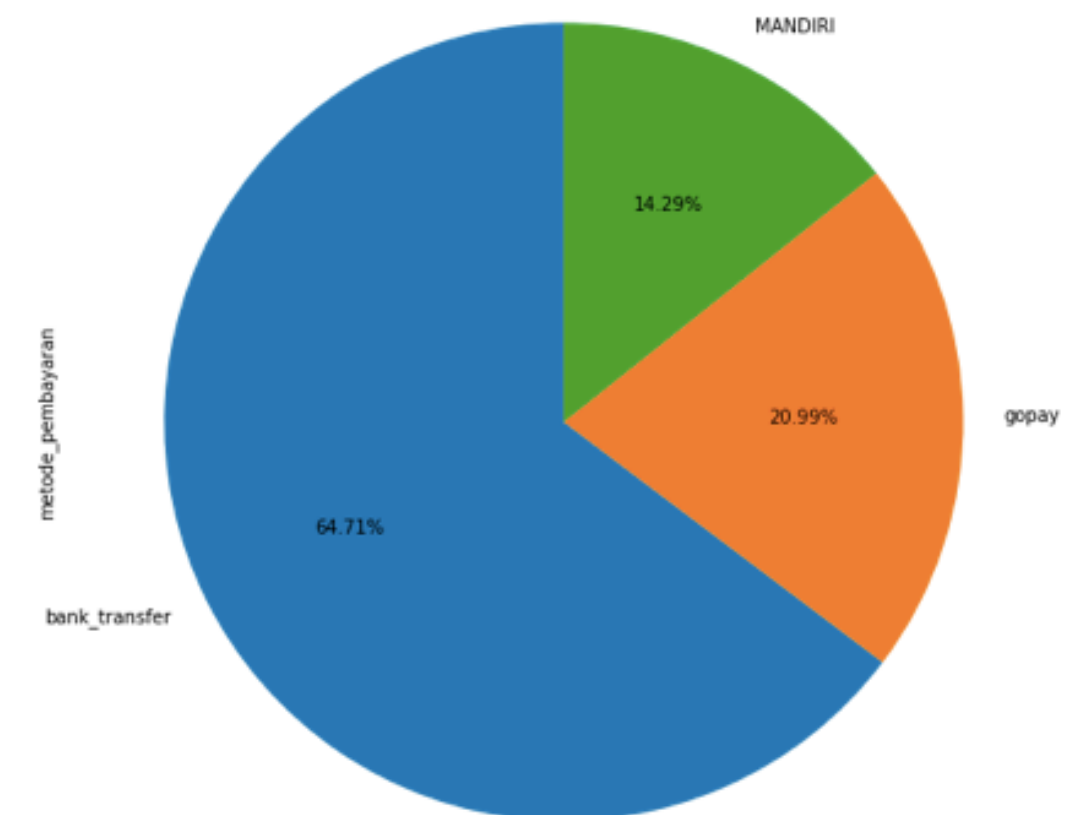
Judul

Pie Chart of 3 frequently used platforms from donasi guest

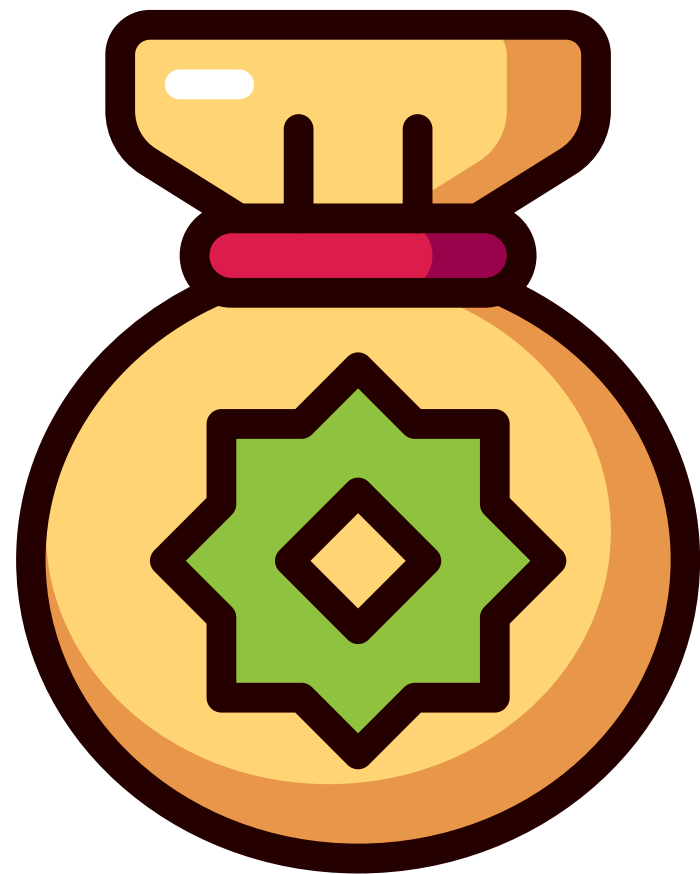


Platform

Pie Chart of 3 frequently used platforms from donasi guest



**Metode
Pembayaran**

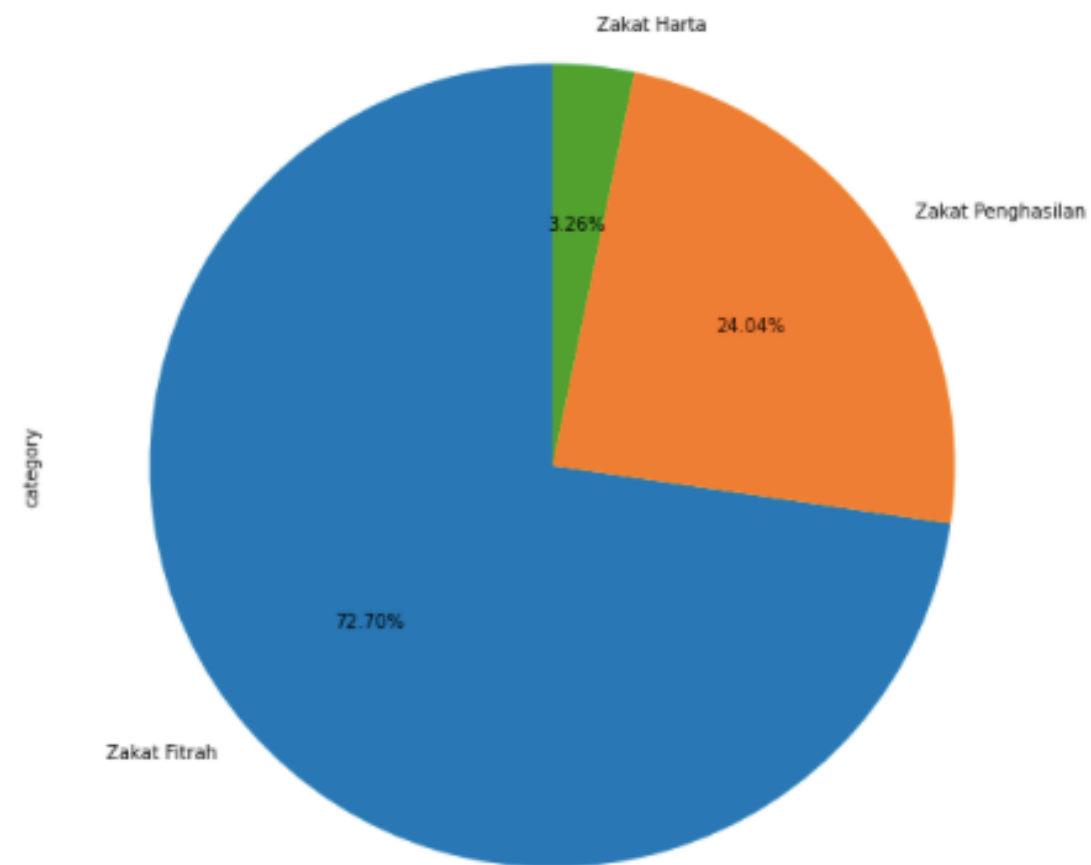


Zakat of Guest



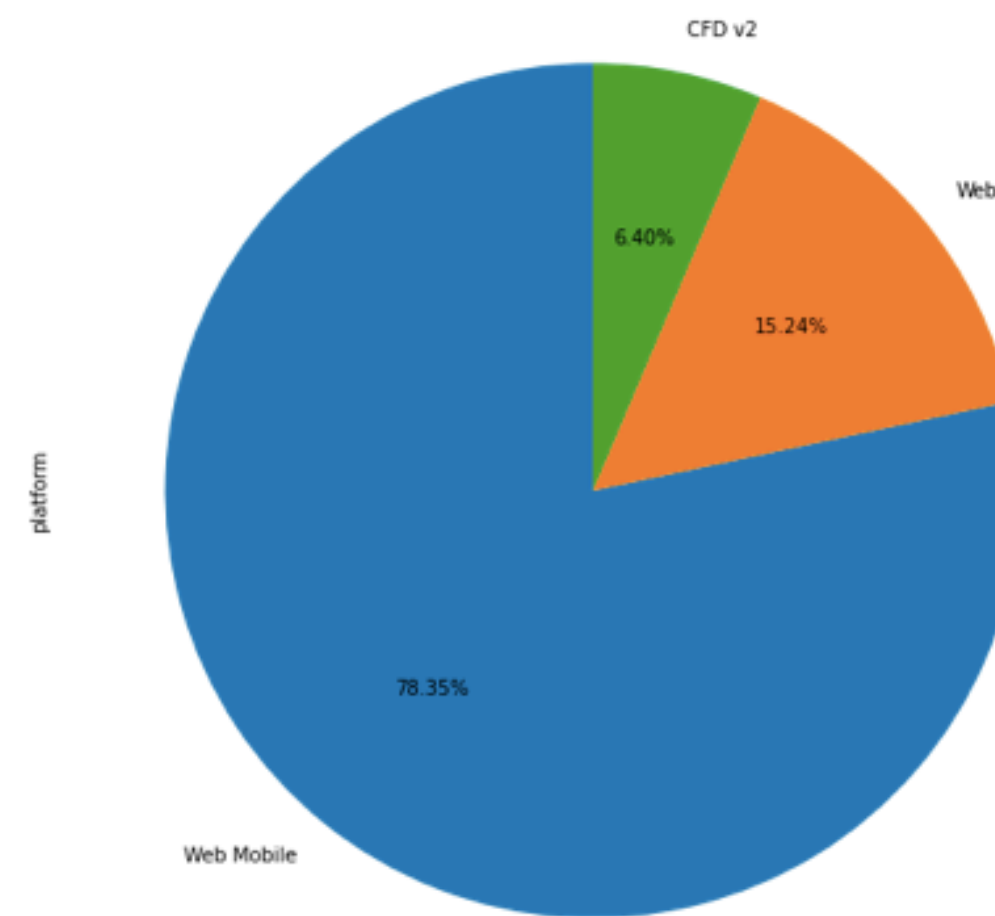
Distritibusi Dari Dataset Zakat Guest

Pie Chart of 3 frequently used category from zakat guest



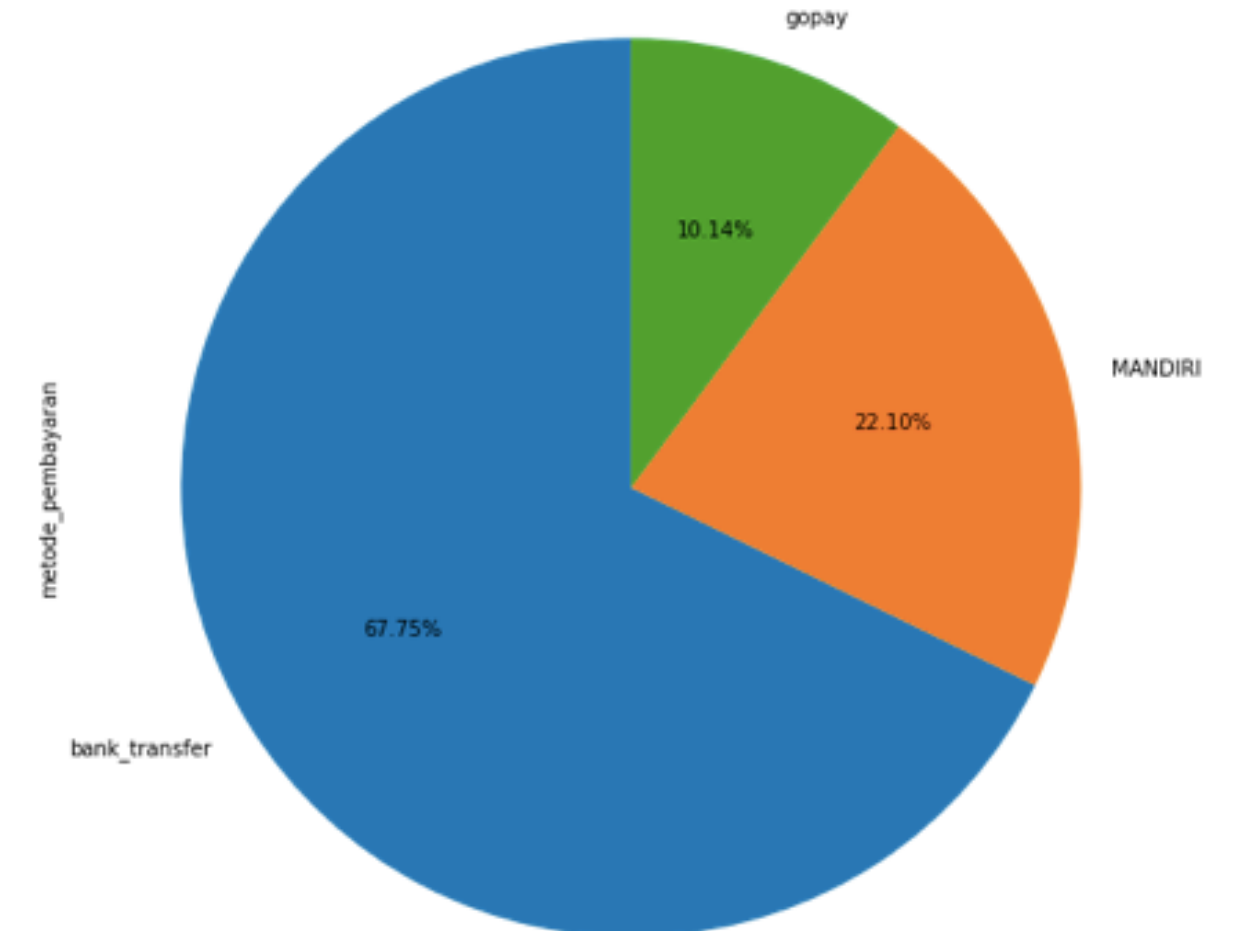
Category

Pie Chart of 3 frequently used platforms from zakat guest



Platform

Pie Chart of 3 frequently used payment methods from zakat guest



Metode
Pembayaran

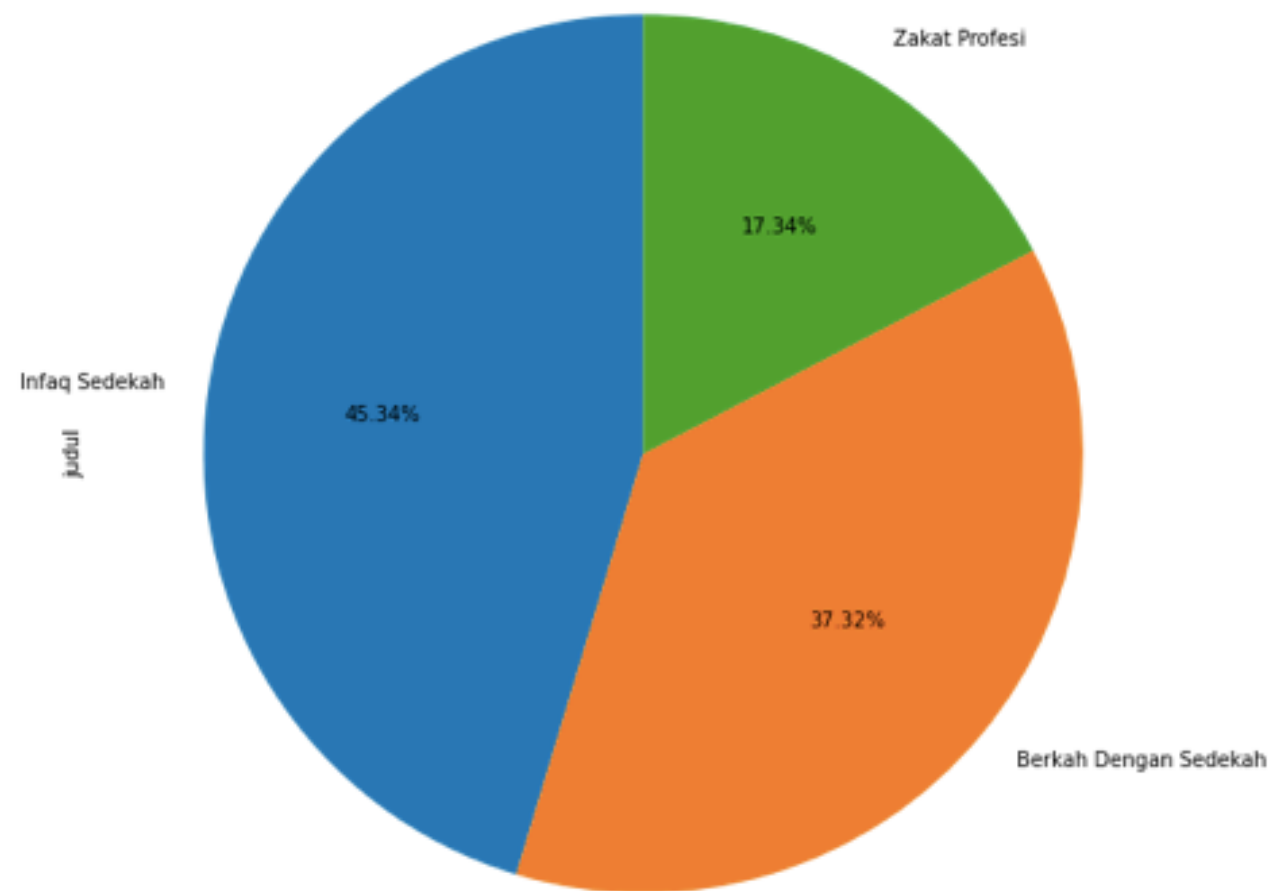


Donation of User



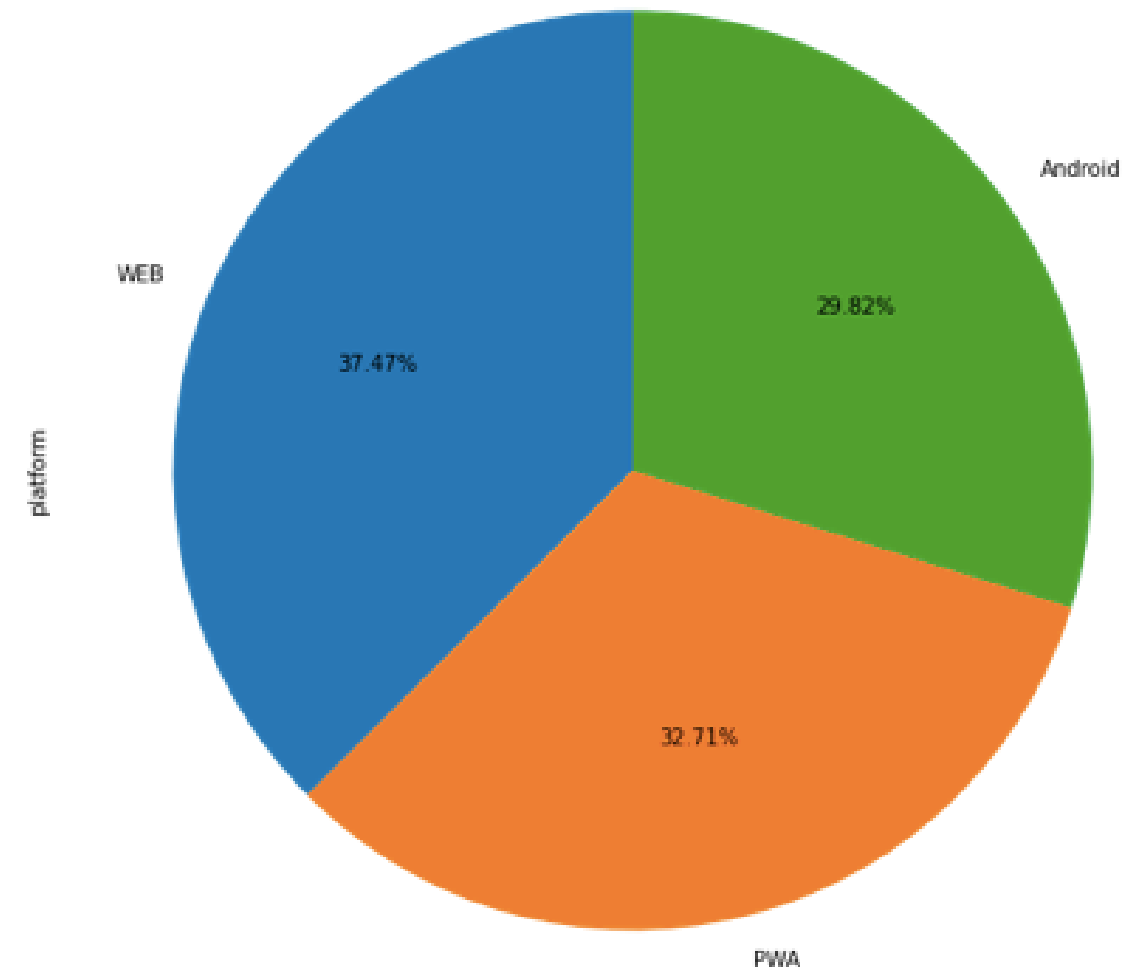
Distritibusi Dari Donasi User

Pie Chart of 3 frequently used judul from donasi user



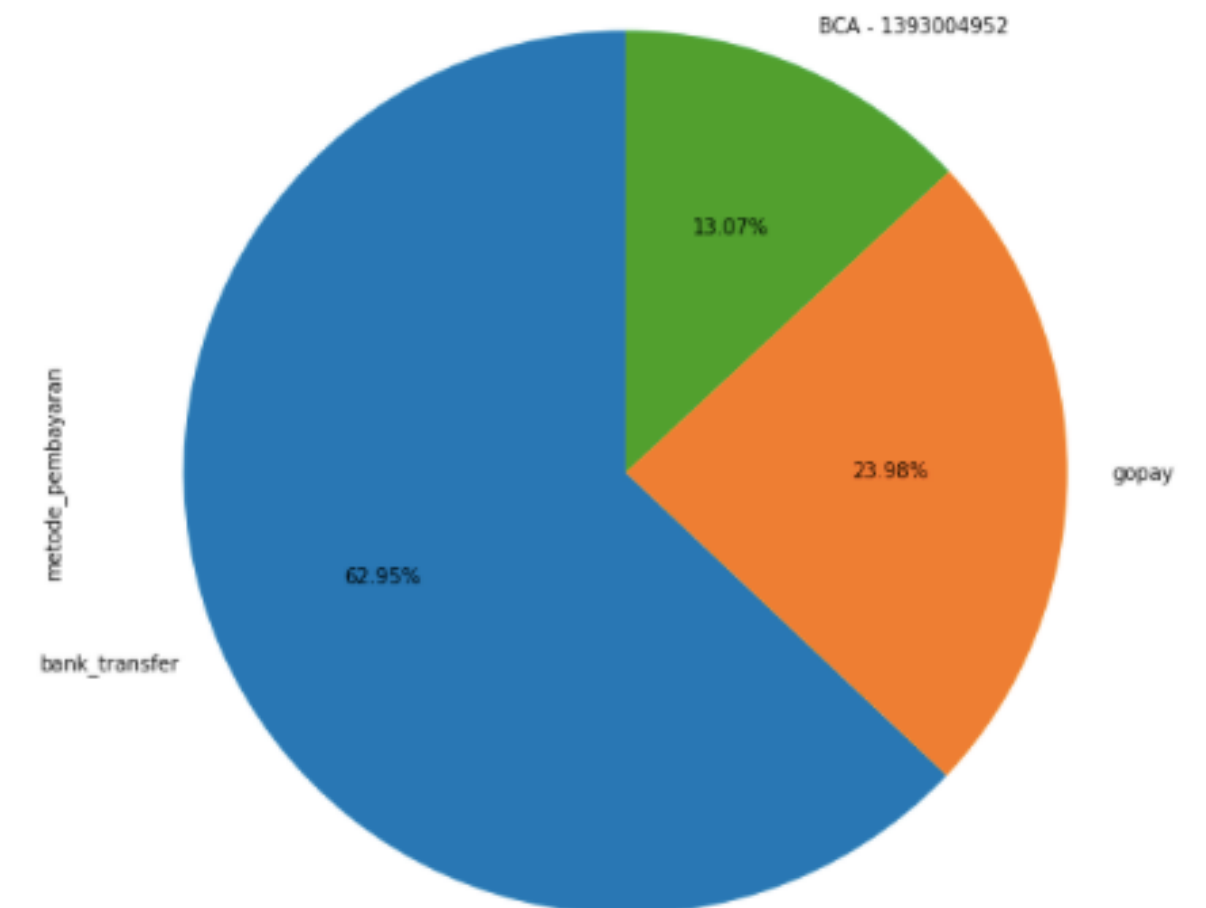
Judul

Pie Chart of 3 frequently used platforms from donasi user



Platform

Pie Chart of 3 frequently used payment method from donasi user



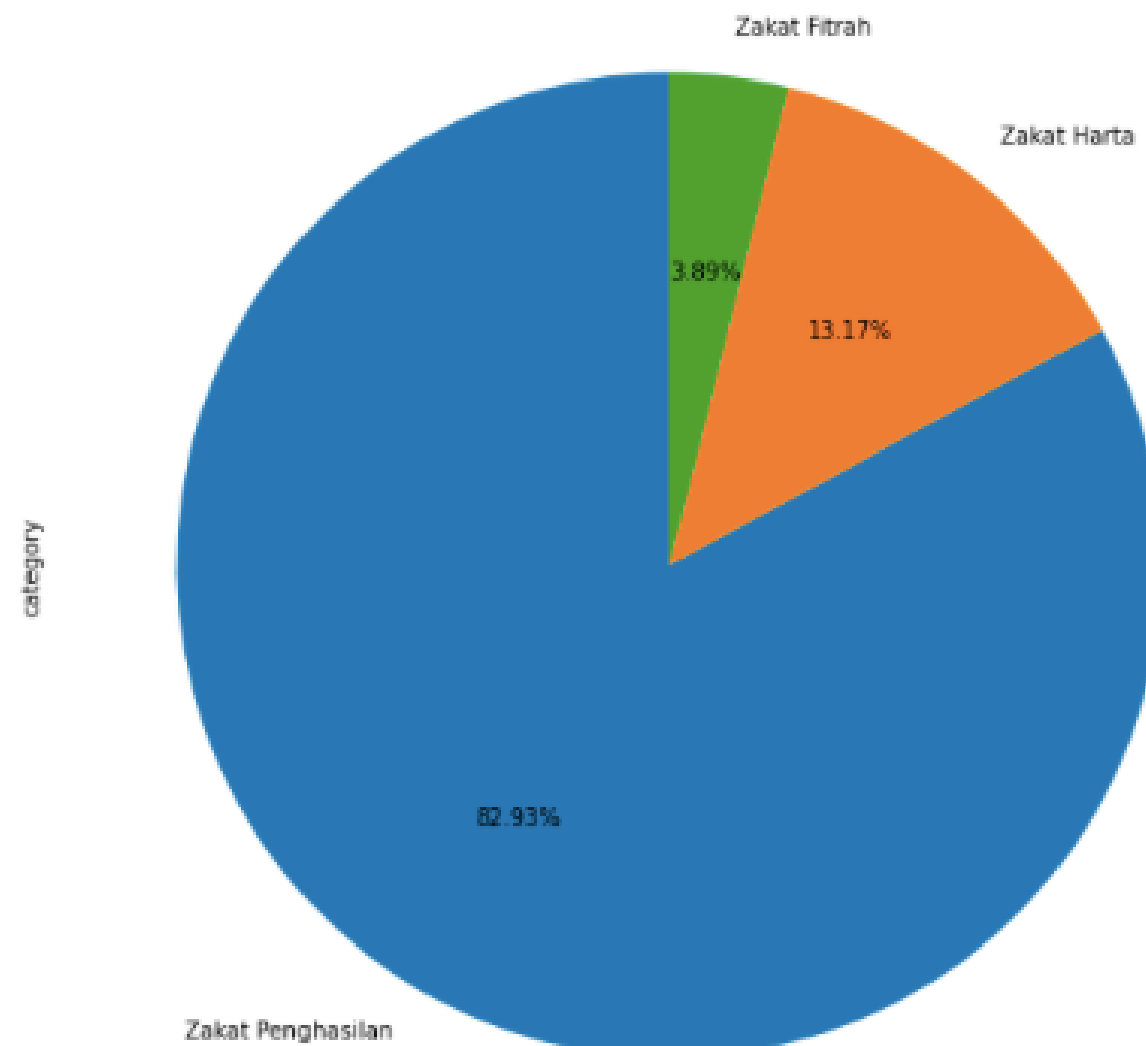
Metode
Pembayaran



Zakat of User

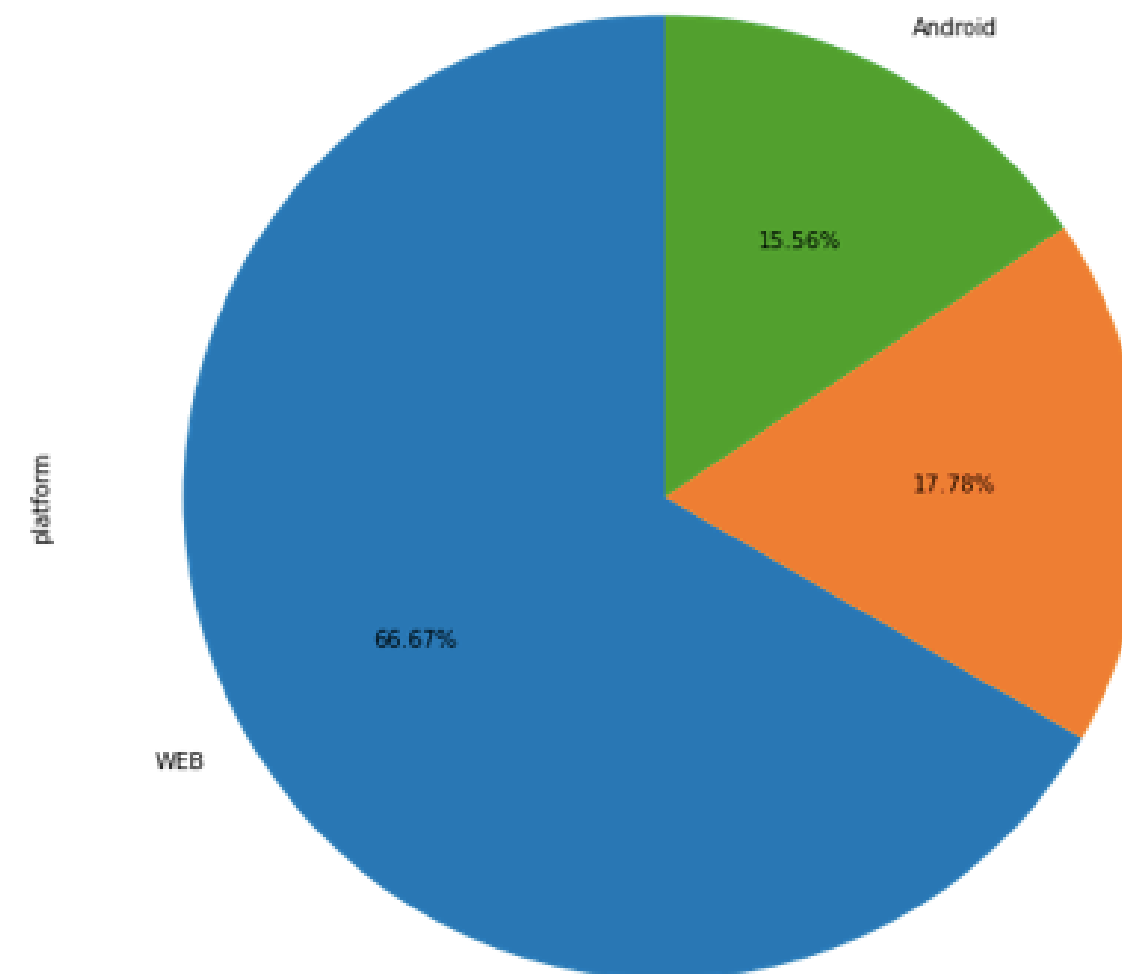
Distritibusi Dari Dataset Zakat User

Pie Chart of 3 frequently used category from zakat user



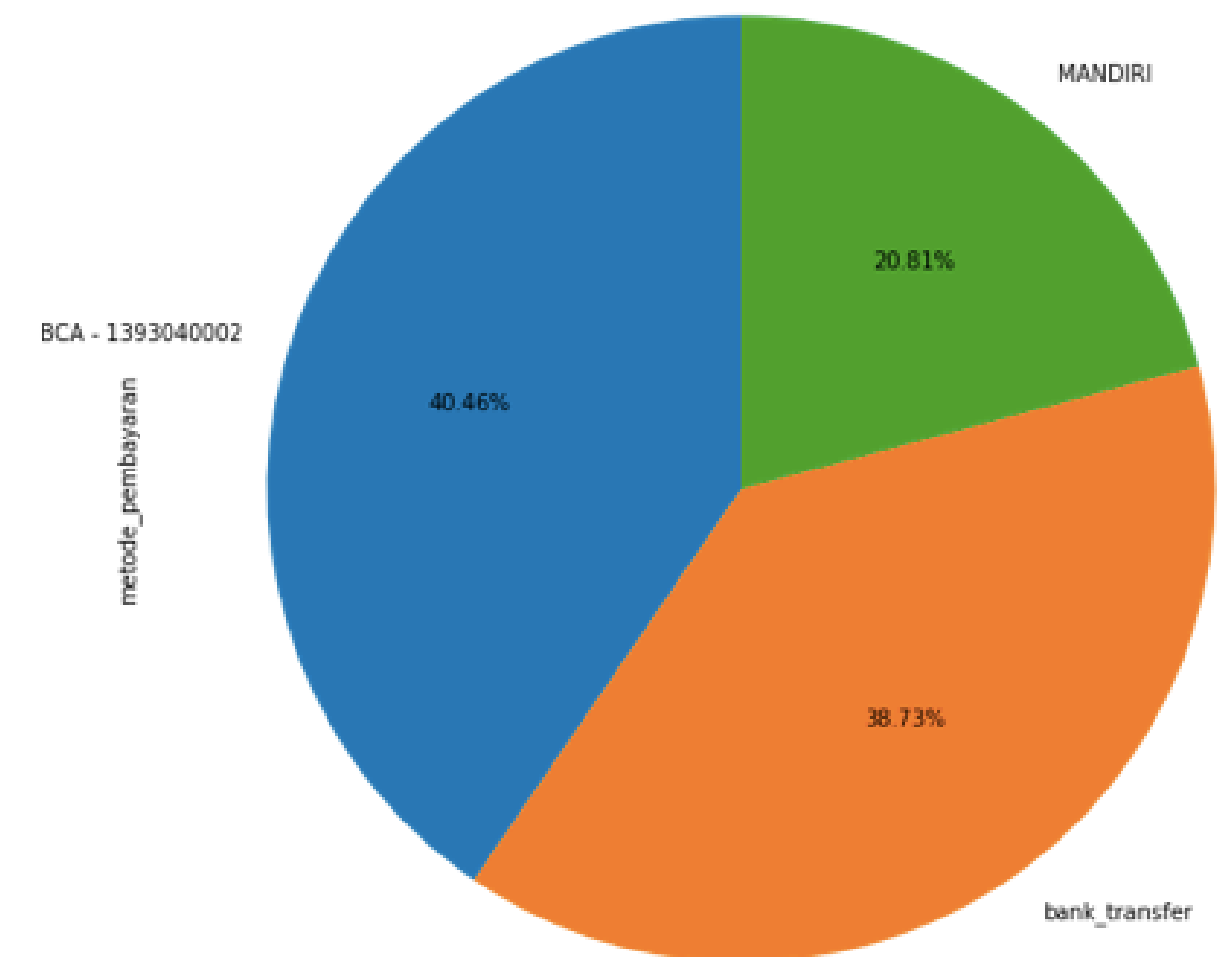
Category

Pie Chart of 3 frequently used platforms from zakat user



Platform

Pie Chart of 3 frequently used payment method from zakat user



Payment Method

Data Preparation

Online Mizan Amanah



Drop the features is
not use for
forecasting

Change Data Type
of "tanggal" to
Datetime

Doing sum()
aggregation based
on the same date

Train Test Split

Data Modelling

Online Mizan Amanah

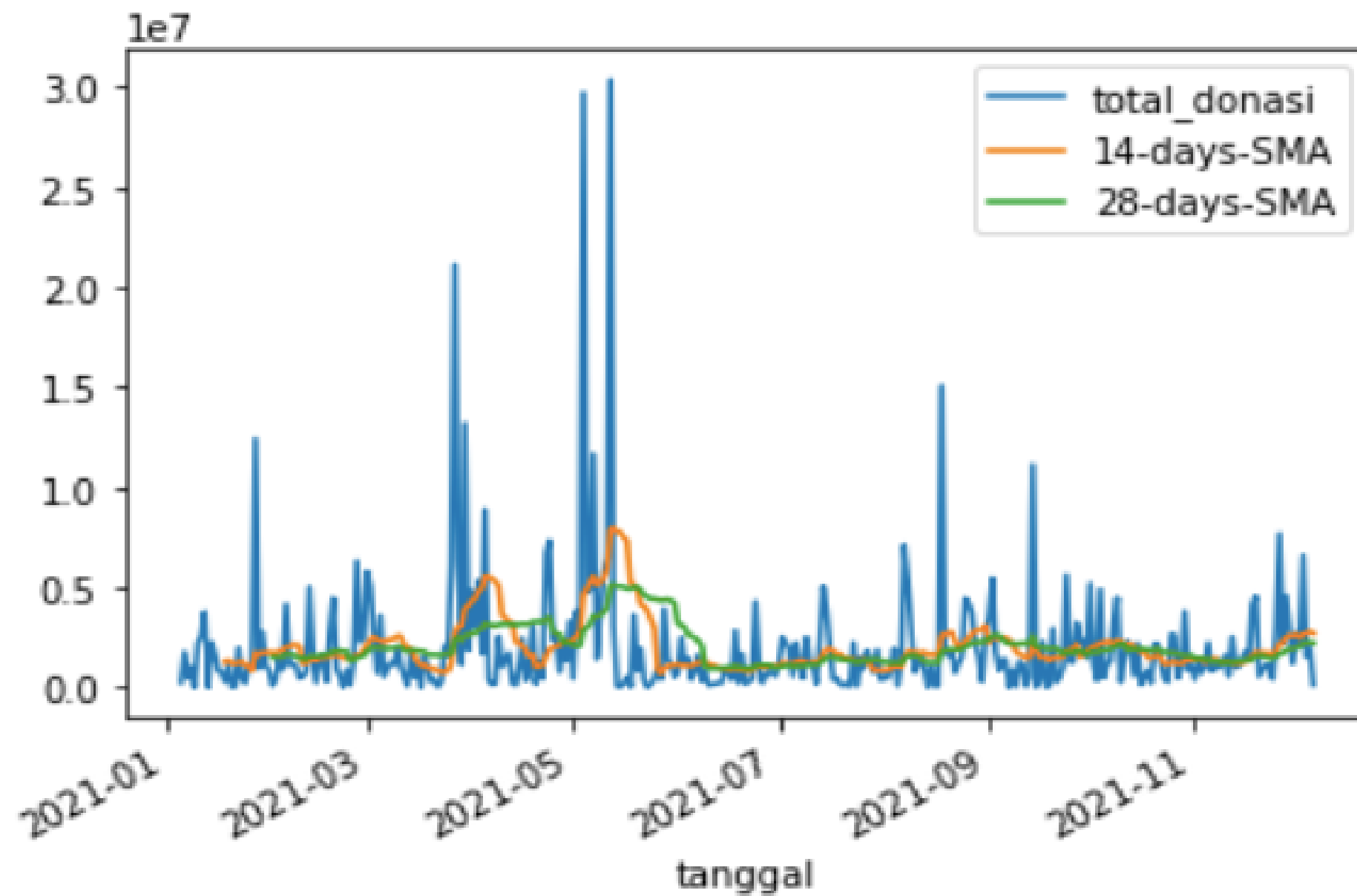


Forecasting Model use Statistical Approach

Berdasarkan analisa statistik, model forecasting yang dibuat adalah :

- 1 Simple Moving Average
- 1 Exponential Smoothing
- 1 ARIMA

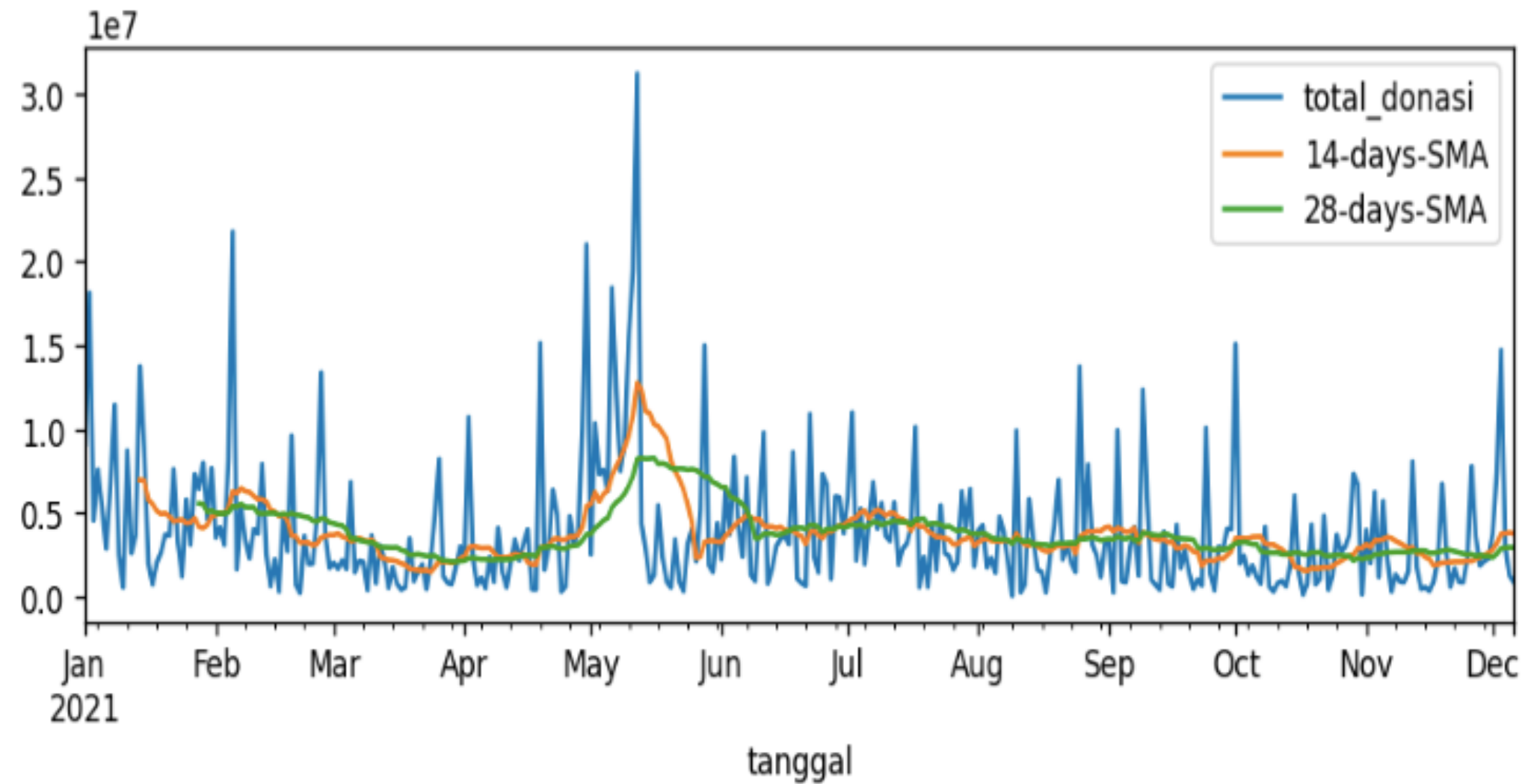
Simple Moving Average



Data Donasi Guest



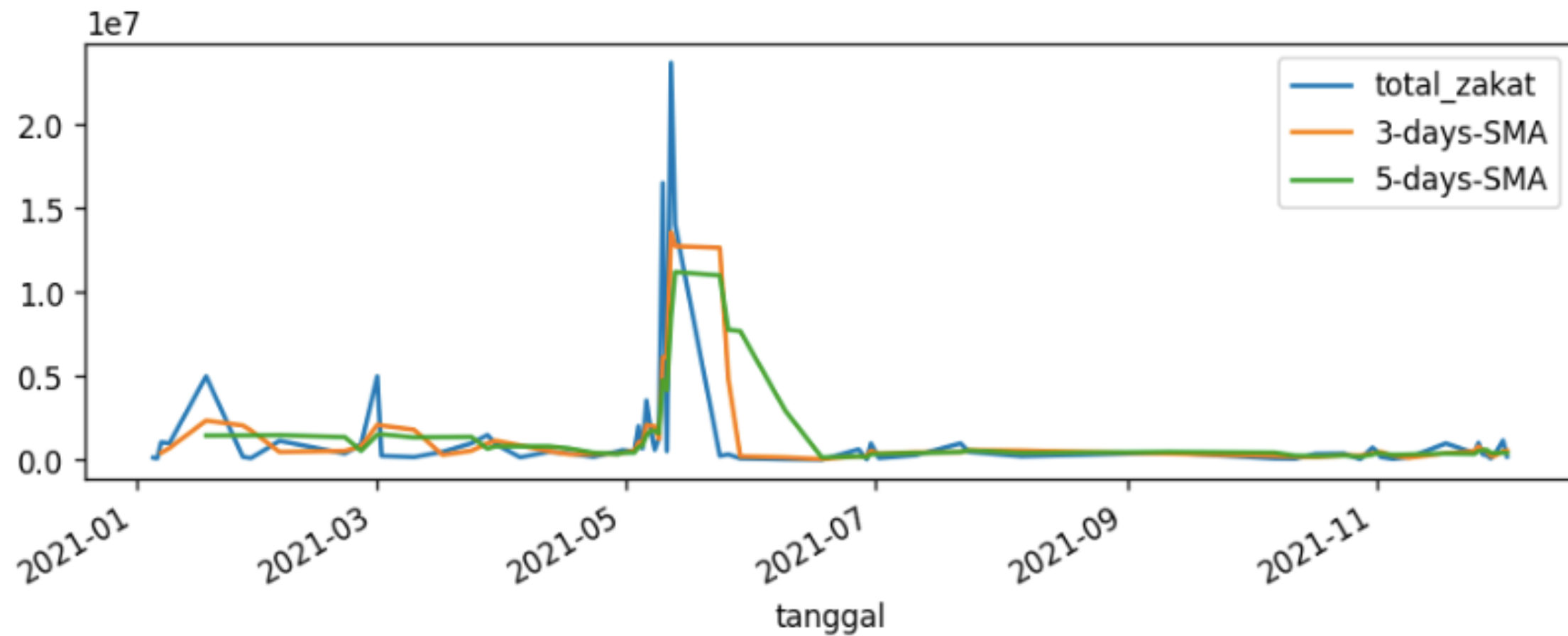
Simple Moving Average



Data Donasi User



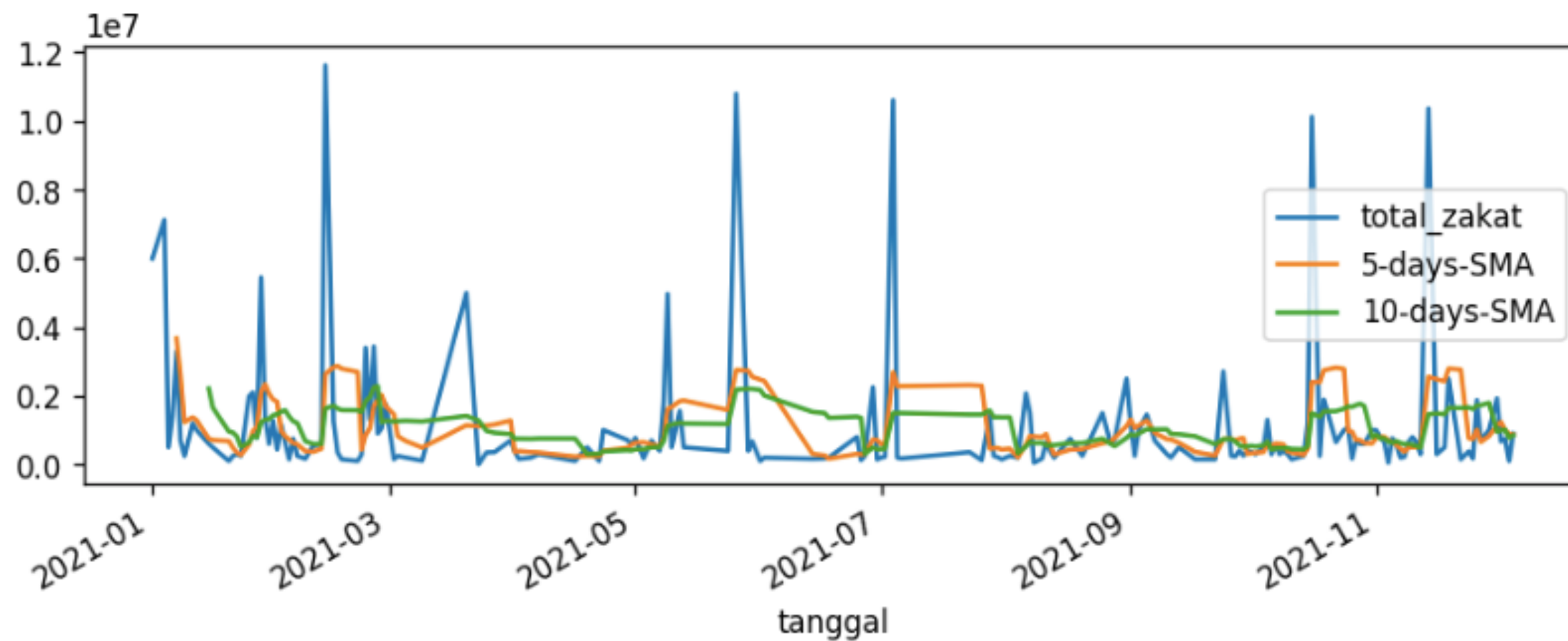
Simple Moving Average



Data Zakat Guest



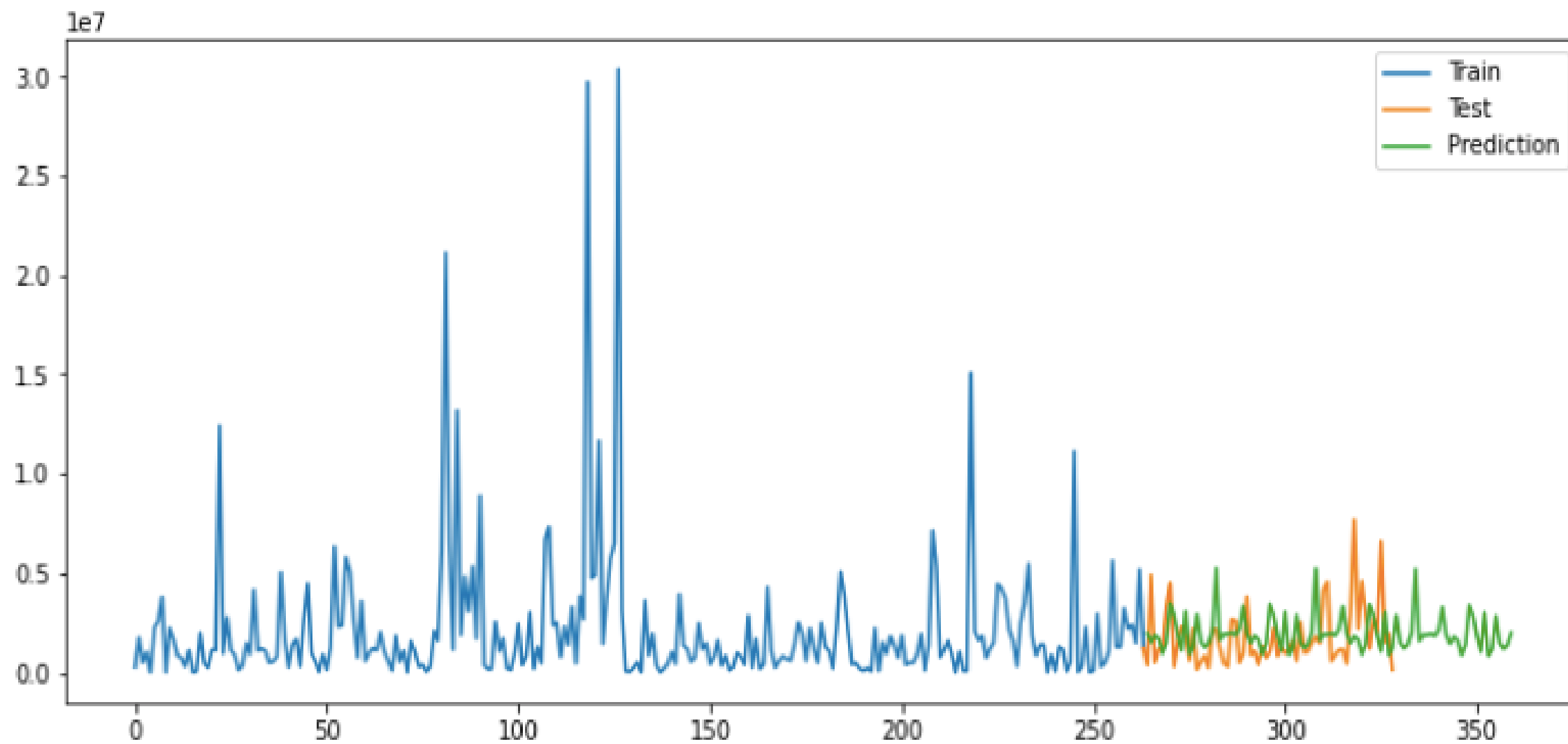
Simple Moving Average



Data Zakat User



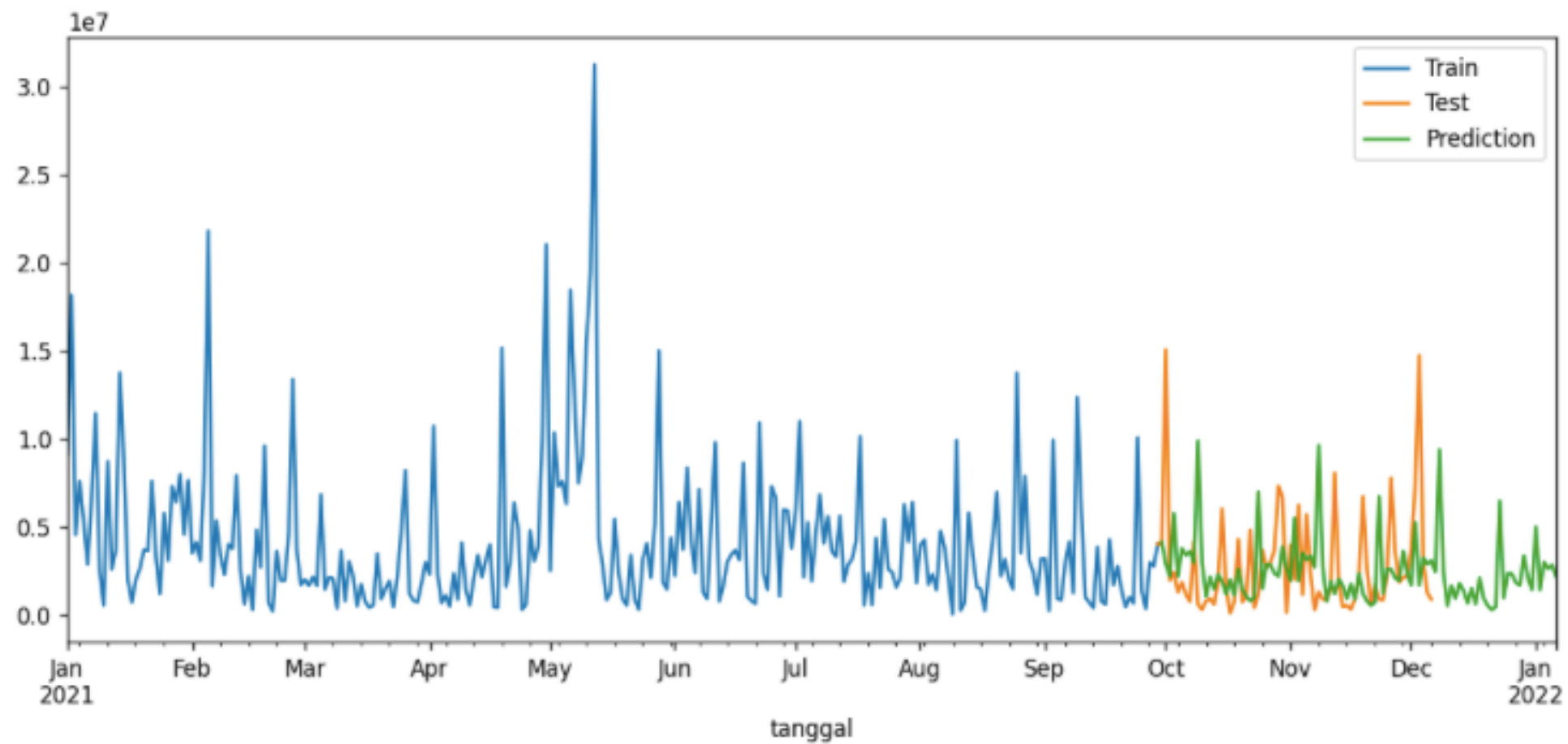
Exponential Smoothing



Data Donasi Guest



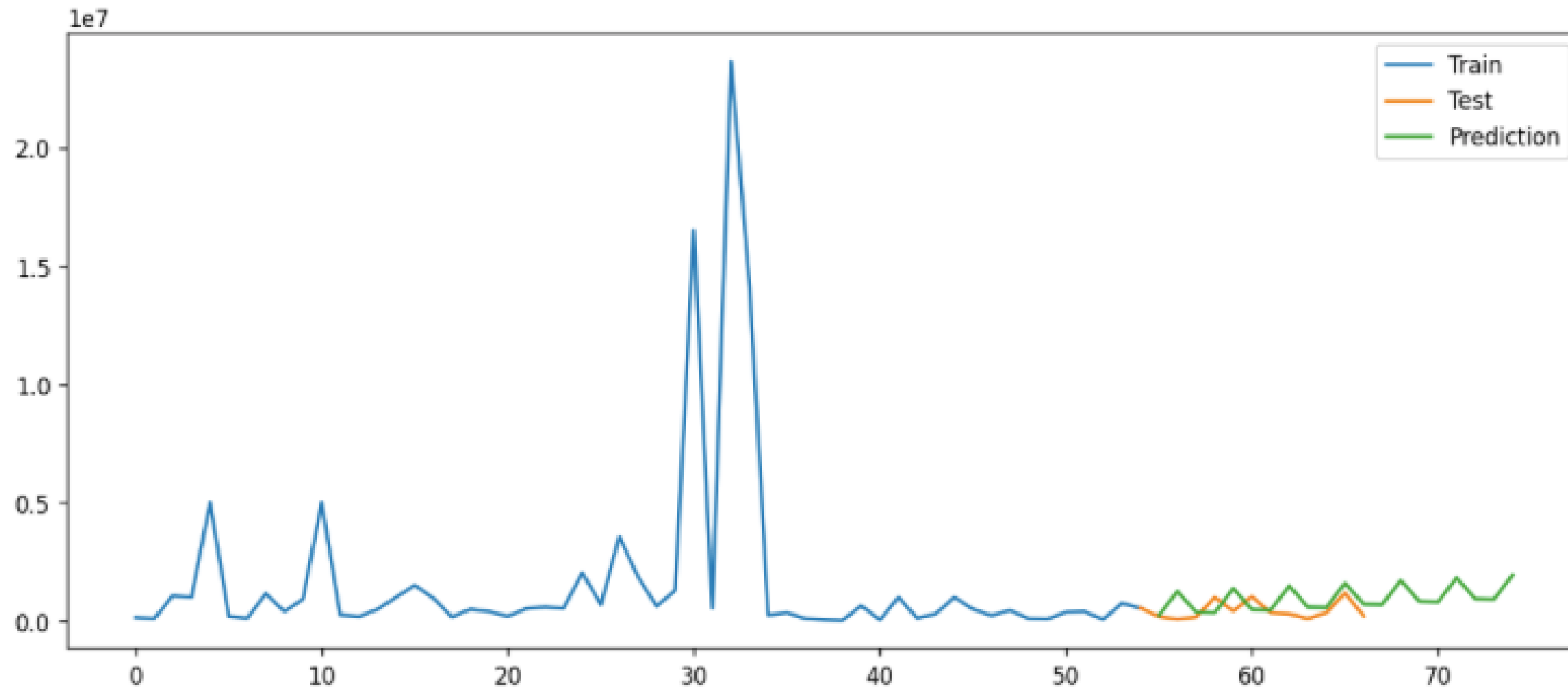
Exponential Smoothing



Data Donasi User



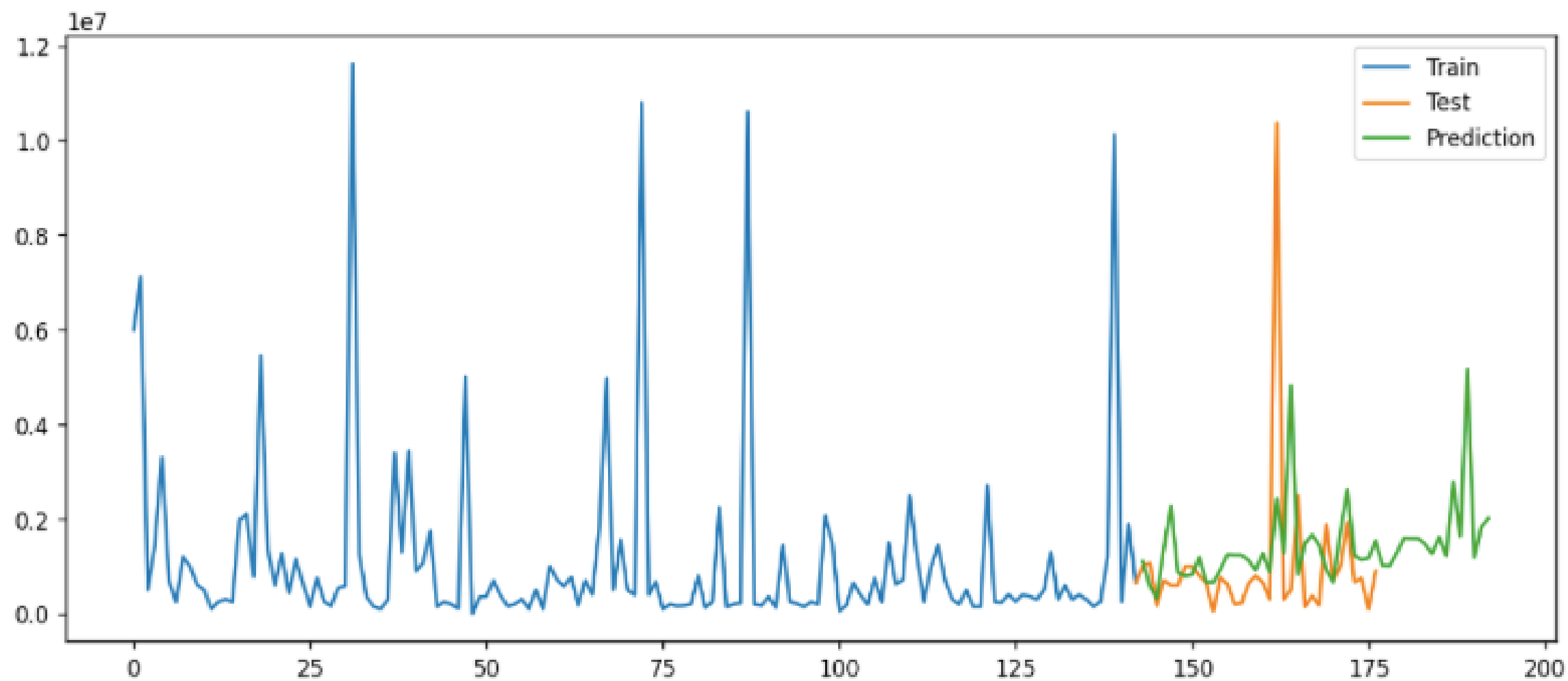
Exponential Smoothing



Data Zakat Guest



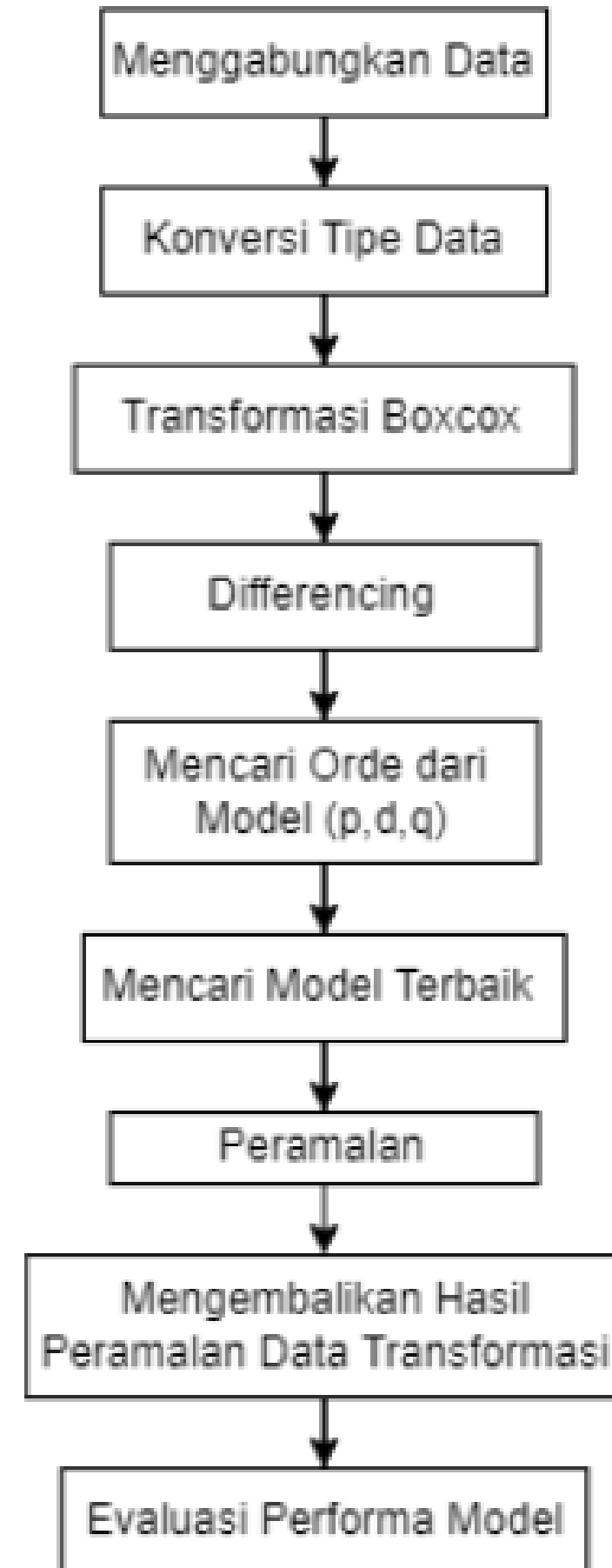
Exponential Smoothing



Data Zakat User



ARIMA



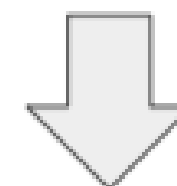
Combine Data

tanggal	total_donasi	jenis
2021-01-05	275802.0	Donasi Guest
2021-01-06	1770315.0	Donasi Guest
2021-01-07	502000.0	Donasi Guest
2021-01-08	1040081.0	Donasi Guest
2021-01-09	20000.0	Donasi Guest

tanggal	total_donasi	jenis
2021-01-01	9104921.0	Donasi User
2021-01-02	18147735.0	Donasi User
2021-01-03	4549815.0	Donasi User
2021-01-04	7592243.0	Donasi User
2021-01-05	5388900.0	Donasi User

tanggal	total_zakat	jenis
2021-01-05	150000.0	Zakat Guest
2021-01-06	100000.0	Zakat Guest
2021-01-07	1070000.0	Zakat Guest
2021-01-09	1000000.0	Zakat Guest
2021-01-18	5000000.0	Zakat Guest

tanggal	total_zakat	jenis
2021-01-01	6000000.0	Zakat User
2021-01-04	7127500.0	Zakat User
2021-01-05	500000.0	Zakat User
2021-01-06	1425000.0	Zakat User
2021-01-07	3300232.0	Zakat User

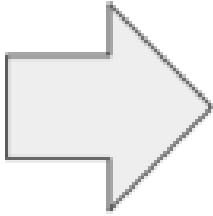


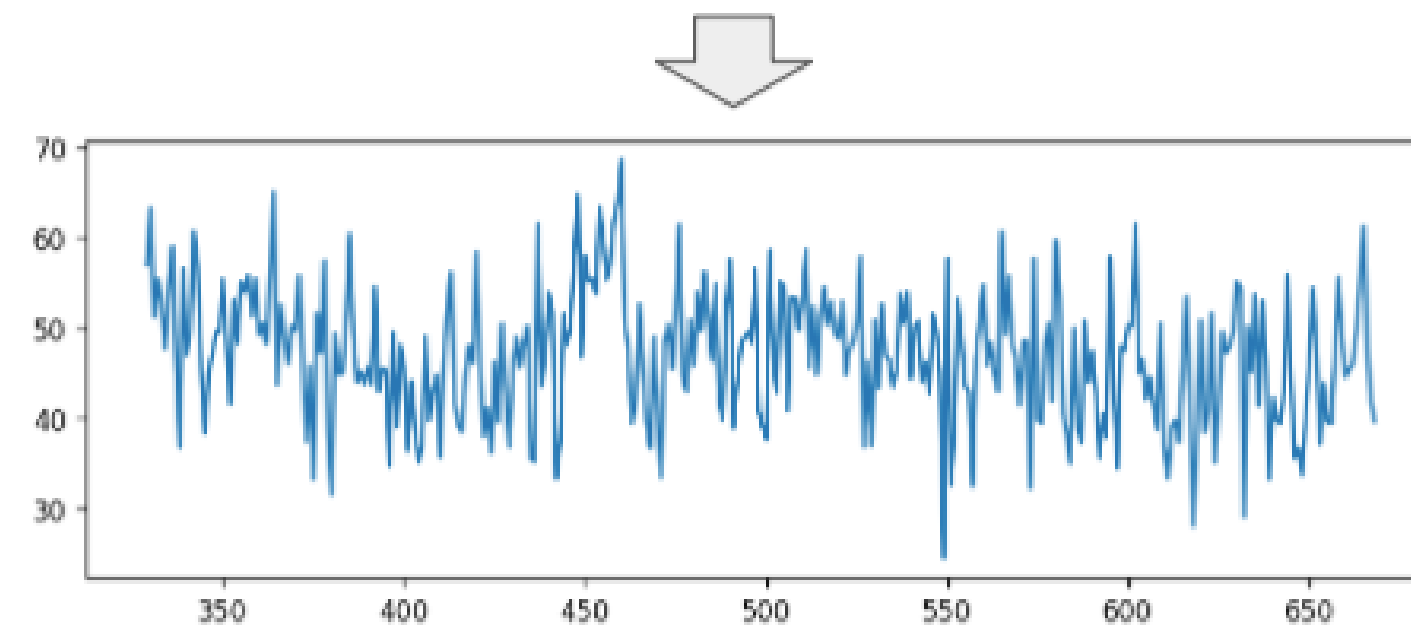
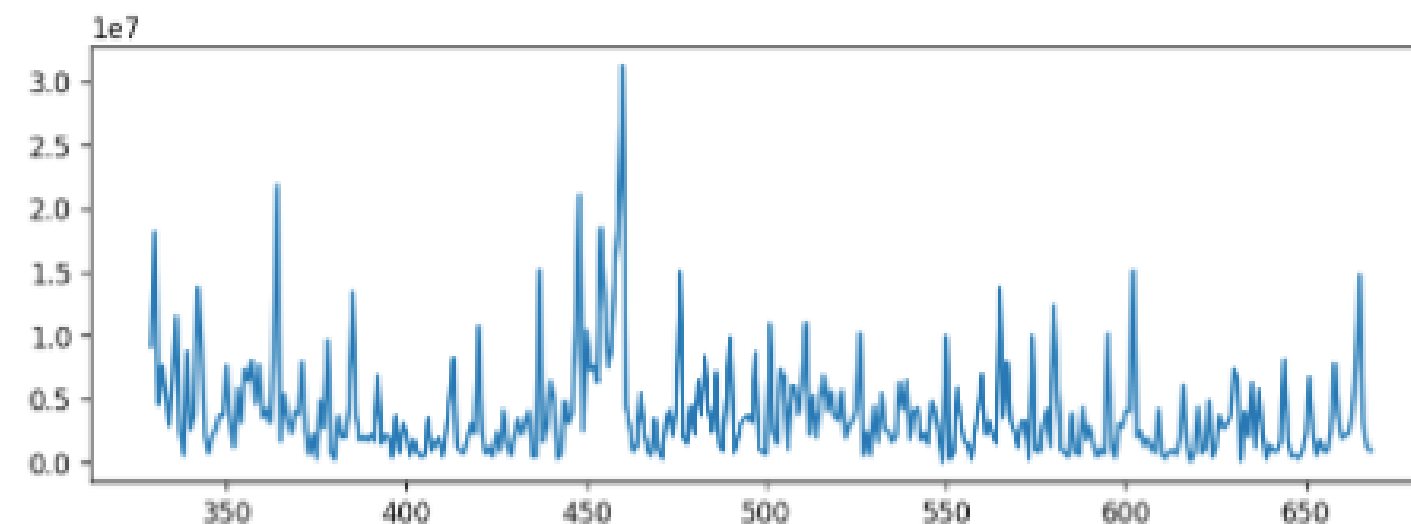
	jenis	tanggal	total
0	Donasi Guest	2021-01-05	275802.0
1	Donasi Guest	2021-01-06	1770315.0
911	Zakat User	2021-12-04	100000.0
912	Zakat User	2021-12-05	900000.0

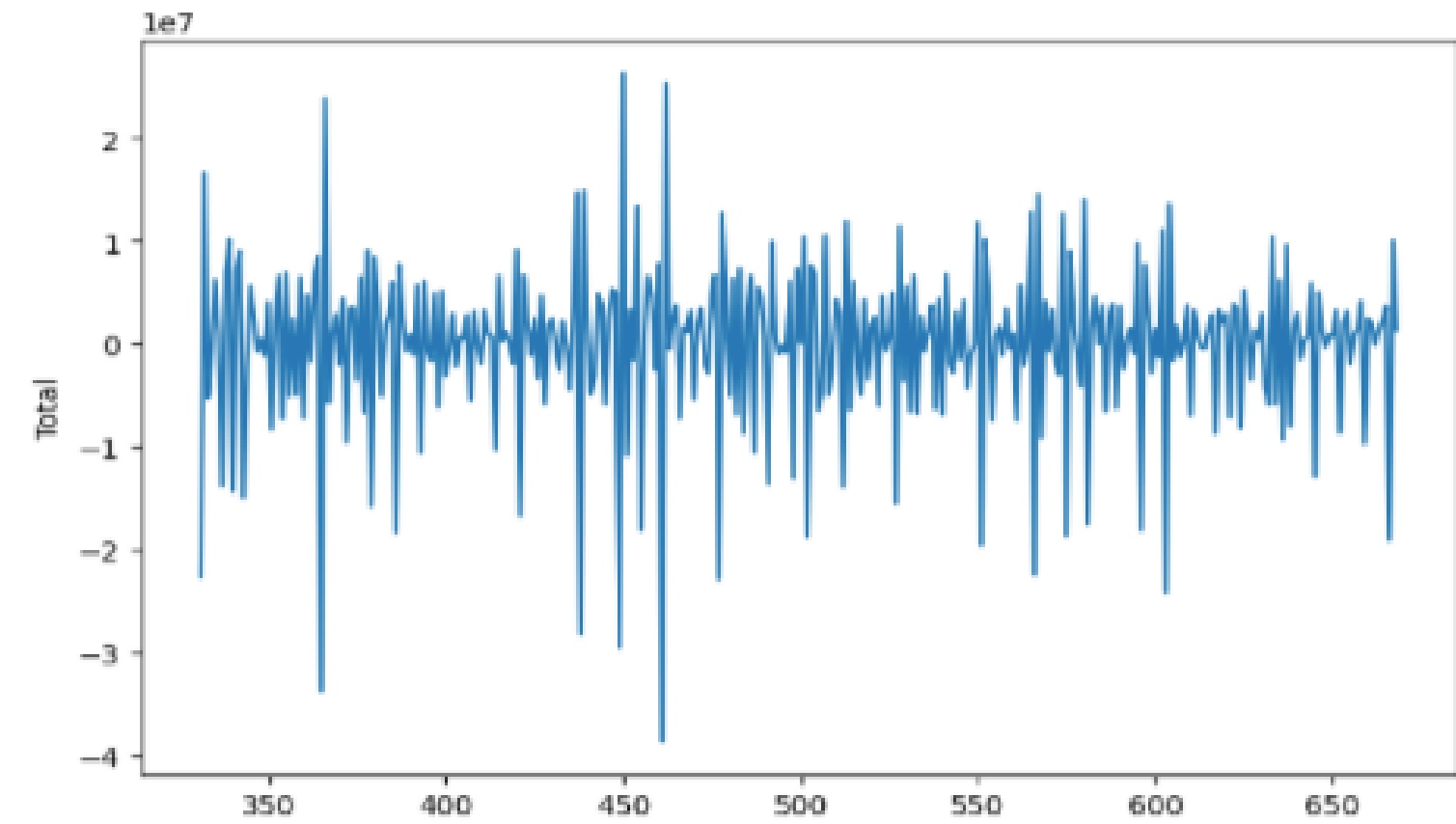
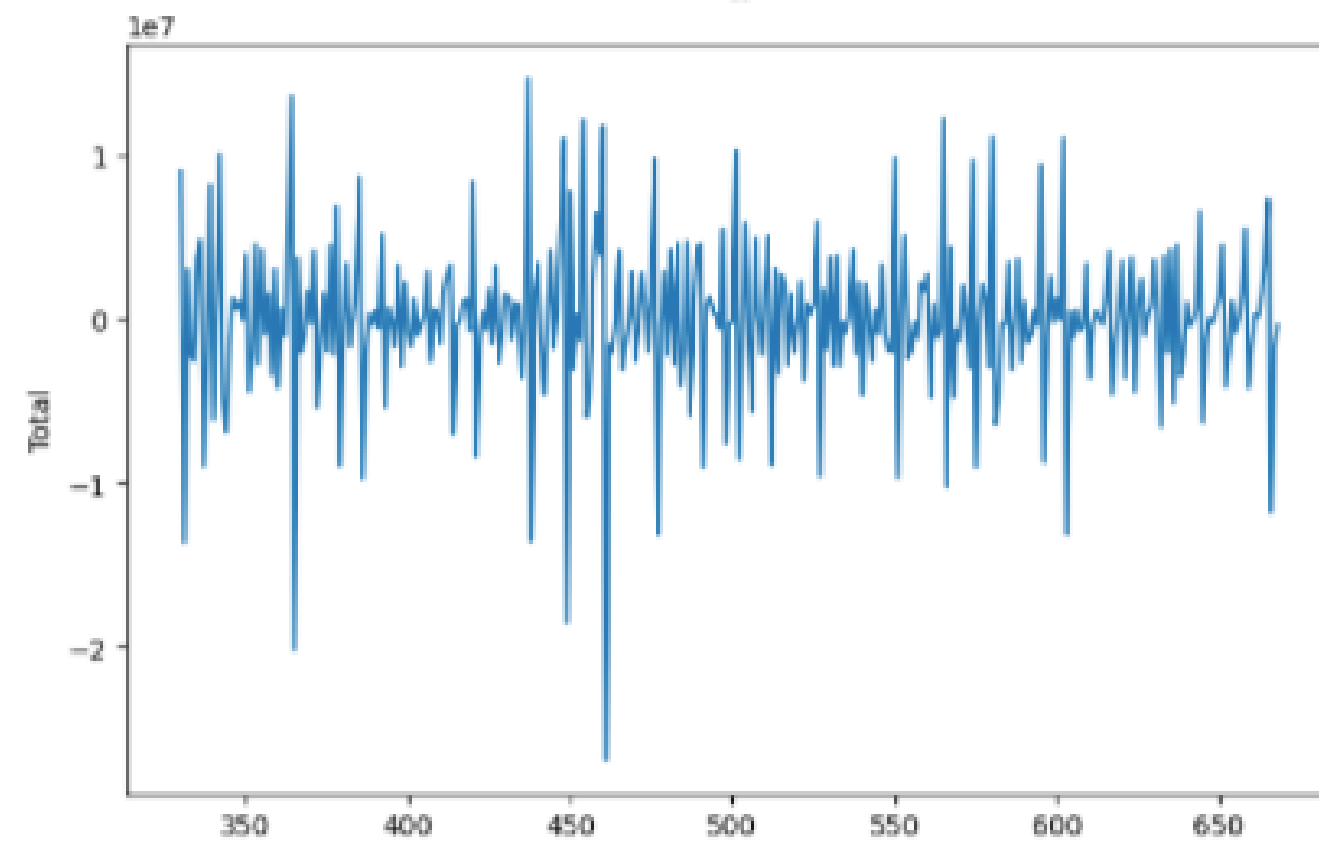
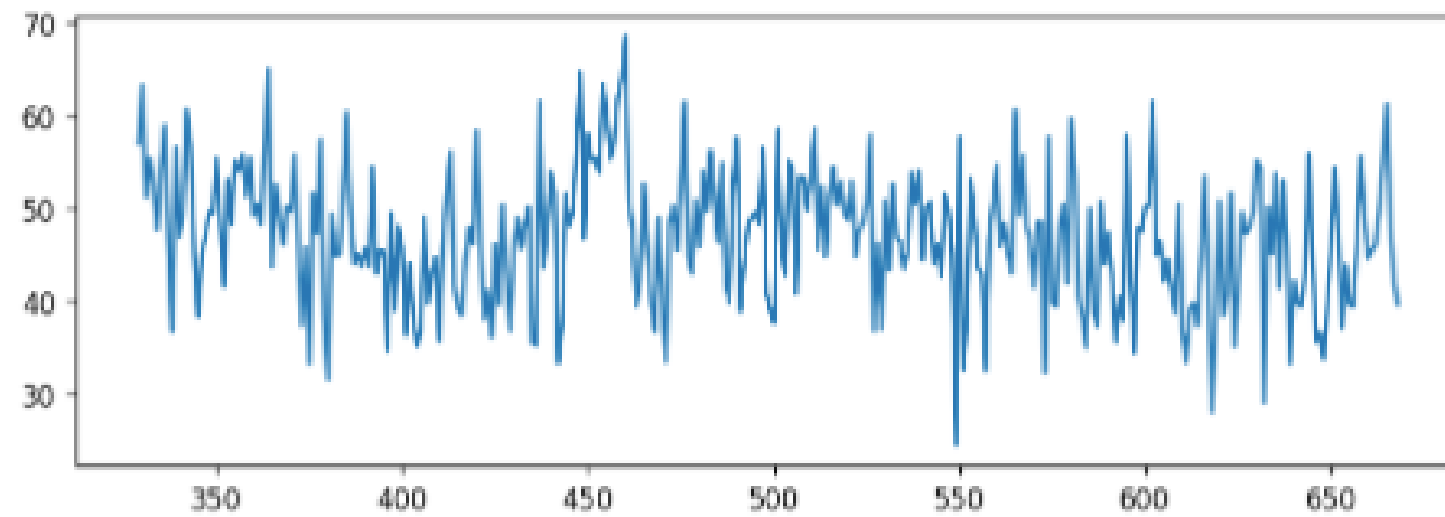


Boxcox Transformation

$$y_i^{(\lambda)} = \begin{cases} \frac{y_i^\lambda - 1}{\lambda} & \text{if } \lambda \neq 0, \\ \ln(y_i) & \text{if } \lambda = 0, \end{cases}$$

total		new_total
275802.0		37.421160
1770315.0		51.738133
502000.0		41.600945
1040081.0		47.223218
20000.0		22.984650

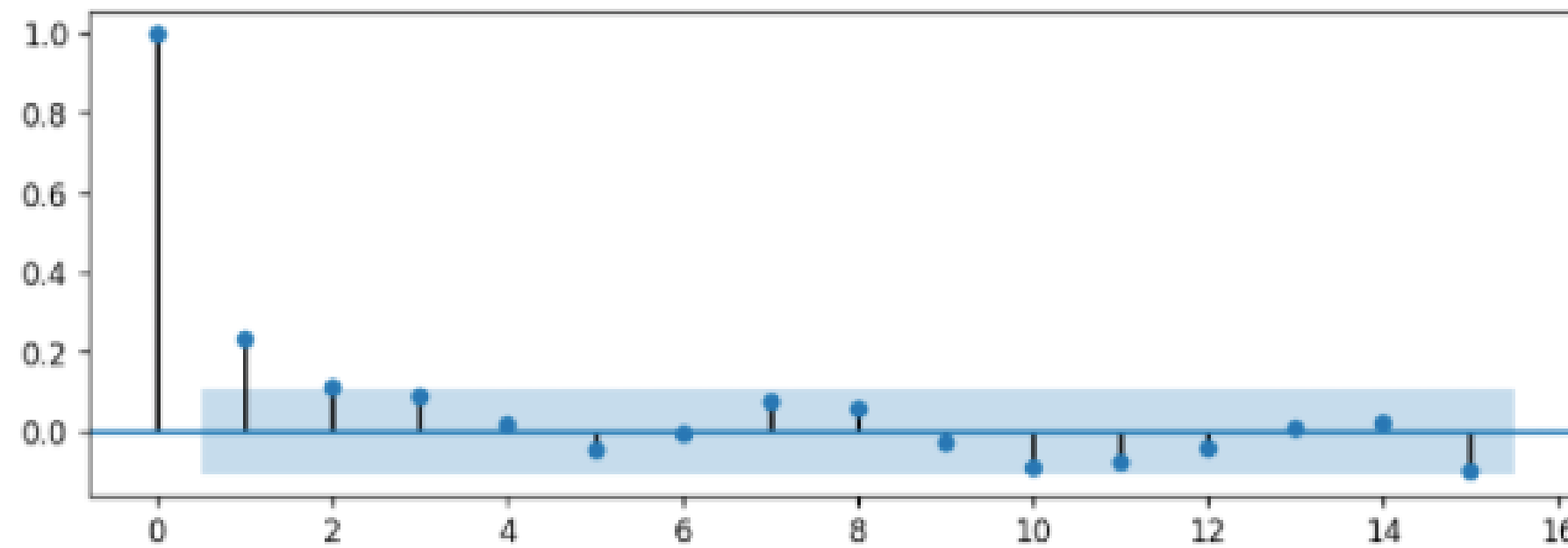




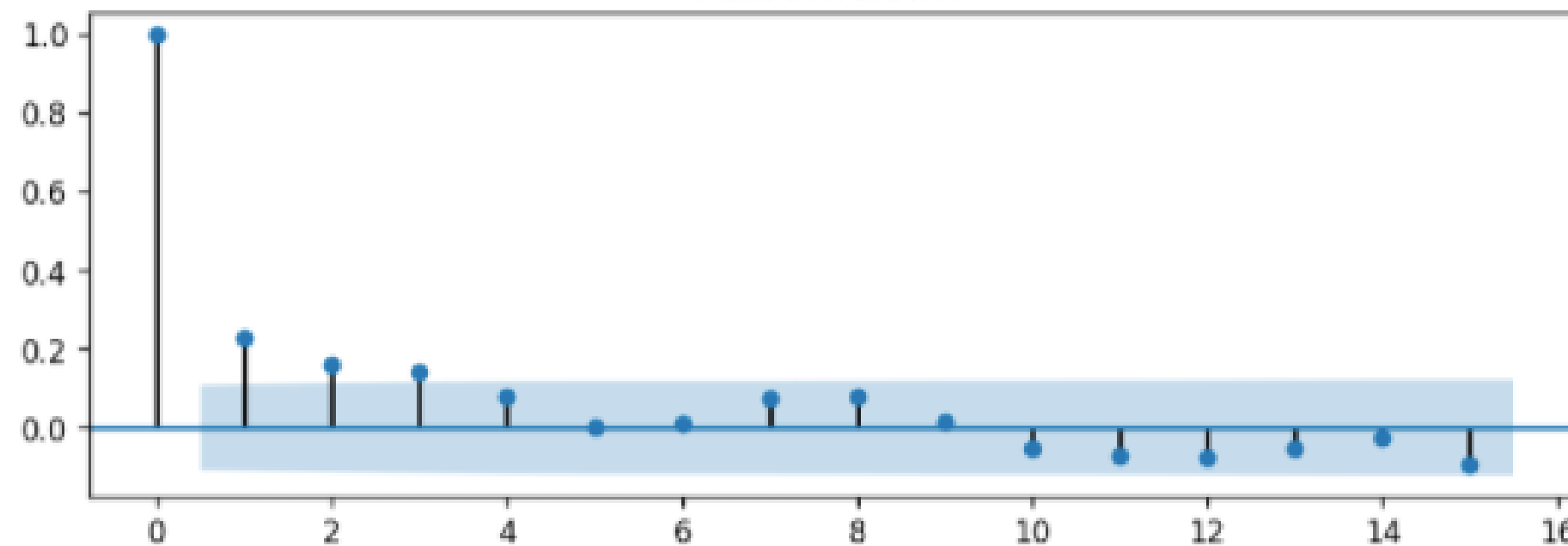
Differencing

Find The Orde of Model (p,d,q)

Partial Autocorrelation



Autocorrelation



Model Tentative

(0,0,1)

(0,0,2)

(0,0,3)

(1,0,0)

(1,0,1)

(1,0,2)

(1,0,3)

(2,0,1)

(2,0,2)

(2,0,3)

Donasi Guest	
Orde	AIC
(0,1,1)	2469.35
(1,1,0)	2533.86
(2,1,0)	2504.54
(3,1,0)	2496.42
(1,1,1)	2457.5
(2,1,1)	2455.26

Donasi User	
Orde	AIC
(0,1,1)	2300.62
(1,1,0)	2398.78
(2,1,0)	2354.41
(3,1,0)	2342.23
(1,1,1)	2298.76

Zakat Guest	
Order	AIC
(0,1,1)	-0.127
(1,1,0)	8.859
(2,1,0)	5.33
(1,1,1)	-1.646

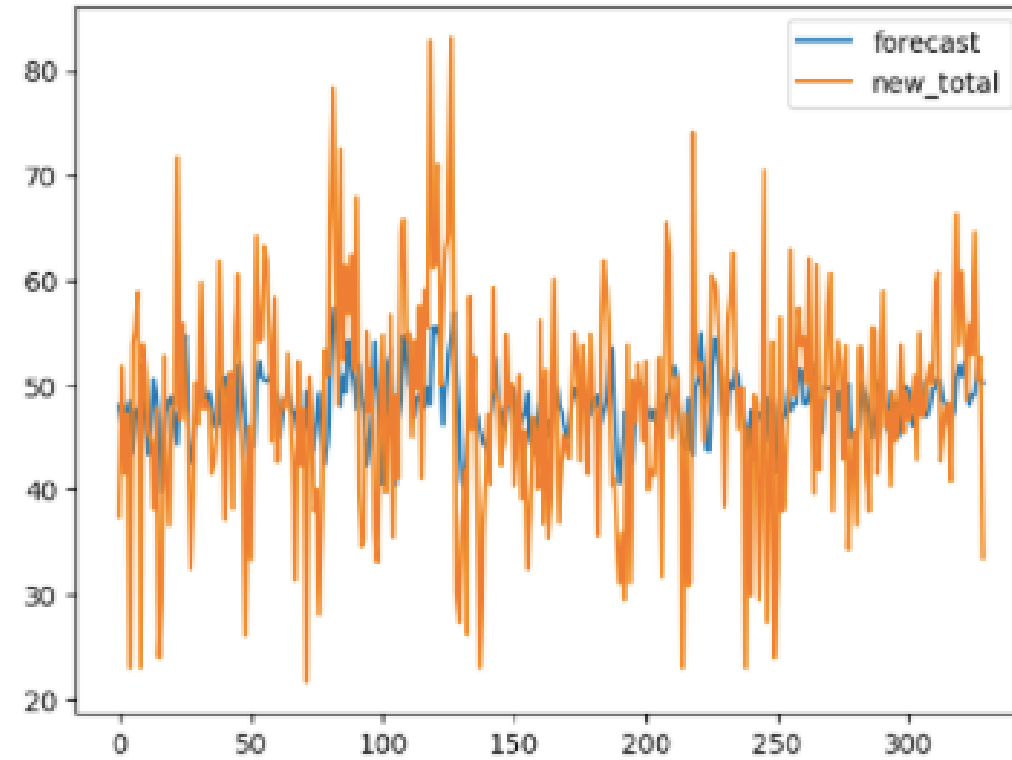
Zakat User	
Orde	AIC
(0,1,1)	1225.14
(1,1,0)	1276.93
(2,1,0)	1257.18
(3,1,0)	1255.03

Model Terbaik	Orde	AIC
Donasi Guest	(2,0,3)	2452.14
Donasi User	(1,1,1)	2298.76
Zakat Guest	(1,0,0)	-6.721
Zakat User	(0,1,1)	1225.14

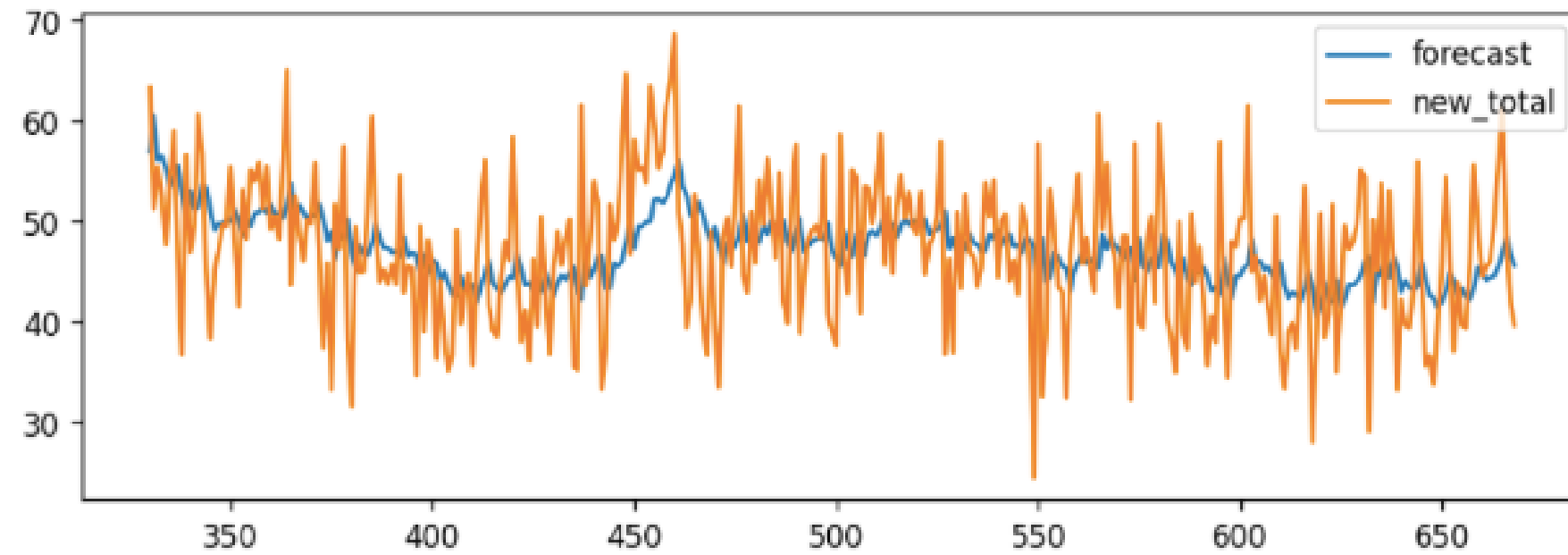


Actual VS Prediction

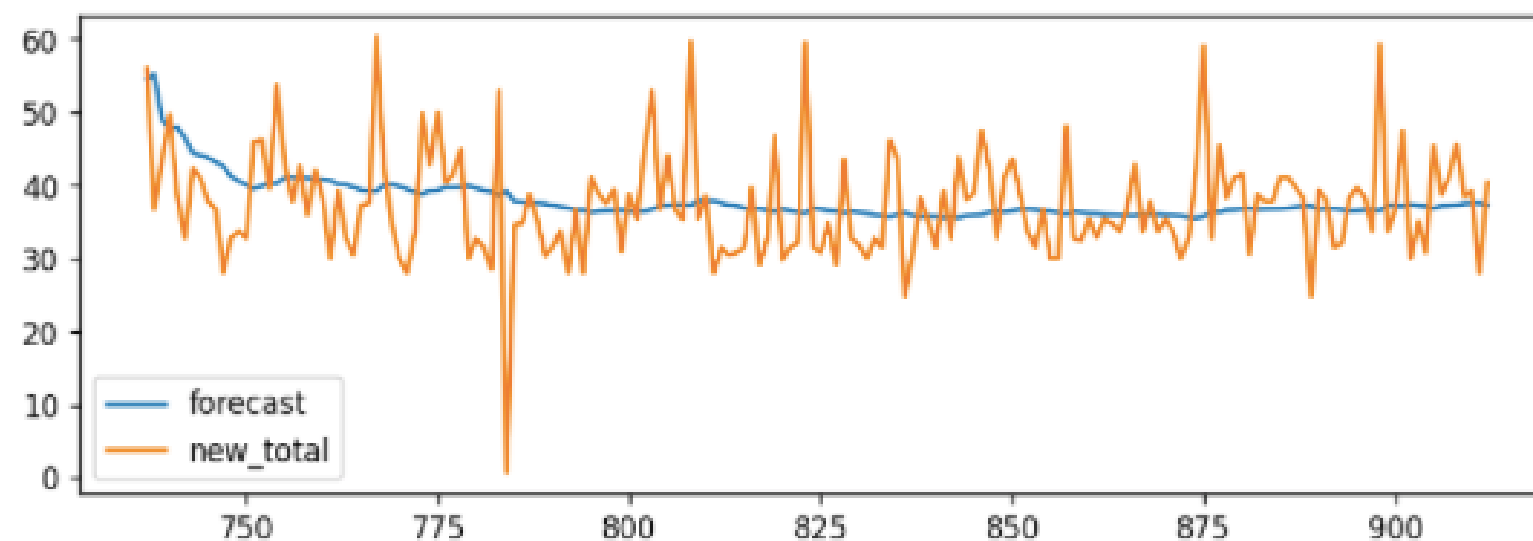
Donasi Guest



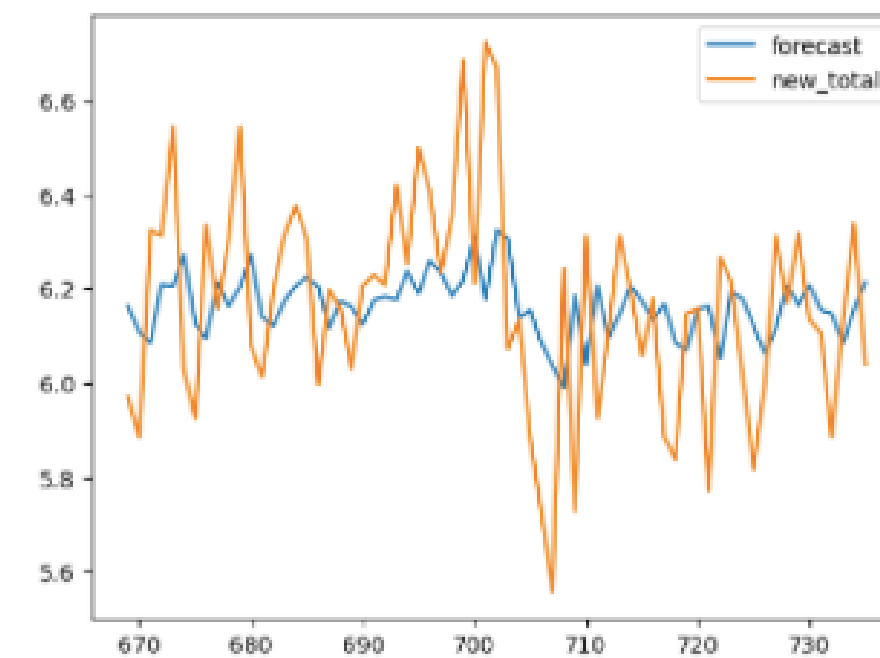
Donasi User



Zakat User

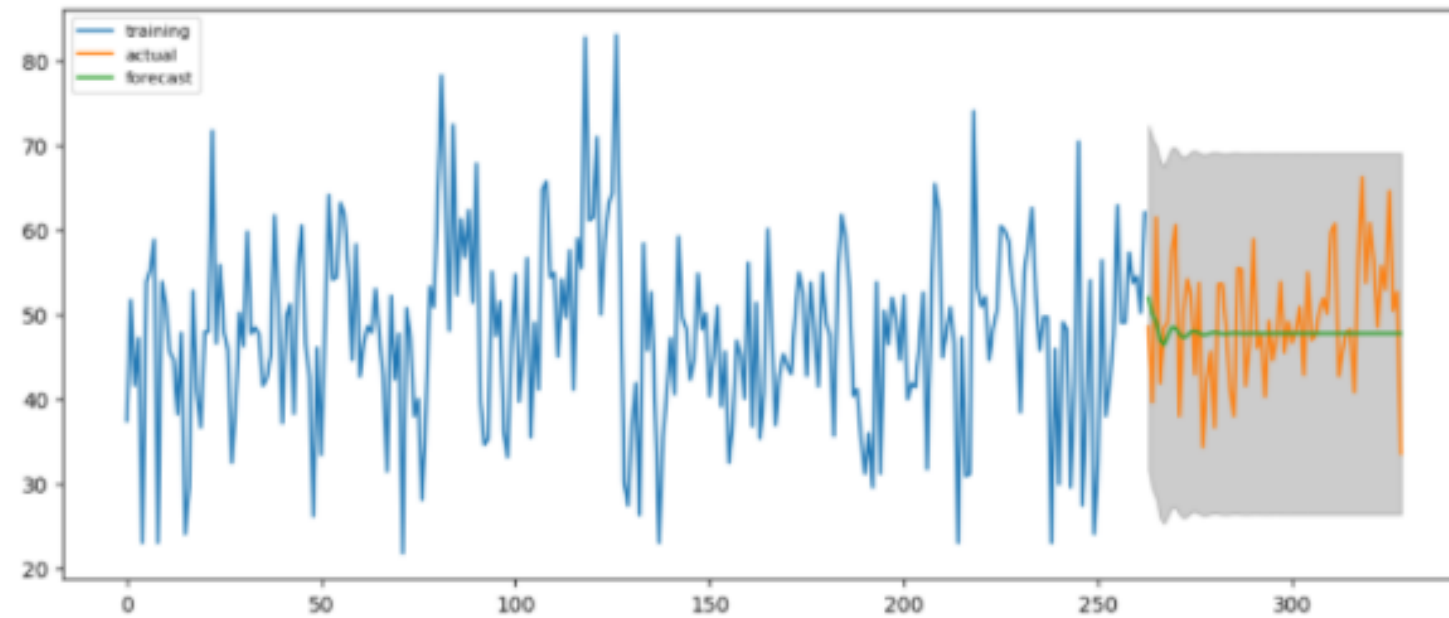


Zakat Guest

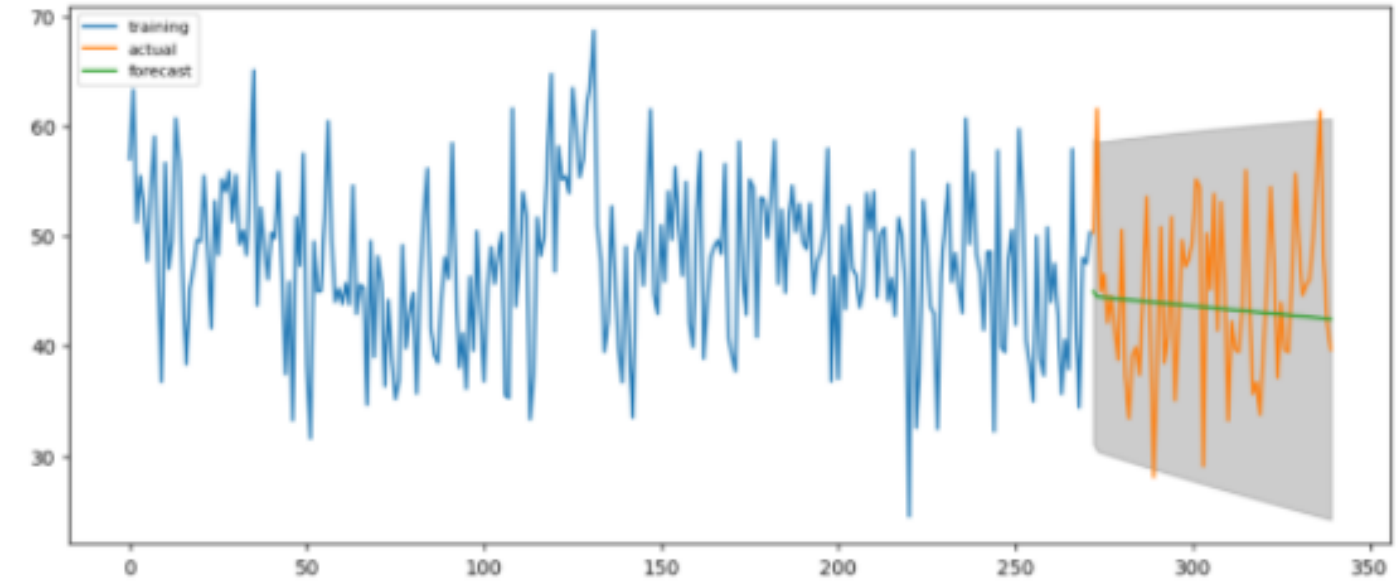


Actual VS Forecast

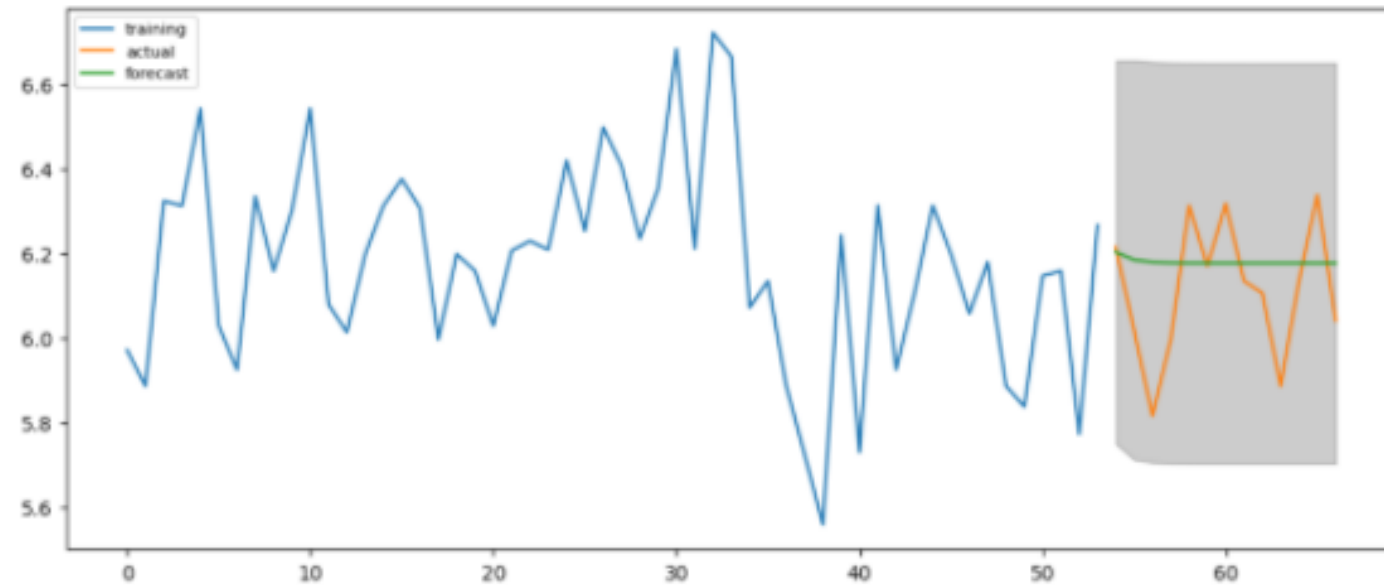
Donasi Guest



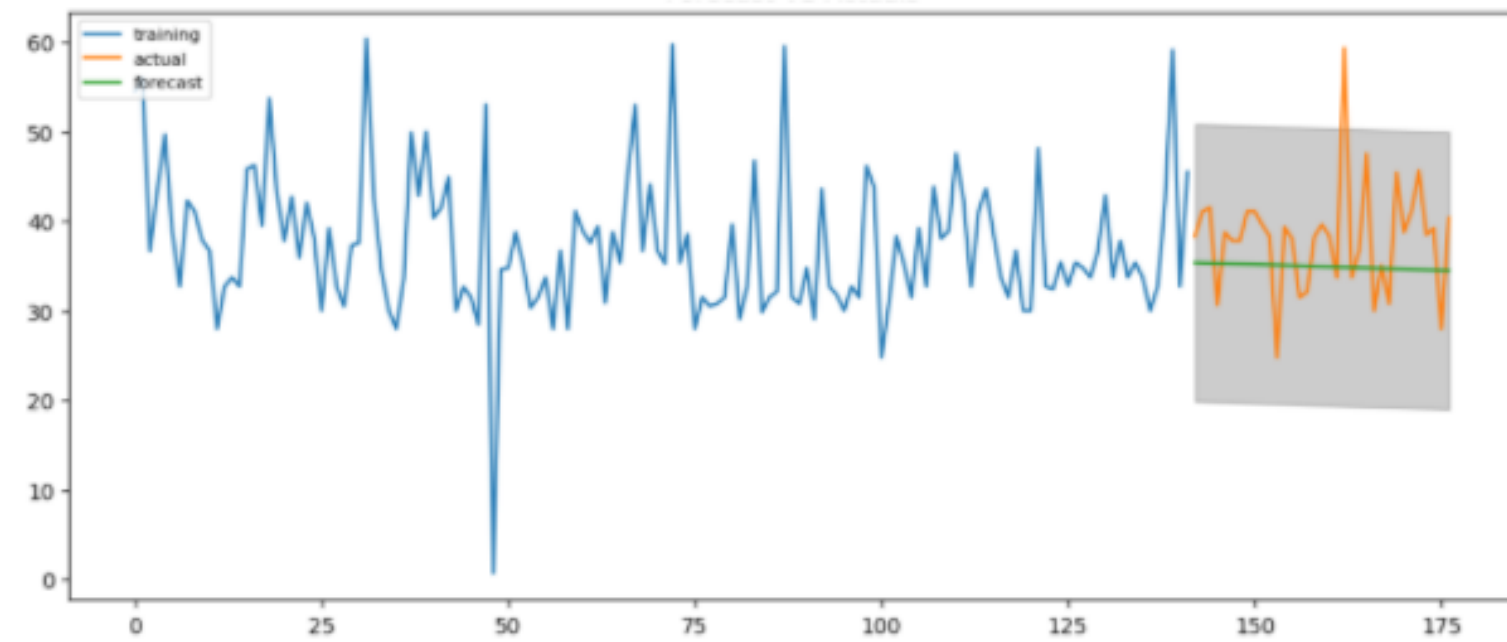
Donasi User



Zakat Guest



Zakat User

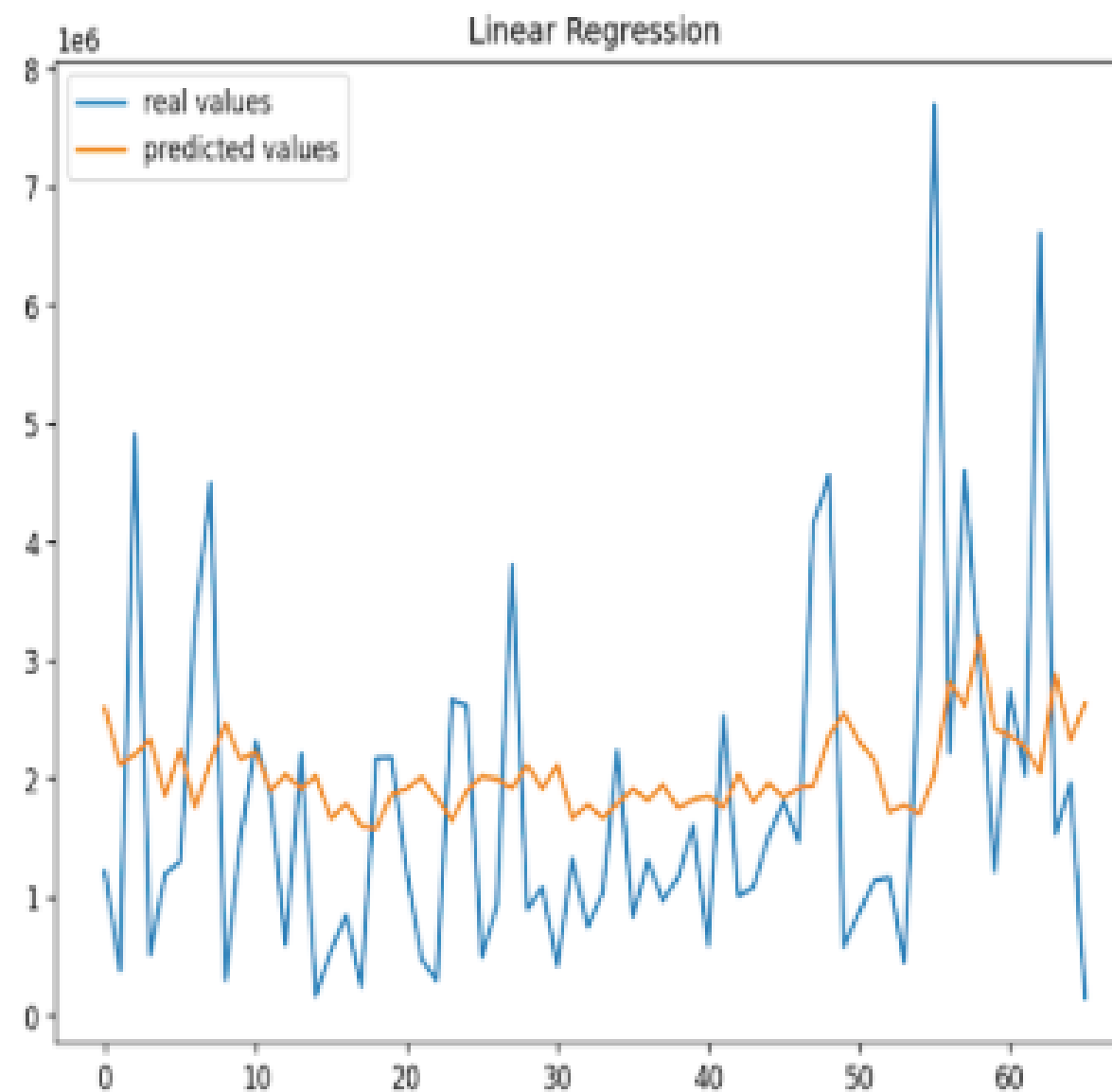
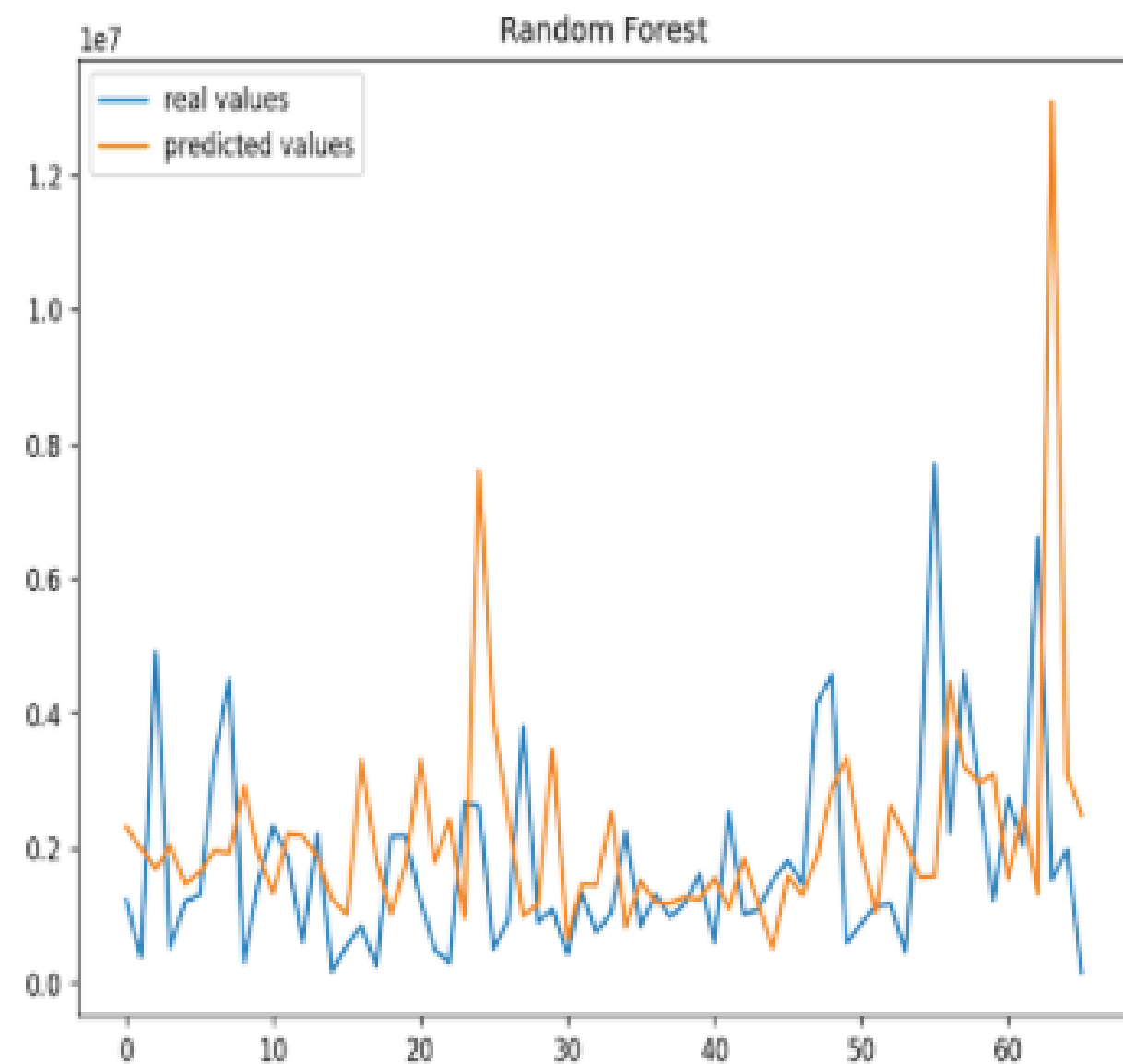


Forecasting Model use Machine Learning Approach

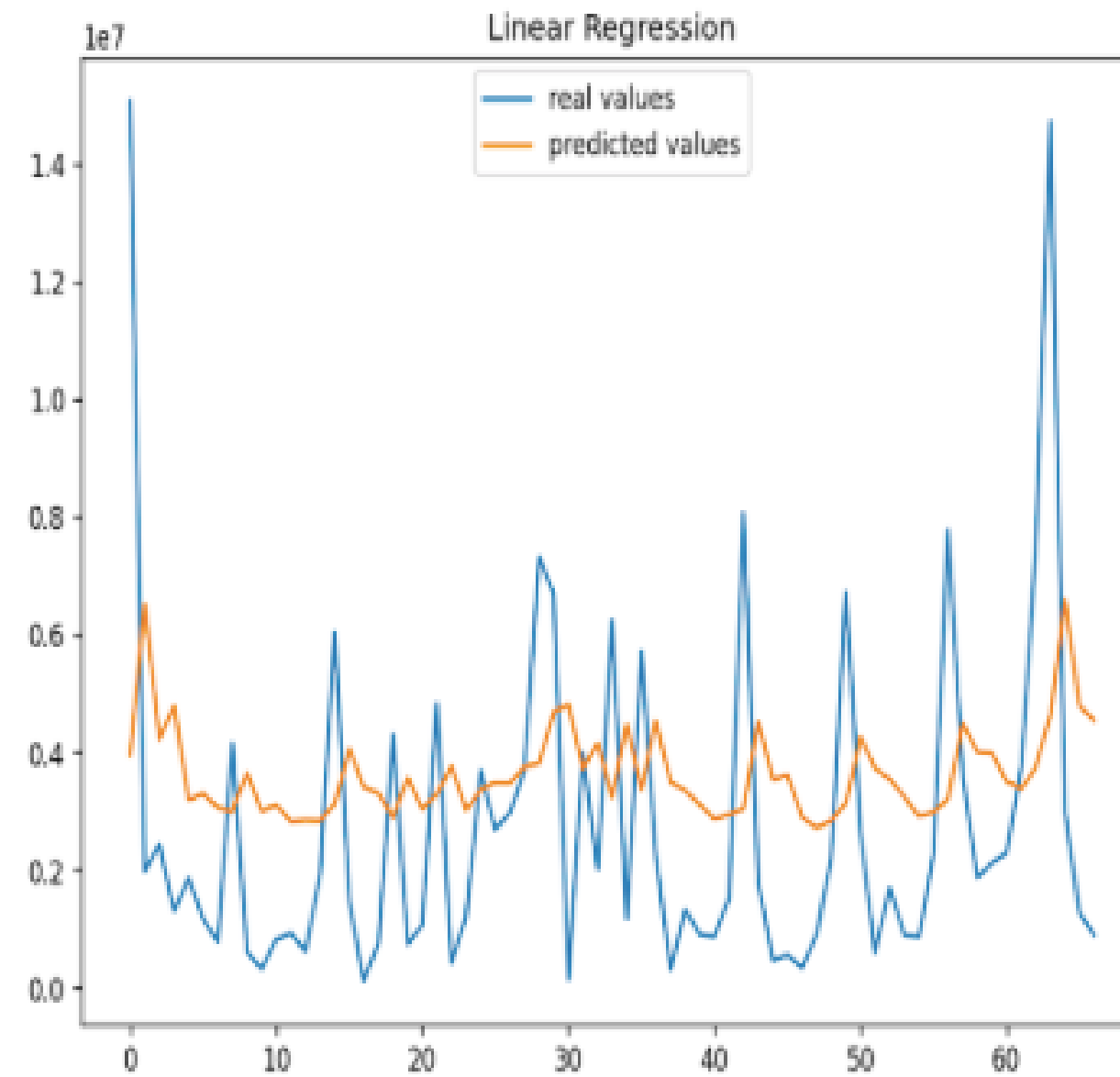
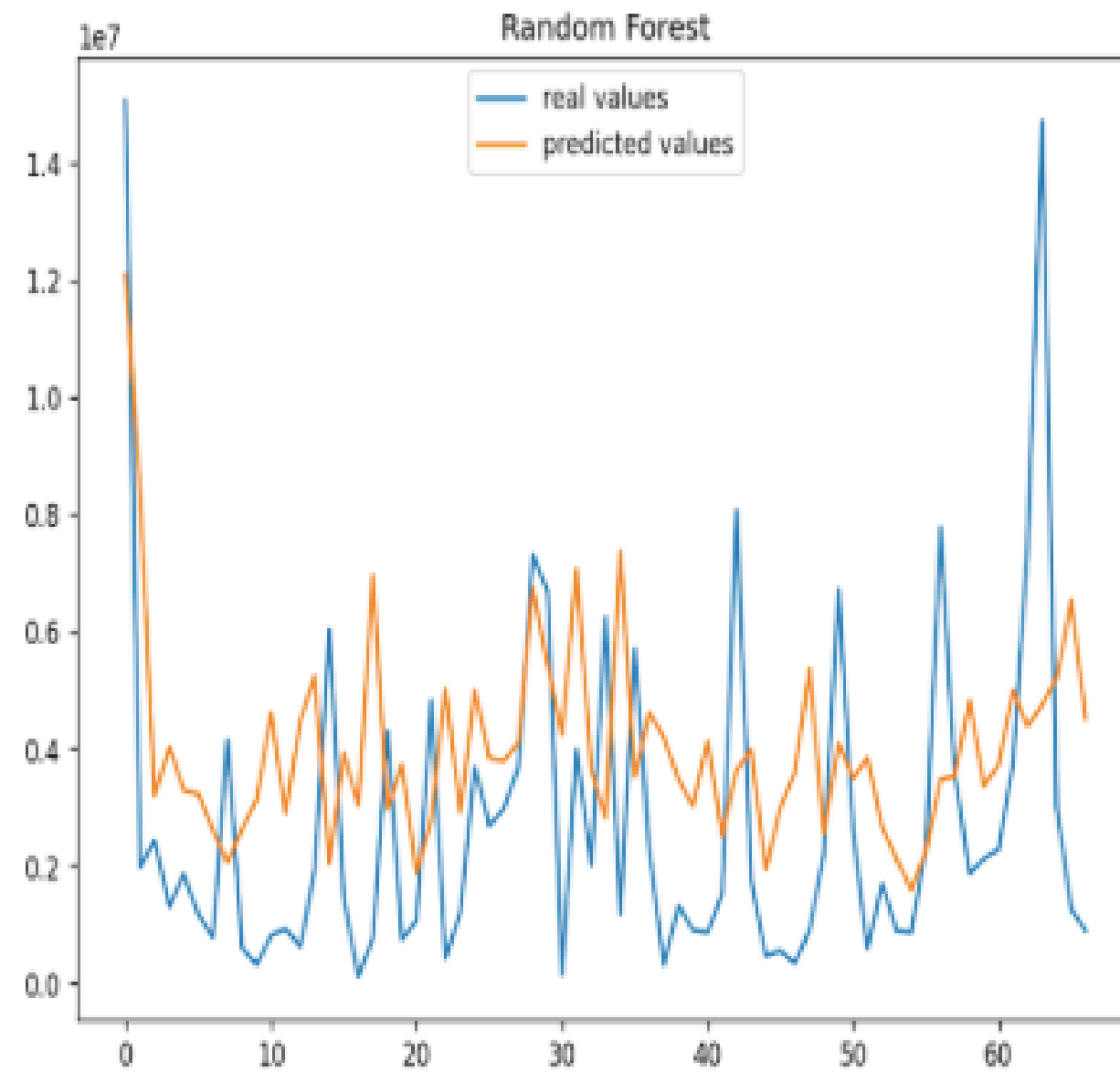
Pada dataset Online Mizan Amanah ini diaplikasikan dua buah model machine learning untuk memprediksi total donasi yang akan diperoleh pada periode yang akan datang, diantaranya:

- 1 Linear Regression
- 2 Random Forest

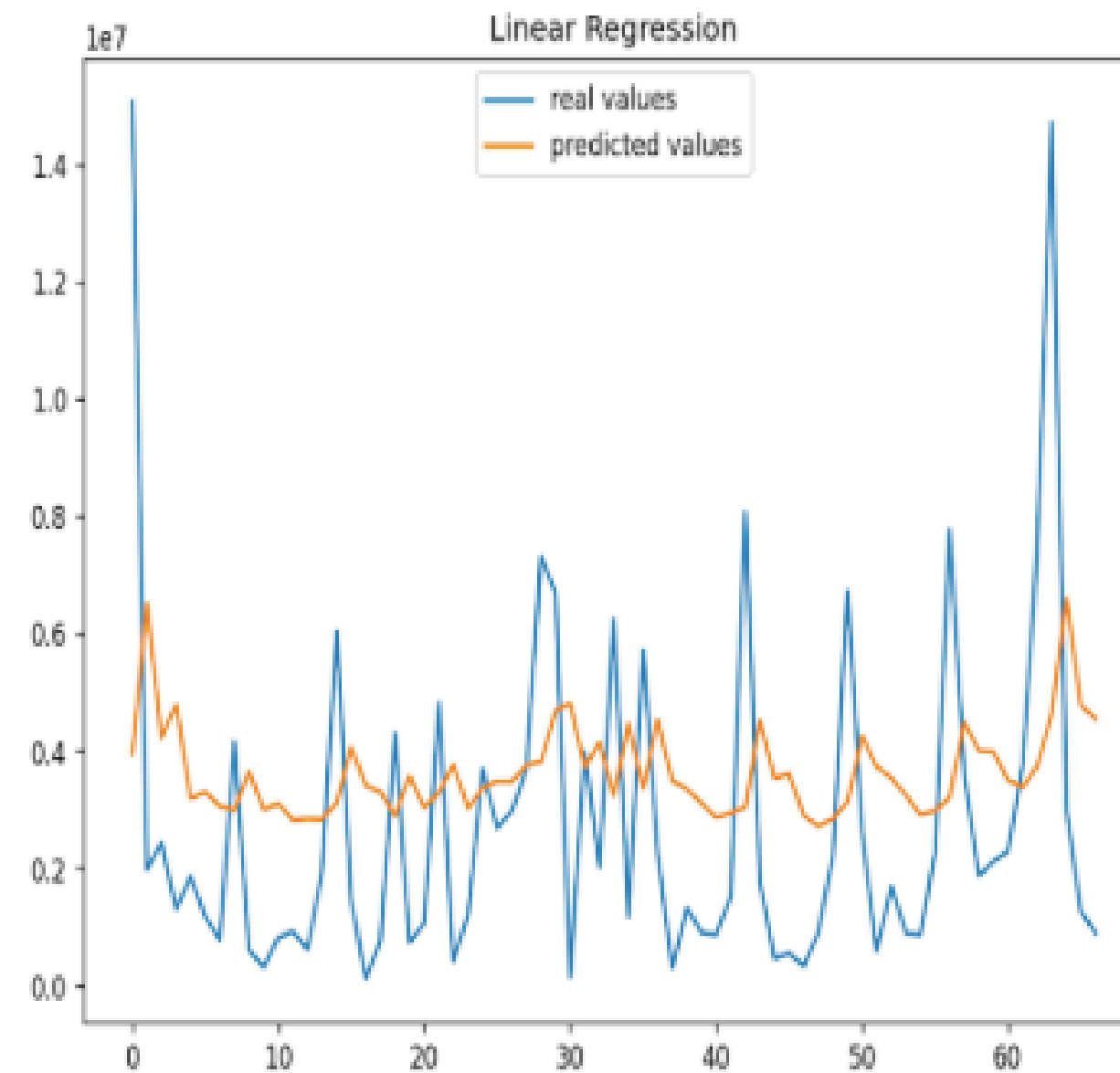
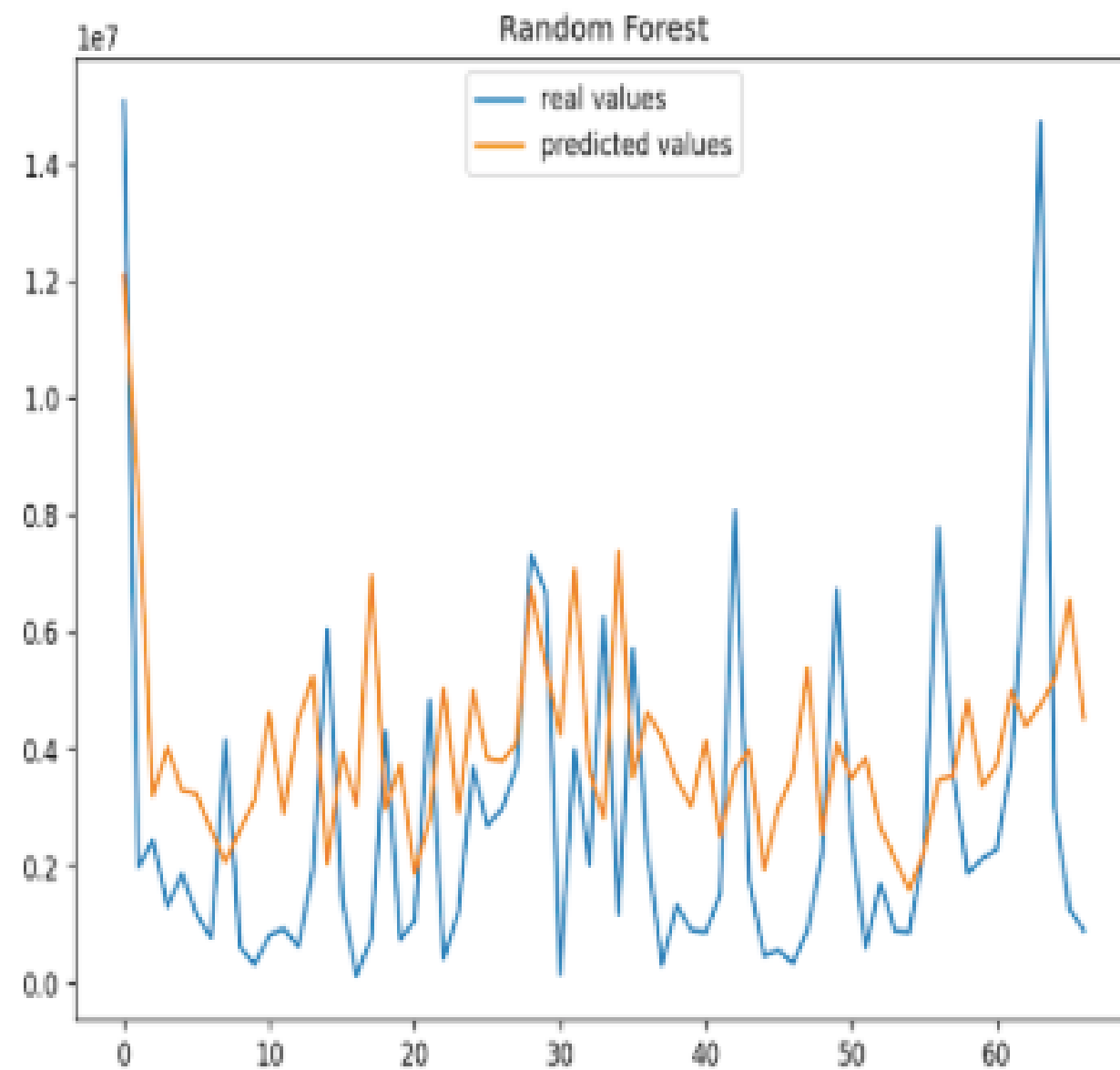
Basic Model Machine Learning Data Donasi Guest



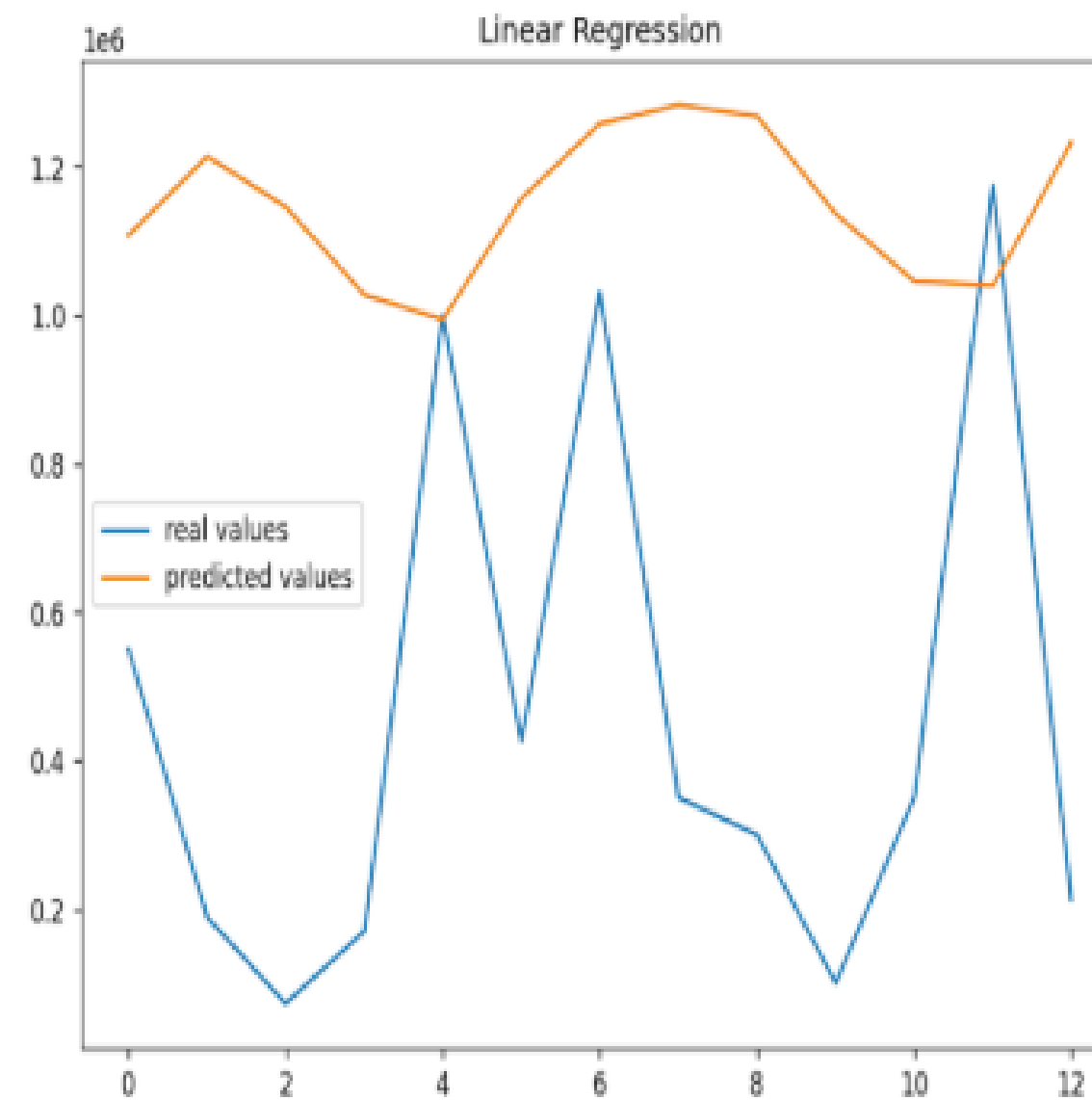
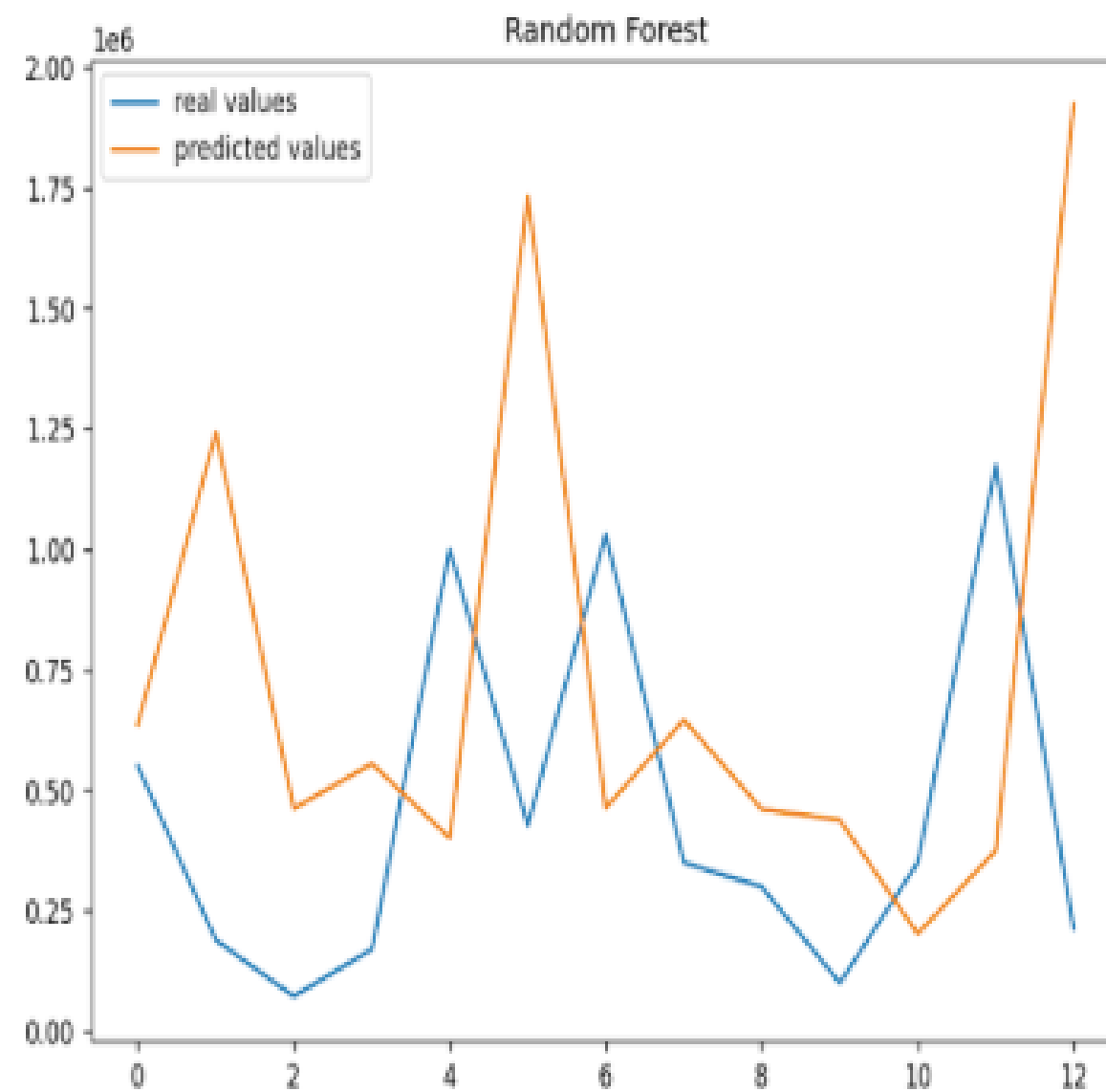
Basic Model Machine Learning Data Donasi User



Basic Model Machine Learning Data Zakat Guest



Basic Model Machine Learning Data Zakat User



Model Terbaik Peramalan Total Donasi Guest

Model	MAE
Exponential Smoothing	1304782.192
ARIMA (2,0,3)	1061351.409
Random Forest Regression	1581882.649
Linear Regression	1203772.882

Model Terbaik Peramalan Total Donasi User

Model	MAE
Exponential Smoothing	2232544.686
ARIMA (1,1,1)	1942643.618
Random Forest Regression	2566168.509
Linear Regression	2556040.146

Model Terbaik Peramalan Total Zakat Guest

Model	MAE
Exponential Smoothing	533027.480
ARIMA (1,0,0)	288945.462
Random Forest Regression	603161.286
Linear Regression	713053.474

Model Terbaik Peramalan Total Zakat User

Model	MAE
Exponential Smoothing	1078333.698
ARIMA (0,1,1)	717661.057
Random Forest Regression	980844.107
Linear Regression	776049.268

Data Visualization

Online Mizan Amanah

Dashboard

Dashboard Mizan Amanah

Reset

Share

Edit



- Dias Indah Melisawati
- Louis Madaerdo Sotarjua
- Siti Hafshah
- Siti Hamidah
- Taqiyuddin Yazid Zaidan

Dashboard Donasi Mizan Amanah

Jenis Transaksi

Periode

Jenis Donasi

Jumlah Donatur
9.749
Orang

Total Donasi
2,294,522,935

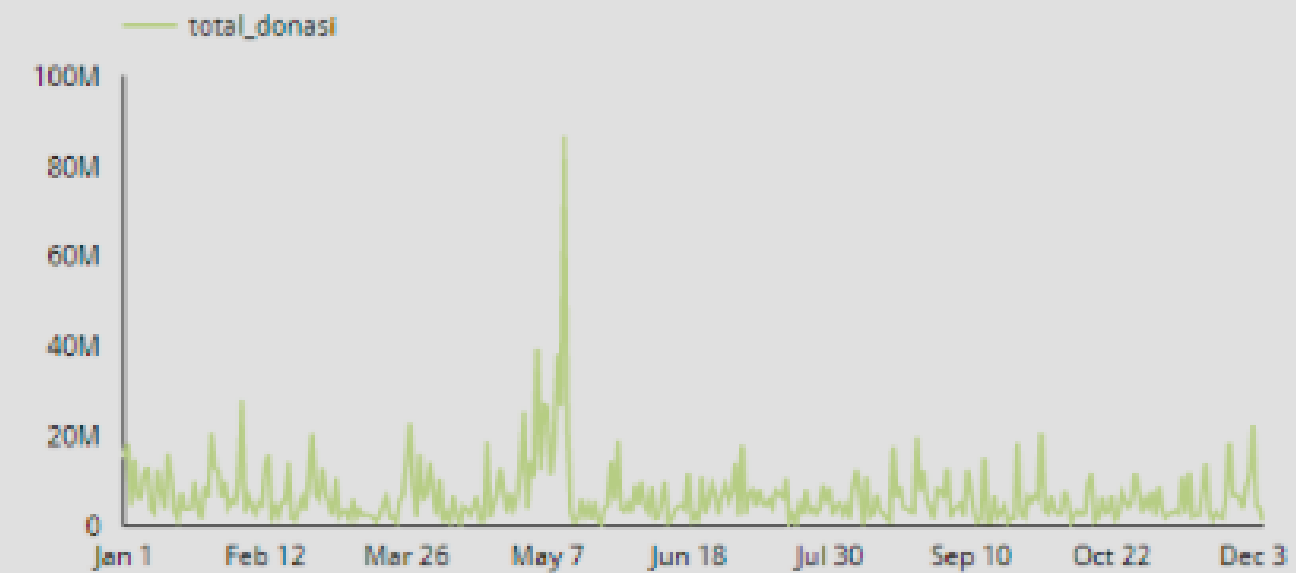
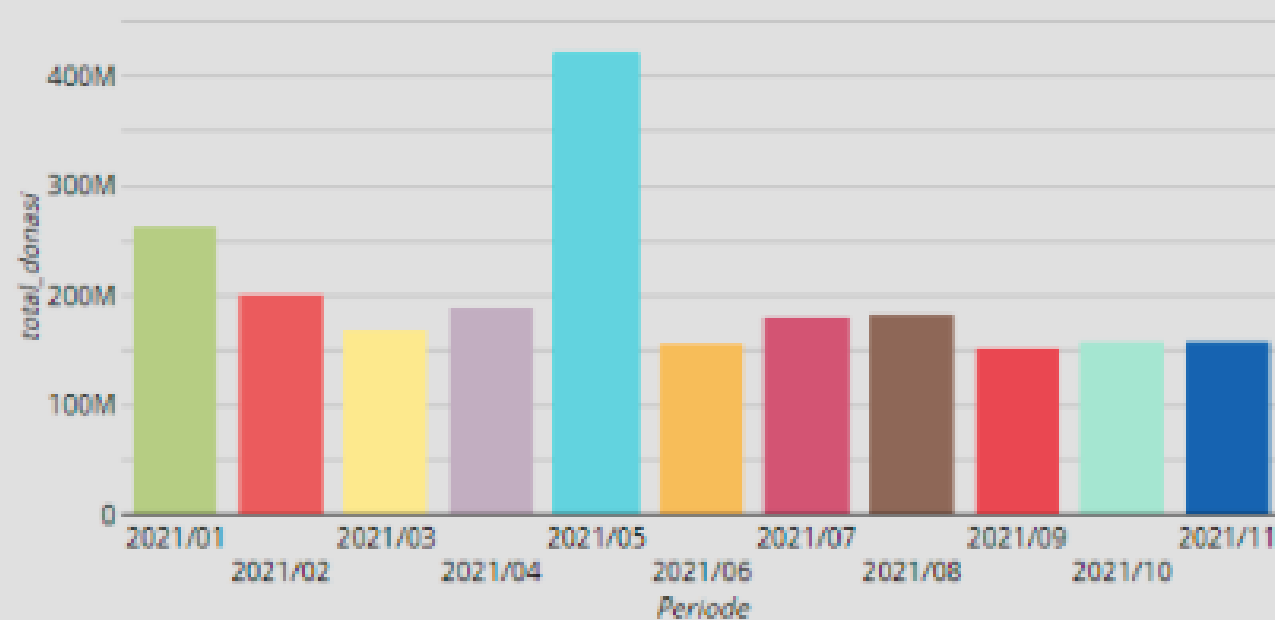
Platform

Metode P...

Jenis Donasi
177

Platform
8

Metode Pembayaran
59



THANK
YOU

QA

