ARCHITECTURE DIAGRAM

DATA COLLECTION

SOURCE: CLIENT PROVIDED SALES DATA ON WEEKLY BASIS.

SIMULATED SALES DATA AND CONVERTED IT INTO CSV FORMAT.

IMPORTING DATA

INTO MYSQL DB

MYSQL CONNECTOR PYTHON

Connection request

Connected

Result data

mysql.connector.connect()

connection.cursor()

cursor.execute()

PYTHON APPLICATION

DATA PREPROCESSING

TYPE CASTING:

CONVERTING OBJECT DATATYPE INTO INTEGER AND INDEX INTO DATETIME FORMAT.

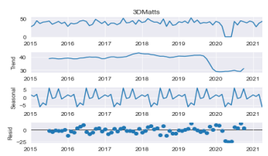
RESAMPLING:

RESAMPLE WEEKLY DATA INTO MONTHLY DATA.

EXPLORATORY DATA ANALYSIS

UNIVARIATE ANALYSIS:

- TREND PLOT WITH ROLLING STATISTICS.
- DECOMPOSTION PLOT: FOR OBSERVING TREND AND SEASONALITY PATTERN.
- ACF PLOT AND PACF PLOT: FOR SELECTING AUTO REGRESSIVE AND MOVING AVEARGE PARAMETERS.



STATIONARITY

NO

TRANSFORM DATA

YES

MODEL BUIDING

MODEL USED:

MODEL BASED APPROACH USING **SEASONAL ARIMA**

HOLT WINTER'S METHOD WITH TRIPLE EXPONENTIAL SMOOTHING.

FB PROPHET

AUTO TIMESERIES

MODEL BUILDING STEPS:

- SEQUENTIAL TRAIN TEST SPLIT.
- HYPERPARAMETER TUNING.
- TRAIN AND VALIDATE MODEL.
- TESTING ON TEST DATA.
- BEST MODEL SELECTION.
- TRAINING ON WHOLE DATA.

MODEL EVALUATION

MODEL EVALUATION METRICS USED:

LEAST AIC VALUE WITH LEAST ERROR COUNT.

ERROR METRICS USED:

MEAN ABSOLUTE PERCENTAGE ERROR

RMSE

SELECT BEST MODEL BASED ON EVALUATION METRICS

MODEL DEPLOYMENT

SOFTWARE USED:

STREAMLIT WEB APPLICATION FRAMEWORK

FORECASTING NEXT 12 MONTH SALES WITH REACTIVE SALES REPORT AND TREND AND SEASONALITY PLOT

FOR BETTER RESULT AND COMPATIBILITY APP VERSION CONTROL REQUIRED.

ARCHITECTURE DIAGRAM