PROJECT DEVELOPMENT – OPTIMIZING ENERGY DEMAND AND CONSUMPTION THROUGH DATA-DRIVEN STRATEGIES

COLLEGE CODE: 8203

COLLEGE NAME: A.V.C COLLEGE OF ENGINEERING

TECHNOLOGY: DATA ANALYTICS

TOTAL NO. OF STUDENTS IN A GROUP: 5

TEAM NAME: "TECH TITANS**"**

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DATA COLLECTION AND PRE-PROCESSING:

1.DATA ACQUISITION AND PREPARATION:

Data Collection Methods:

An Optimizing energy demand and consumption dataset typically includes information about energy consumption data, weather data, sensors networked data, Historical Data. It's invaluable for understanding energy demand and consumption, preferences, and predicting future actions. The energy consumption data was collected from the open source through Kaggle-dataset website.

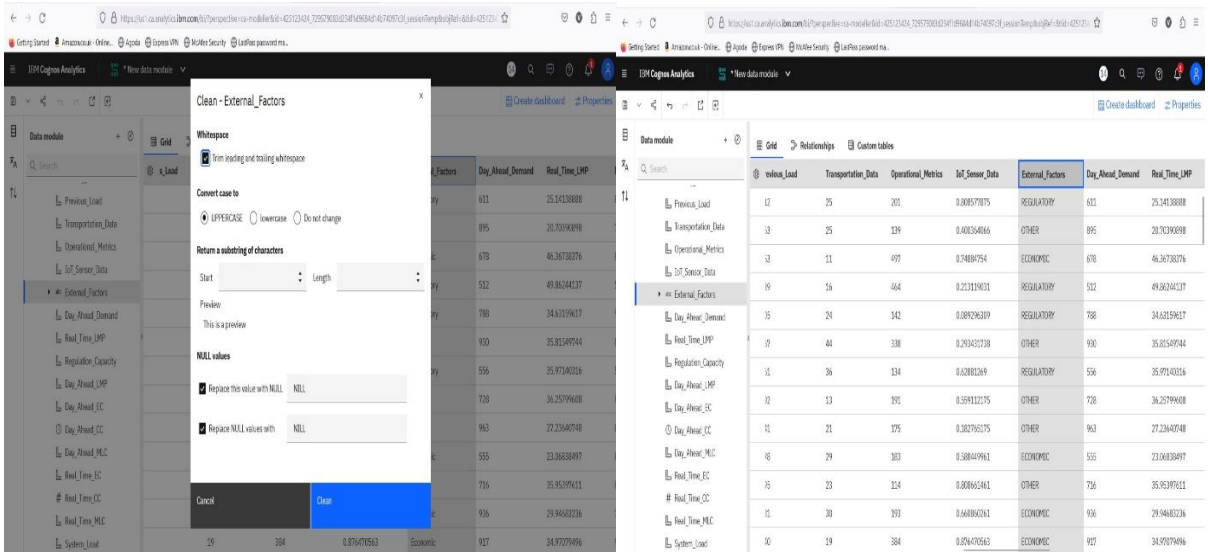
Link:

https://www.kaggle.com/datasets/nasirayub2/electricityload-logistics-iot

2.DATA MODULE CONVERSION:

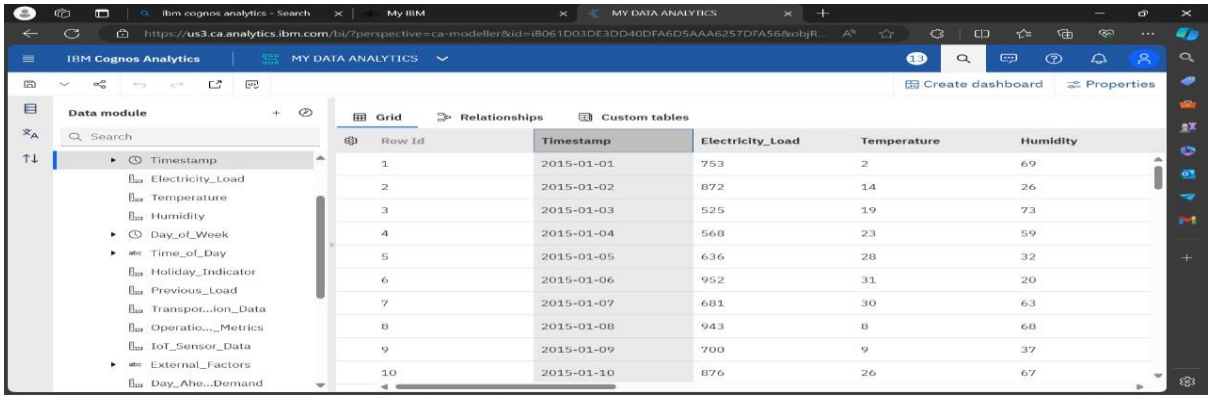
Data cleaning:

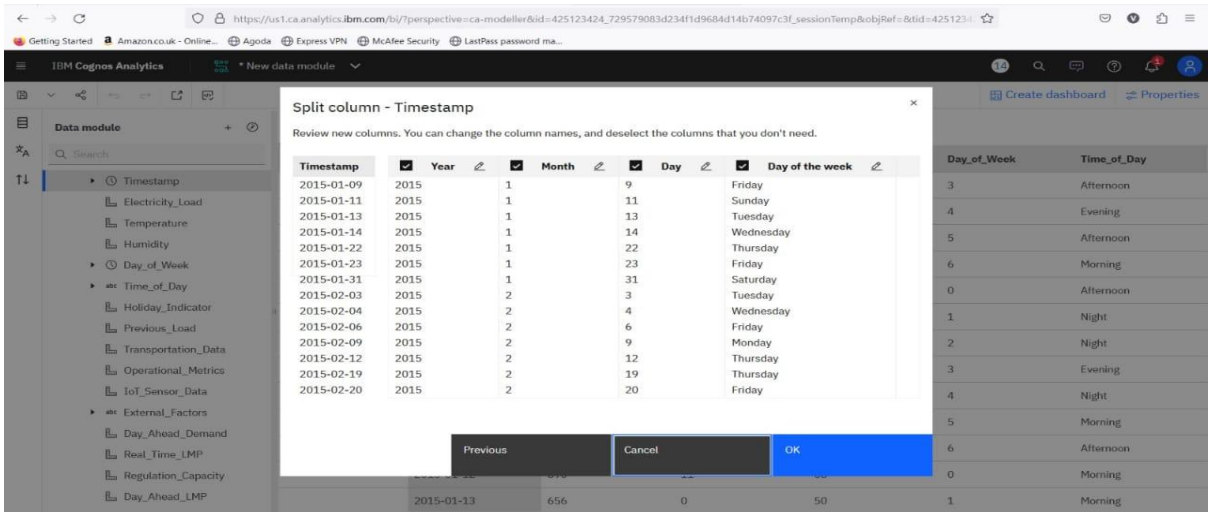
Data cleaning involves identifying and correcting errors or inconsistencies in a dataset to improve its quality and reliability for analysis. Common tasks include removing duplicates, handling missing values, outlier detection and removal and standardizing formats.



Data Integration:

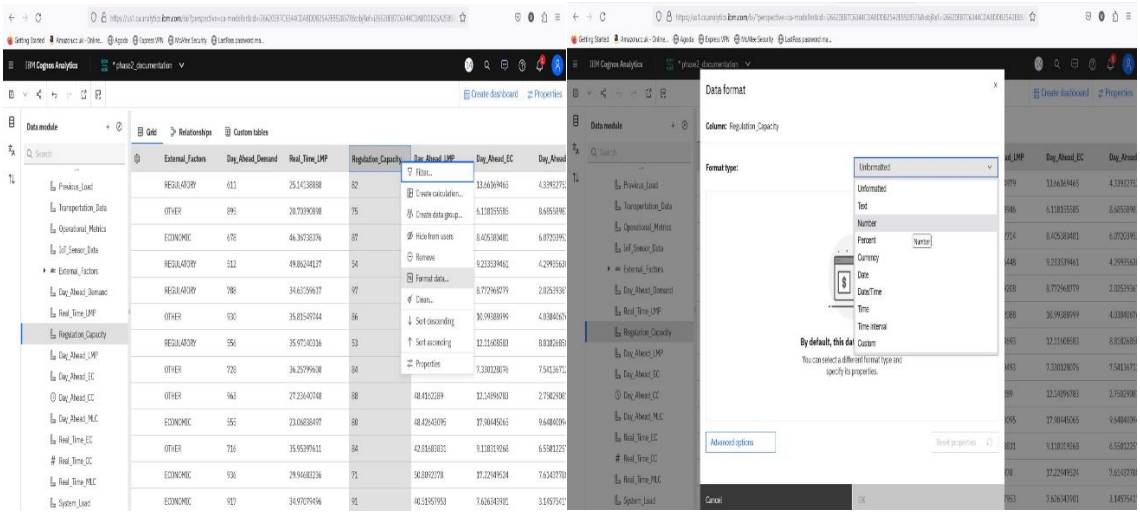
Data integration merges data from multiple sources into a unified view, enabling comprehensive analysis and decision-making. It involves transforming, mapping, and reconciling data to ensure consistency

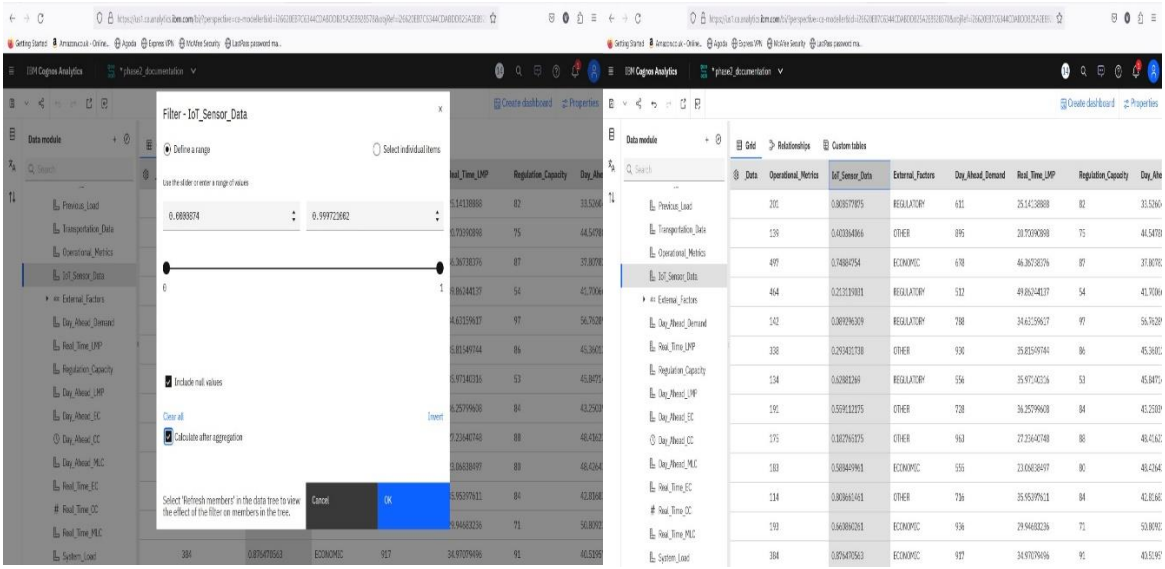




Data Transformation:

Data transformation involves converting data from one format, structure, or representation to another to suit analytical requirements or integration purposes.





3. DATA EXPLORATION (Data Visualization and Data Analysis):

Data Visualization:

Data visualization is the graphical representation of data to uncover insights and communicate findings effectively. Types include charts, graphs, maps, and dashboards, each tailored to display specific patterns or relationships in the data.

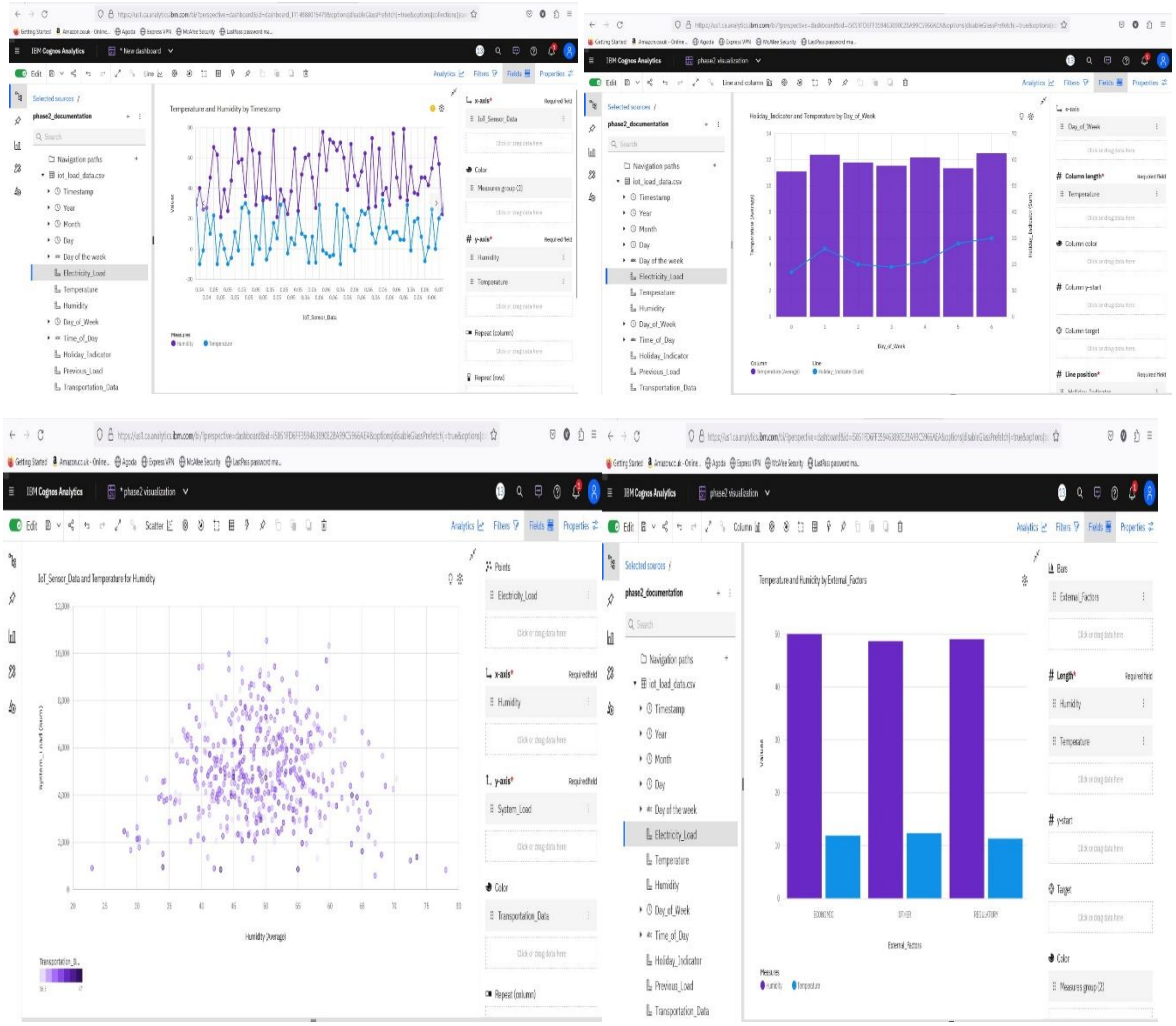
Anomaly Detection:

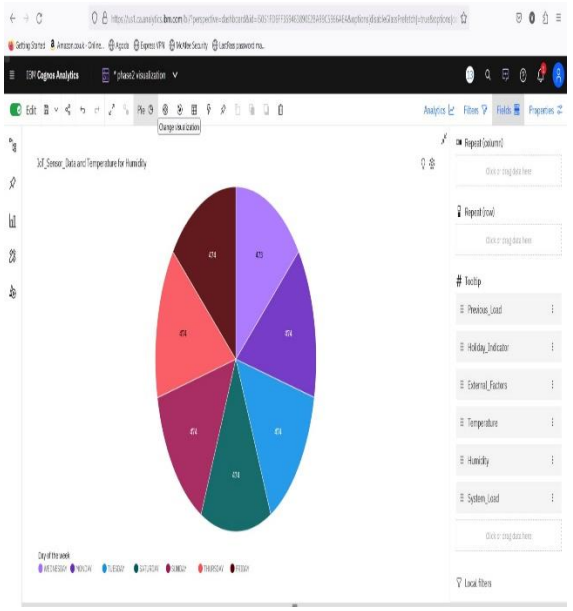
Anomaly detection is the process of identifying data points, events, or patterns that deviate significantly from the norm, potentially indicating errors, outliers, or suspicious activity.

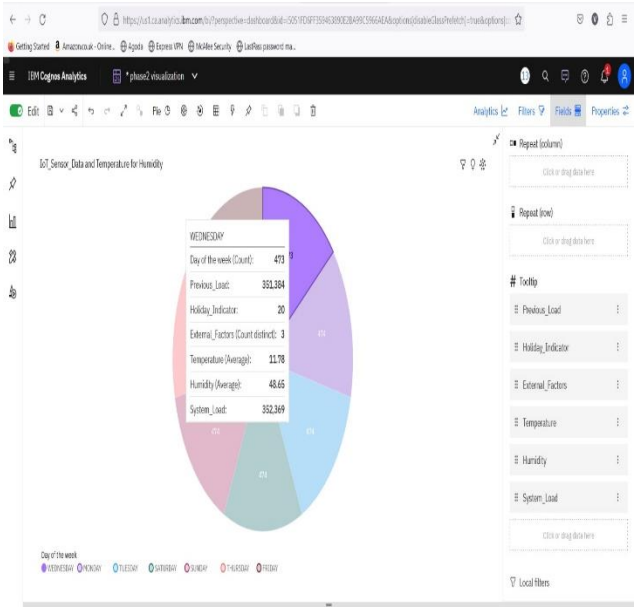
Insights for Further Analysis:

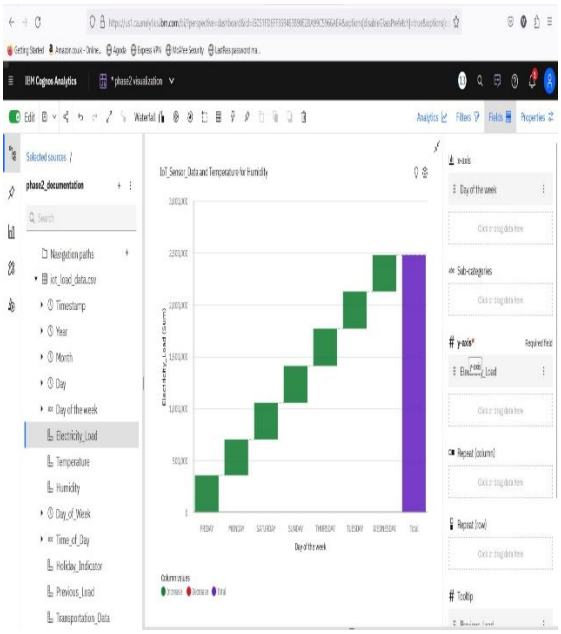
Energy consumption dataset insights could reveal correlations between demographic factors and consumed behavior, guiding external factors. Additionally, identifying temperature, humidity and electricity loads.

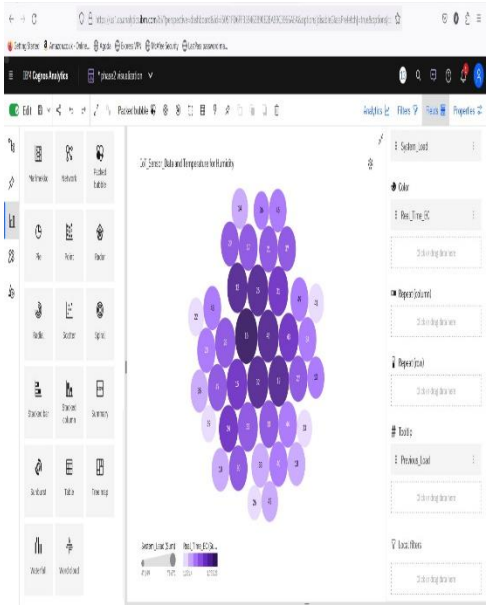
Screenshots:




IBM Cognos Analytics
* phase2 visualization
IoT_Sensor_Data and Temperature for Humidity
Day of the week
Repeat (column)
Repeat (row)
Tooltip
Previous_Load
Holiday_Indicator
External_Factors
Temperature
Humidity
System_Load
Local filters


IBM Cognos Analytics
* phase2 visualization
IoT_Sensor_Data and Temperature for Humidity
WEDNESDAY
Day of the week (Count): 473
Previous_Load: 351,384
Holiday_Indicator: 20
External_Factors (Count distinct): 3
Temperature (Average): 11.78
Humidity (Average): 48.65
System_Load: 352,369
Day of the week
Repeat (column)
Repeat (row)
Tooltip
Local filters


IBM Cognos Analytics
* phase2 visualization
IoT_Sensor_Data and Temperature for Humidity
phase2_documentation
Navigation paths
iot_load_data.csv
Timestamp
Year
Month
Day
Day of the week
Electricity_Load
Temperature
Humidity
Day_of_Week
Time_of_Day
Holiday_Indicator
Previous_Load
Transportation_Data
Day of the week
Sub-categories
Repeat (column)
Repeat (row)
Tooltip


IBM Cognos Analytics
* phase2 visualization
IoT_Sensor_Data and Temperature for Humidity
System_Load
Color
Repeat (column)
Repeat (row)
Tooltip
Previous_Load
Local filters