**Results and Discussion**

**# Graph to show product popularity through description**

A graph of a product description

Description automatically generated with medium confidence

Visualizing product popularity through descriptions can provide valuable insights into consumer preferences and purchasing behaviors. Aa we can find out that white hanging heart – light holder is the most sale product.

**# Sales of Product in different countries**

A graph with different colored bars

Description automatically generated  
Analyzing the sales of a product across different countries offers valuable insights into global market dynamics and consumer preferences. By examining sales data from diverse regions, businesses can identify lucrative markets, understand regional variations in demand, and tailor their marketing and distribution strategies accordingly. Visualizing sales figures through graphs can highlight geographical patterns, such as which countries contribute the most to overall sales or where there are opportunities for growth. Moreover, from this graph we can see that USA and UK is the most consume country for the products.

**# Show the data with respect to country which returns most of the products**

**Original data:  
A screenshot of a computer screen

Description automatically generated**

Has around 5,41,909 values and 8 columns  
After omitting na values the data set lookalike:

A screen shot of a computer screen

Description automatically generated

Has around 4,06,829 values and 8 columns

#return\_data containing only the rows where the Quantity column is less than zero.

A screenshot of a computer screen

Description automatically generated

A graph with a bar chart

Description automatically generated

Analyzing product returns data with respect to different countries provides critical insights into customer satisfaction, product quality, and logistical challenges across global markets. By examining which country has the highest rate of product returns, businesses can pinpoint potential issues such as customer dissatisfaction, shipping complications, or discrepancies between product descriptions and actual offerings. From the above graph USA has most of the return this is obvious because this country is the most purchase one too.

**# Matrix Correlation between revenue and most sale month**

Let's move to daily sales: Revenue, Year, Quarter, Month, Week, Weekday and Day columns are created from InvoiceDate columns to work further.

A computer screen shot of numbers and letters

Description automatically generated

Find the top revenue which can be shown in graph, From this we can see the sweet spot is -8.5 where we can get the maximum sales

A graph of a bar graph

Description automatically generated

## Let's check which are popular days to shop.

# Summary of Revenue with respect to quantity

A screenshot of a computer screen

Description automatically generated

#Sort the data by 'Revenue' in descending order and count occurrences of each day and show them in graph

A graph of a number of days

Description automatically generated

look like day 6 is very popular.

##Let's check which month is very popular

A graph of a number of months

Description automatically generated

# Select the first few rows and reset the index

A screen shot of a computer

Description automatically generated

## look like 3rd November is the most revenue day in month nov

A graph of a number of days

Description automatically generated

Let see the occurrence of stock code the most.

A graph of sales

Description automatically generated

## Looks like product code 23355 is very popular during month of November.

A graph of stock code sales

Description automatically generated## Looks like stock code 15056 is popular during the year opposed to code 23355 during the month of November.

# Calculate the 1st and 99th percentiles for 'Quantity' and ‘Revenue’ then remove infinite values. Here is the summarize data.

A screenshot of a computer screen

Description automatically generated

# Here is the histogram of daily product sales with respect to frequency.

A graph of a number of daily product sales

Description automatically generated

## We can see the lower quantities are popular during purchase

# Plot correlation matrix

A graph of sales data

Description automatically generated with medium confidence

**#This we can see by correlation matrix how month is related to revenue of the product and its unit price and revenue.**