Sales Analysis

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About Presentation

This presentation is to give an overview of the use case of an E-commerce company who has its operation in various countries. The aim of this presentation is to scrape out insights from the same.

Use of certain graphs

In this presentation the following graphs are used for the purposes mentioned below

1. **Bar graph**: For comparing different values of the same attribute where values of these values are the main interest.

2. **Pie chart**: For comparing different values of the same attribute where values are seen as in form of a percentage of the total.

3. **Line chart**: For finding out the trend.

Describing the case in brief

The dataset consists of two tables. One is the sales table and the other one is the date table.

The sales table consists of all the details of the transactions made which include the product detail, quantity sold, unit price etc
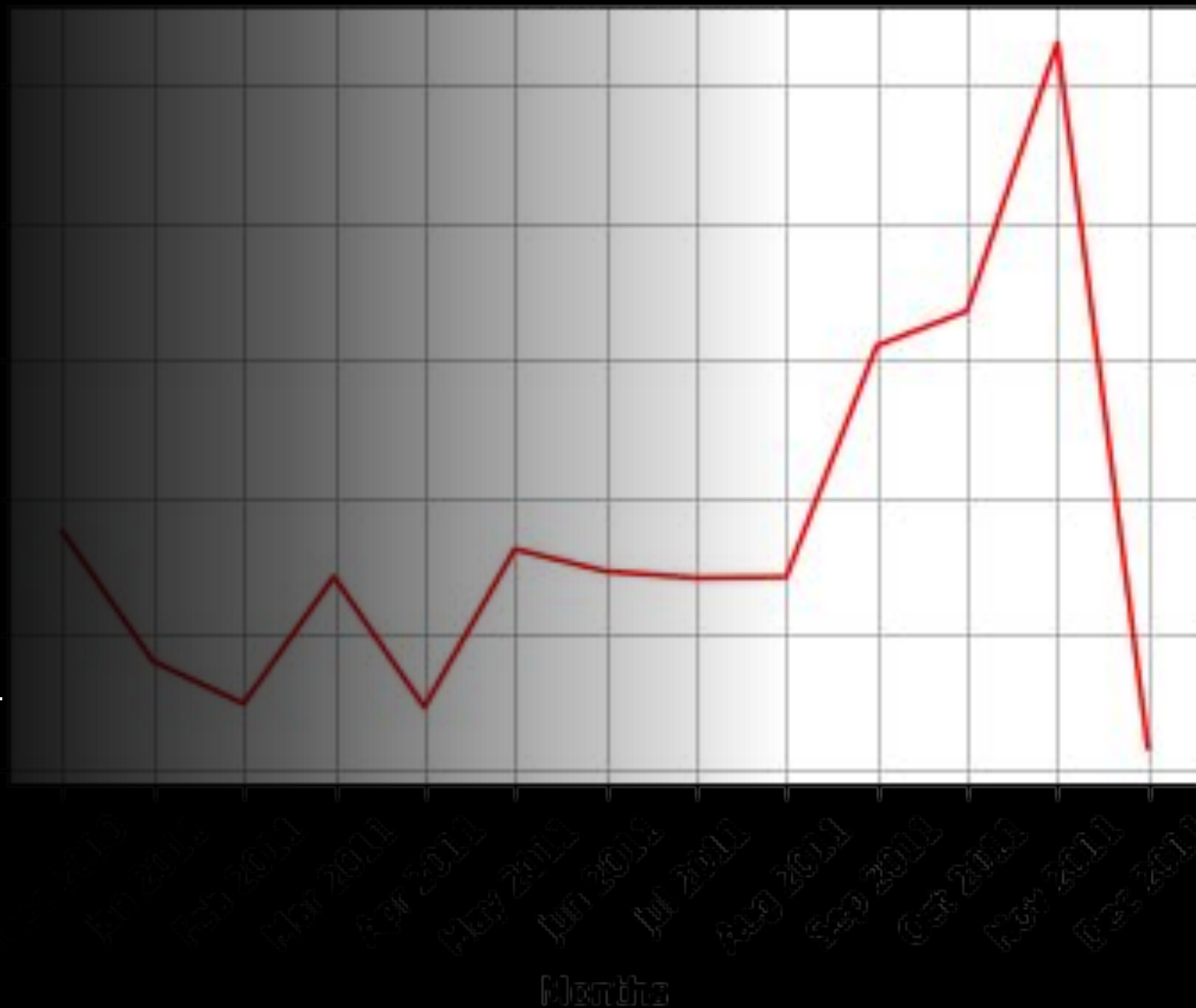
The date table consists of the details of the time and date at which the transaction was made.

General Insights

In this section of the presentation we will be taking a look at different questions and see how the data is able to answer them.

Company's Performance

Monthly revenue

- **<u>Yearly</u>**: There's an annual increase of 95.17% in the total revenue generated from Dec 2010 to Nov 2011.

- **<u>Quarterly</u>**:
  - Q1(Dec 2010-Mar 2011 exclusive): There's a dip of 33.49%
  - Q2(Mar 2011-Jun 2011 exclusive): There's an increase of 5.86%
  - Q3(Jun 2011-Sept 2011 exclusive) There's a fall of 1.22%
  - Q4(Sept 2011- Dec 2011 exclusive) There's a rise of 43.35%

Inference and other insights of this case

- The dip we see after Nov 2011 is because we don't have data for the month of December. As of Dec 2011, the records are of only 9 days and not of the whole month.

- Dec 2011 is still kept in the analysis so as not to tamper the dataset.

- Similarly for Dec 2010, the data of that month is of only 20 days. In that case we can take the mean for 10 days and add it to the month for filling the revenue detail of the missing 10 days.

Monthly revenue generated

Important insights and trends in the dataset

- We observe an increase in the revenue over the month, although there are a few valleys because in real time the graph is never linearly inclined.

- The incline of Oct 2011 to Nov 2011 is 36.52% whereas the incline of Aug 2011 to Sep 2011 is 49.36%

- The sales of the company has improved in one year.

- It would be safe to say that there is a random trend that can be observed in the limited data that is provided.

Measuring performance in terms of customer acquisition and building customer loyalty

- We can measure it by analysing how much revenue is being generated, how many transactions are happening, how much quantity of product is being sold and how many times the same customer is coming back to buy from us.

- We have had seen the analysis of revenue that is being generated so we will see the rest of the metrics.

Monthly Transactions

Who are our customers?

```
In [8]: #now counting how many transcations from each country in a span of 12 months
        country_wise_transcount={}
        for i in df_sales['transaction country']:
            if i not in country_wise_transcount.keys():
                country_wise_transcount.update({i:1})
            else:
                country_wise_transcount[i]+=1
        print(country_wise_transcount) #this will give me total count of transaction per country
```

```
{'United Kingdom': 495478, 'France': 8557, 'Australia': 1259, 'Netherlands': 2371, 'Germany': 9495, 'Norway': 1086, 'EIRE': 819
6, 'Switzerland': 2002, 'Spain': 2533, 'Poland': 341, 'Portugal': 1519, 'Italy': 803, 'Belgium': 2069, 'Lithuania': 35, 'Japa
n': 358, 'Iceland': 182, 'Channel Islands': 758, 'Denmark': 389, 'Cyprus': 622, 'Sweden': 462, 'Austria': 401, 'Israel': 297,
'Finland': 695, 'Bahrain': 19, 'Greece': 146, 'Hong Kong': 288, 'Singapore': 229, 'Lebanon': 45, 'United Arab Emirates': 68, 'S
audi Arabia': 10, 'Czech Republic': 30, 'Canada': 151, 'Unspecified': 446, 'Brazil': 32, 'USA': 291, 'European Community': 61,
'Malta': 127, 'RSA': 58}
```
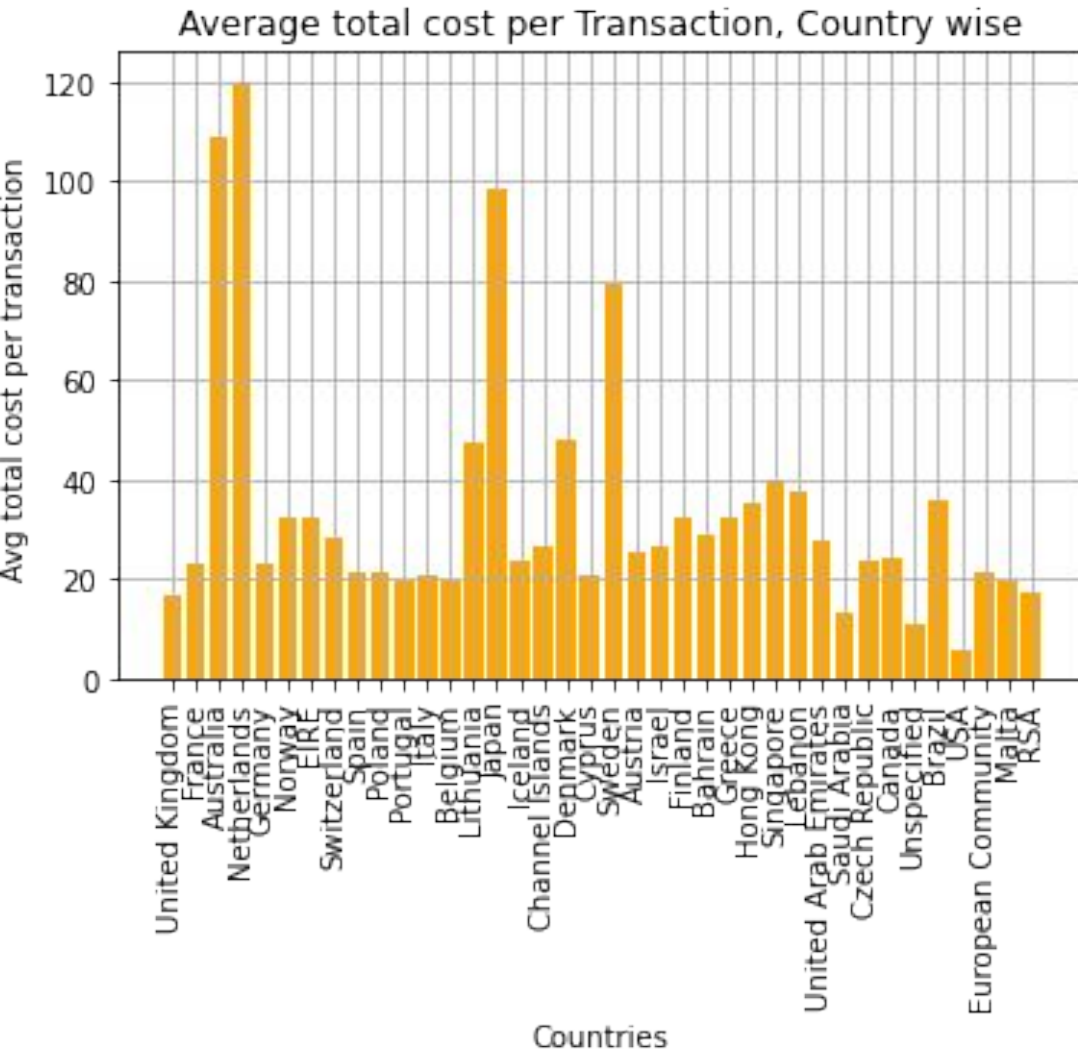
- This shows a list of 38 countries along with the number of transactions each country had from Dec 2010 to Dec 2011.

- Maximum number of transactions are from United kingdom.

- Minimum number of transactions are from Saudi Arabia.

List of
countries

What kind of customers buy from us?

Average total cost per Transaction, Country wise

- United Kingdom had the most number of transactions but its average total cost per transaction is at 35th position out of 38 countries.

- Where as Netherlands stands the first in the same criteria with an average total cost of 120.05(currency) per transaction.

- Netherlands had 2371 transaction and stood up strong where as UK was at the top in transactions but here in this criteria Netherlands is at first place.

- This shows that most of the transaction that are made from countries like UK, Germany, France and other countries with high number of transactions are made from middle class people because the average of these countries is less than 40.

Average total cost per transaction

```
Rank of countries on avg total cost per transaction
1 Netherlands : 120.05969633066223
2 Australia : 108.87789515488461
3 Japan : 98.7168156424581
4 Sweden : 79.21192640692641
5 Denmark : 48.24714652956299
6 Lithuania : 47.45885714285714
7 Singapore : 39.82703056768559
8 Lebanon : 37.64177777777778
9 Brazil : 35.737500000000004
10 Hong Kong : 35.12861111111112
11 Norway : 32.378876611418086
12 Greece : 32.26383561643835
13 Finland : 32.12480575539564
14 EIRE : 32.12259882869672
15 Bahrain : 28.86315789473684
16 Switzerland : 28.164510489510537
17 United Arab Emirates : 27.97470588235295
18 Israel : 26.62565656565655
19 Channel Islands : 26.499063324538202
20 Austria : 25.322493765586024
21 Canada : 24.280662251655635
22 Iceland : 23.681318681318665
23 Czech Republic : 23.590666666666667
24 Germany : 23.348942601368996
25 France : 23.069288301974993
26 Spain : 21.624390051322532
27 European Community : 21.17622950819672
28 Poland : 21.15290322580644
29 Italy : 21.034259028642595
30 Cyprus : 20.813971061093245
31 Belgium : 19.773301111648127
32 Malta : 19.728110236220473
33 Portugal : 19.333127057274517
34 RSA : 17.281206896551723
35 United Kingdom : 16.525065419657608
36 Saudi Arabia : 13.116999999999999
37 Unspecified : 10.649753363228692
38 USA : 5.948178694158077
```

Average quantity sold per transaction

```
1 Netherlands : 84.4065795023197
2 Sweden : 77.13636363636364
3 Japan : 70.44134078212291
4 Australia : 66.4440031771247
5 Singapore : 22.85589519650655
6 Denmark : 21.04884318766067
7 Czech Republic : 19.733333333333334
8 Lithuania : 18.62857142857143
9 Canada : 18.29801324503311
10 Norway : 17.722836095764272
11 EIRE : 17.40324548560273
12 Hong Kong : 16.55902777777778
13 Finland : 15.346762589928058
14 Switzerland : 15.147352647352648
15 Israel : 14.656565656565656
16 United Arab Emirates : 14.441176470588236
17 Bahrain : 13.68421052631579
18 Iceland : 13.505494505494505
19 France : 12.91106696272058
20 Channel Islands : 12.505277044854882
21 Germany : 12.369457609268036
22 Austria : 12.037406483790523
23 Belgium : 11.18994683421943
24 Brazil : 11.125
25 Poland : 10.712609970674487
26 Greece : 10.657534246575343
27 Portugal : 10.65174456879526
28 Spain : 10.58981444926964
29 Cyprus : 10.155948553054662
30 Italy : 9.961394769613948
31 United Kingdom : 8.605486015524402
32 Lebanon : 8.577777777777778
33 European Community : 8.147540983606557
34 Saudi Arabia : 7.5
35 Malta : 7.433070866141732
36 Unspecified : 7.3991031390134525
37 RSA : 6.068965517241379
38 USA : 3.5532646048109964
```

## Rank of countries with Average total cost per Transaction

What factors drive the company's sales?

- There are 3 key factors that drive the sales of the company, as observed from the data given and they are:
  - Number of transaction: More number of transactions, more the sales
  - Quantity sold: More quantity sold, more would be the revenue generated.
  - Total cost: It is quantity sold*unit price. The sales of company are impacted the most by this factor as for it to go up both the quantity and the unit price has to be considerably high.
    - A transaction with say 4 qty of stock with a unit price of 1 would give a total cost of 4 where as on the other hand a case with unit price of 2 and qty of stock 3 would generate a total cost of 6 units of currency.

What initiatives can be taken to improve the sales?

- There are a lot of countries where the number of transactions are less than 1000 a year. The company had expanded vastly in some areas without even pillaring the areas that are already doing good like Australia, Netherlands etc.

- UK has the most number of transactions, after that we have countries like Germany, France, Spain, Netherlands where growth is a dire need. The number of transactions in these countries would grow faster than the ones were number is almost dead like Saudi Arabia, Brazil, RSA etc.

- Countries like Lebanon don't fall in the upper most transaction countries like Germany and also not in the lower ones like Saudi Arabia but the average total cost per transaction is relatively high here. So a good focus on such countries can surely scrape a considerable amount of sales for the company.
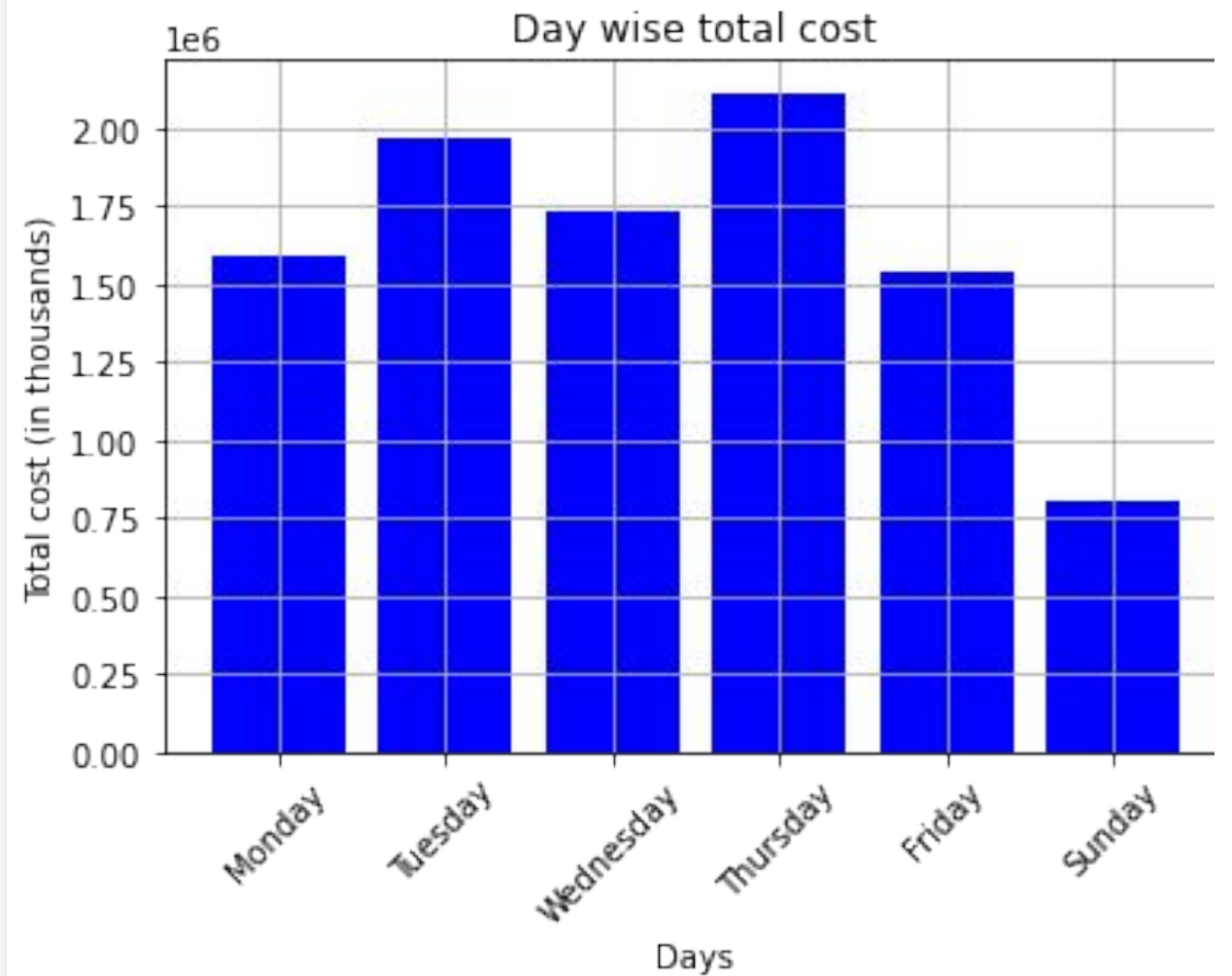
Exploring more

Average Qty Sold per Transaction, Country wise

Average total cost per Transaction, Country wise
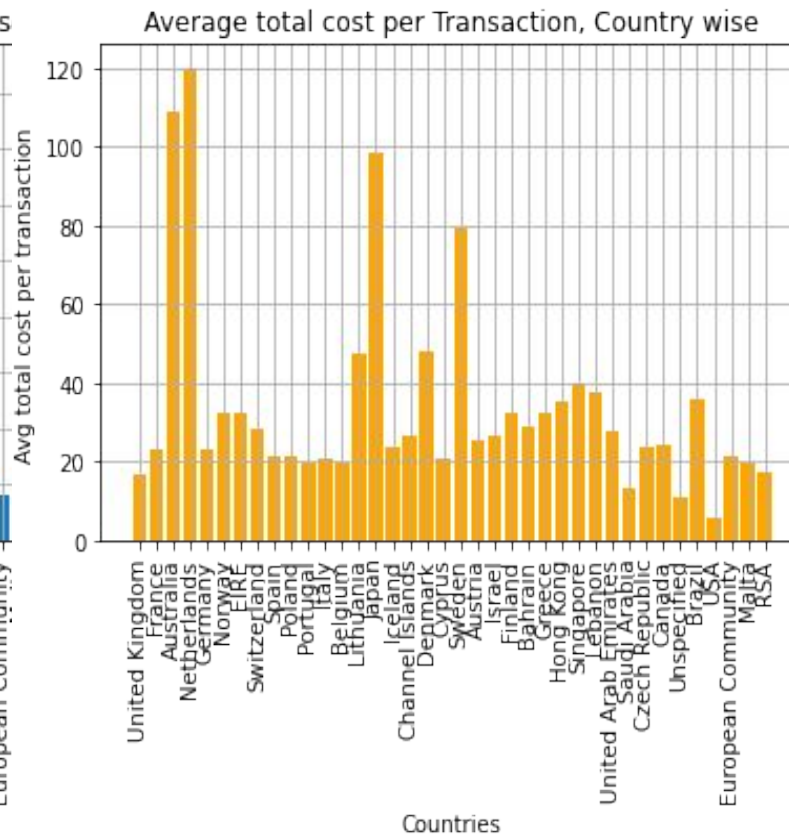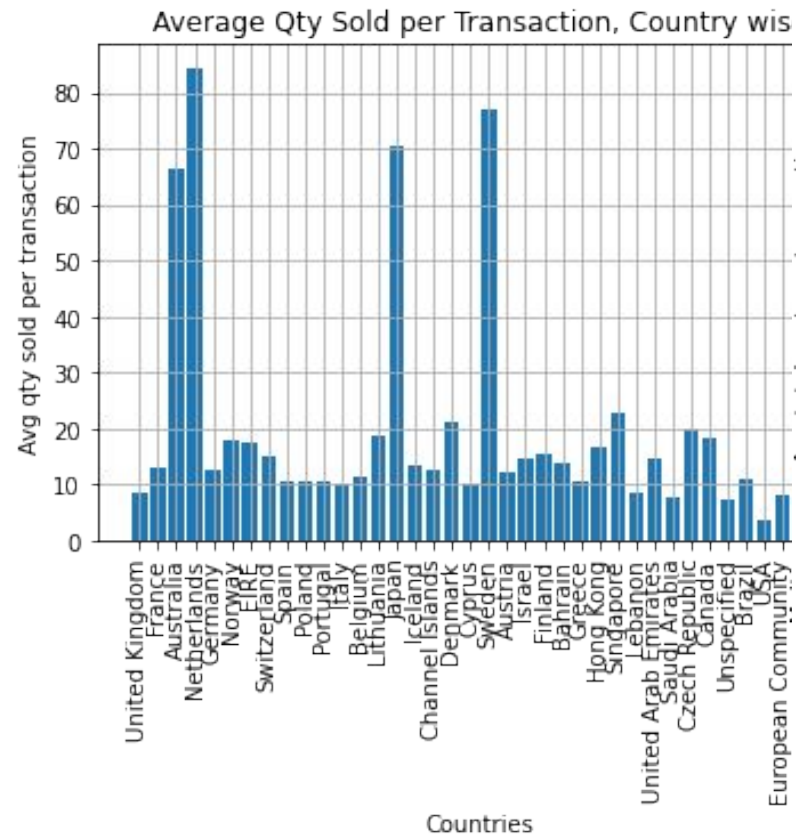
"Torture the data, and it will confess to anything."

– Ronald Coase

Day wise transactions to the company
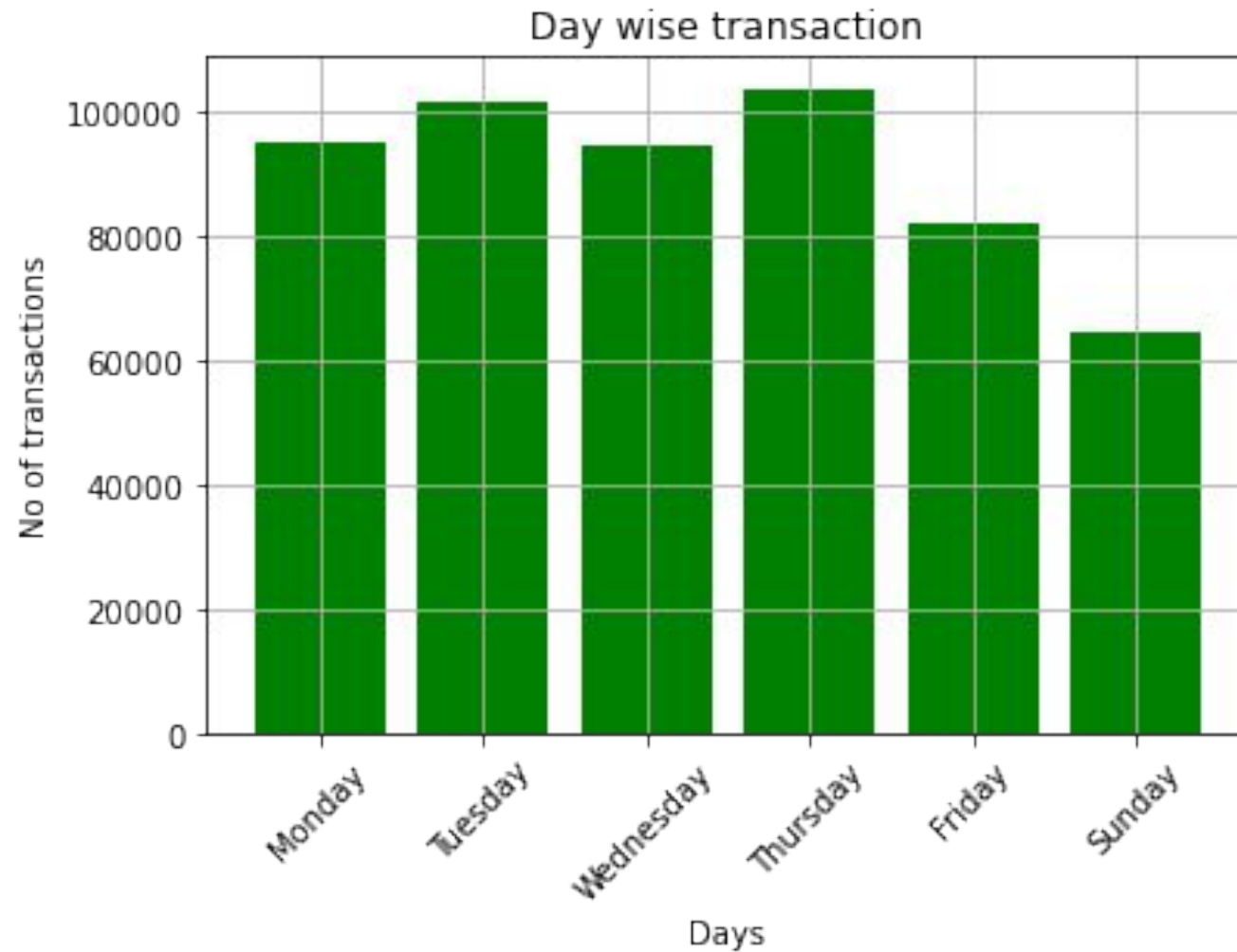
# Day wise revenue to the company

Finding the day with max number of transactions for each country

```
Out[73]: {'United Kingdom': 'Tuesday',
         'France': 'Wednesday',
         'Australia': 'Thursday',
         'Netherlands': 'Tuesday',
         'Germany': 'Thursday',
         'Norway': 'Friday',
         'EIRE': 'Monday',
         'Switzerland': 'Wednesday',
         'Spain': 'Thursday',
         'Poland': 'Wednesday',
         'Portugal': 'Thursday',
         'Italy': 'Tuesday',
         'Belgium': 'Thursday',
         'Lithuania': 'Sunday',
         'Japan': 'Wednesday',
         'Iceland': 'Tuesday',
         'Channel Islands': 'Wednesday',
         'Denmark': 'Thursday',
         'Cyprus': 'Friday',
         'Sweden': 'Friday',
         'Austria': 'Monday',
         'Israel': 'Thursday',
         'Finland': 'Tuesday',
         'Bahrain': 'Monday',
         'Greece': 'Monday',
         'Hong Kong': 'Tuesday',
         'Singapore': 'Tuesday',
         'Lebanon': 'Thursday',
         'United Arab Emirates': 'Thursday',
         'Saudi Arabia': 'Thursday',
         'Czech Republic': 'Monday',
         'Canada': 'Monday',
         'Unspecified': 'Thursday',
         'Brazil': 'Friday',
         'USA': 'Monday',
         'European Community': 'Thursday',
         'Malta': 'Monday',
         'RSA': 'Thursday'}
```

Revenue insights at different time intervals of the day
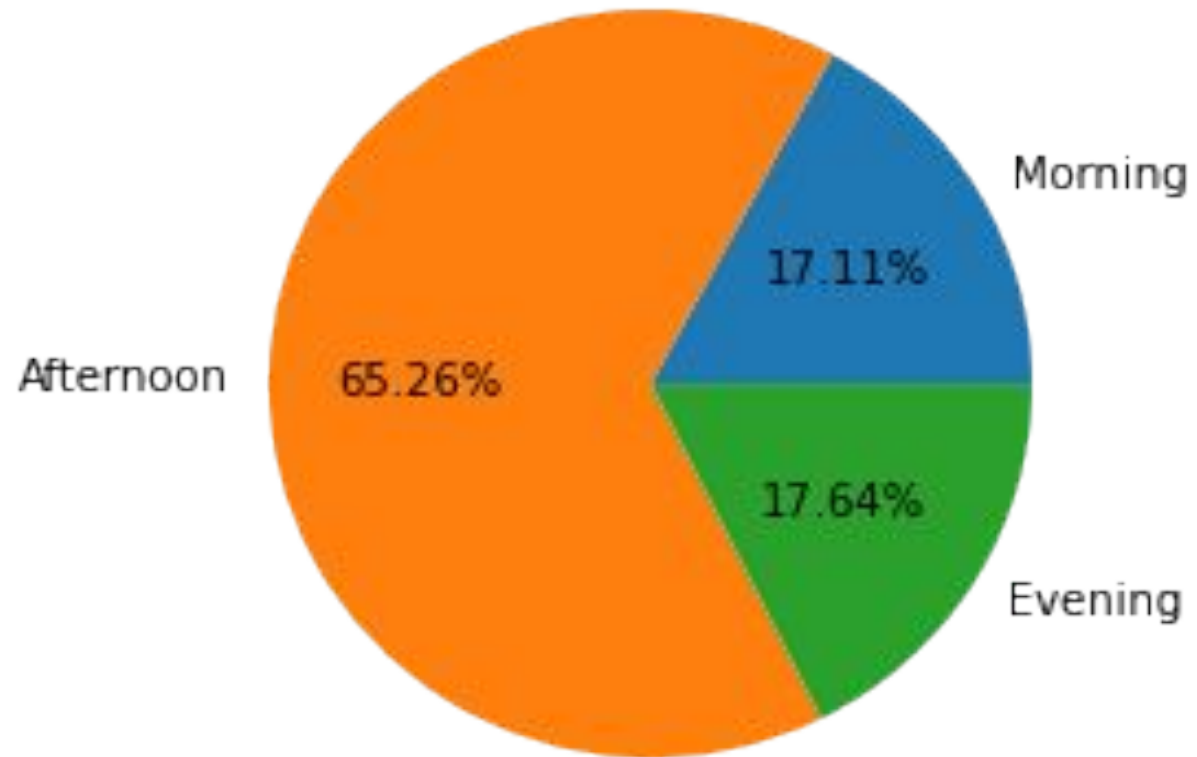
Thank you for your valuable time

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