Quantium Data Analytics Virtual Internship: - Task 2

Importing Libraries

```
In [2]: # Data Manipulation Library
         import numpy as np
         import pandas as pd
         # Data Visualization Library
         import seaborn as sns
         import matplotlib.pyplot as plt
         import plotly.express as pe
In [3]: df = pd.read_csv("E:\Virtual Internship Data Analytics\Quantium Virtual Internship\Task 2\Task 2 Dataset\QVI_de
In [6]: df.head()
Out[6]:
             LYLTY_CARD_NBR DATE STORE_NBR TXN_ID PROD_NBR PROD_NAME PROD_QTY TOT_SALES PACK_SIZE
                                                                                                                           BRAND
                                                                       Natural Chip
                              2018-
          0
                                                                                          2
                         1000
                                                                  5
                                                                         Compny
                                                                                                     6.0
                                                                                                                175
                                                                                                                         NATURAL
                               10-17
                                                                      SeaSalt175g
                                                                     Red Rock Deli
                              2018-
                                                                                                                             RRD S
          1
                         1002
                                                      2
                                                                 58
                                                                                          1
                                                                                                     2.7
                                                                                                                150
                                                                      Chikn&Garlic
                              09-16
                                                                        Aioli 150g
                                                                      Grain Waves
                              2019-
                                                                            Sour
                         1003
                                                                                                                210
                                                                                                                        GRNWVES
          2
                                                      3
                                                                                          1
                                                                                                     3.6
                                                                 52
                              03-07
                                                                    Cream&Chives
                                                                            210G
                                                                          Natural
                              2019-
                                                                      ChipCo Hony
          3
                         1003
                                                                106
                                                                                                     3.0
                                                                                                                175
                                                                                                                         NATURAL
                              03-08
                                                                             Sov
                                                                       Chckn175g
                                                                      WW Original
                              2018-
                         1004
                                                                     Stacked Chips
                                                                                                     1.9
                                                                                                                    WOOLWORTHS
                               11-02
                                                                            160a
In [ ]:
```

Checking Data Types and changing Data types according to fields

```
In [7]: df.dtypes
 Out[7]: LYLTY_CARD_NBR
                                int64
         DATE
                               object
         STORE_NBR
                                int64
         TXN_ID
                                int64
         PROD NBR
                                int64
         PROD_NAME
                               object
         PROD_QTY
                                int64
         TOT_SALES
                               float64
         PACK_SIZE
                                int64
         BRAND
                               object
         LIFESTAGE
                               object
         PREMIUM_CUSTOMER
                               object
         dtype: object
In [13]: df['DATE'] = pd.to_datetime(df['DATE'])
```

```
In [15]: df.dtypes
Out[15]: LYLTY_CARD_NBR
                                           int64
          DATE
                                 datetime64[ns]
          STORE_NBR
                                           int64
          TXN ID
                                           int64
          PROD NBR
                                           int64
          PROD_NAME
                                          object
          PROD_QTY
                                           int64
          TOT_SALES
                                         float64
          PACK_SIZE
                                           int64
          BRAND
                                          object
          LIFESTAGE
                                          object
          PREMIUM_CUSTOMER
                                          object
          dtype: object
In [16]: df.head()
Out[16]:
              LYLTY_CARD_NBR DATE STORE_NBR TXN_ID PROD_NBR PROD_NAME PROD_QTY TOT_SALES PACK_SIZE
                                                                                                                              BRAND
                                                                        Natural Chip
                                2018-
           0
                                                                        Compny
SeaSalt175g
                                                                                             2
                          1000
                                                                    5
                                                                                                                            NATURAL
                                                                                                       6.0
                                                                                                                  175
                                10-17
                                                                       Red Rock Deli
                                2018-
                          1002
                                                        2
                                                                   58
                                                                        Chikn&Garlic
                                                                                                       2.7
                                                                                                                  150
                                                                                                                                RRD
           1
                                                                                             1
                                                                                                                                     S
                                09-16
                                                                          Aioli 150g
                                                                        Grain Waves
                                2019-
                                                                                                                           GRNWVES
           2
                          1003
                                                        3
                                                                                                       3.6
                                                                                                                  210
                                                                   52
                                                                                             1
                                                                      Cream&Chives
                                03-07
                                                                              210G
                                                                             Natural
                                2019-
                                                                        ChipCo Hony
           3
                          1003
                                                        4
                                                                  106
                                                                                             1
                                                                                                       3.0
                                                                                                                  175
                                                                                                                            NATURAL
                                03-08
                                                                               Soy
                                                                         Chckn175g
                                                                        WW Original
                                2018-
                          1004
                                                                       Stacked Chips
                                                                                                       1.9
                                                                                                                  160 WOOLWORTHS
                                11-02
                                                                              160g
```

Checking for Null Values

```
In [5]: df.isnull().sum()
Out[5]: LYLTY_CARD_NBR
                             0
         DATE
                             0
         STORE_NBR
                             0
         TXN_ID
                             0
         PROD_NBR
                             0
         PROD NAME
                             0
         PROD_QTY
                             0
         TOT_SALES
                             0
         PACK_SIZE
                             0
         BRAND
                             0
         LIFESTAGE
                             0
        PREMIUM_CUSTOMER
                             0
         dtype: int64
In [ ]:
```

Checking for Outliers

```
In [18]: df.select_dtypes(["int","float"])
Out[18]:
                   LYLTY_CARD_NBR STORE_NBR TXN_ID PROD_NBR PROD_QTY TOT_SALES PACK_SIZE
                                                                             2
                0
                               1000
                                                      1
                                                                  5
                                                                                        6.0
                                                                                                   175
                               1002
                                                      2
                                                                 58
                                                                                        2.7
                                                                                                  150
                2
                               1003
                                                      3
                                                                                        3.6
                                                                                                  210
                                                                 52
                               1003
                                                                106
                                                                                        3.0
                                                                                                  175
                               1004
                                                      5
                                                                                        1.9
                4
                                                                 96
                                                                                                  160
                                                                             2
                                                                                        7.2
           264829
                            2370701
                                             88
                                                 240378
                                                                 24
                                                                                                  210
                                                                             2
           264830
                            2370751
                                                 240394
                                                                 60
                                                                                        9.2
                                                                                                  150
           264831
                            2370961
                                                 240480
                                                                 70
                                                                             2
                                                                                        8.4
                                                                                                   165
           264832
                            2370961
                                             88
                                                 240481
                                                                 65
                                                                             2
                                                                                       10.2
                                                                                                  300
           264833
                            2373711
                                             88
                                                 241815
                                                                 16
                                                                             2
                                                                                       11.4
                                                                                                  330
          264834 rows × 7 columns
In [25]: plt.figure(figsize = (12,5))
          sns.boxplot(df.select_dtypes(["int","float"]))
Out[25]: <Axes: >
           2.5
           2.0
            1.5
            1.0
            0.5
            0.0
                LYLTY_CARD_NBR
                                   STORE_NBR
                                                      TXN_ID
                                                                     PROD_NBR
                                                                                      PROD_QTY
                                                                                                      TOT_SALES
                                                                                                                       PACK_SIZE
In [ ]:
```

Total Sales Revenue

```
In [30]:
         df.head()
Out[30]:
                     STORE_NBR TXN_ID PROD_NBR PROD_NAME PROD_QTY TOT_SALES PACK_SIZE
         NBR DATE
                                                                                                           BRAND
                                                                                                                          LIFESTAGE
                                                       Natural Chip
                                                                                                                             YOUNG
               2018-
                                                                                                          NATURAL
                                                                           2
         1000
                                                  5
                                                          Compny
                                                                                     6.0
                                                                                                175
               10-17
                                                                                                                   SINGLES/COUPLES
                                                       SeaSalt175g
                                                      Red Rock Deli
               2018-
                                                                                                                             YOUNG
         1002
                                                 58
                                                       Chikn&Garlic
                                                                                     2.7
                                                                                                150
                                                                                                              RRD
               09-16
                                                                                                                   SINGLES/COUPLES
                                                         Aioli 150g
                                                       Grain Waves
               2019-
                                                             Sour
         1003
                                                                                                                     YOUNG FAMILIES
                                       3
                                                 52
                                                                           1
                                                                                     3.6
                                                                                                210
                                                                                                         GRNWVES
               03-07
                                                     Cream&Chives
                                                            210G
                                                           Natural
               2019-
                                                      ChipCo Hony
         1003
                                                106
                                                                           1
                                                                                     3.0
                                                                                                175
                                                                                                          NATURAL
                                                                                                                     YOUNG FAMILIES
               03-08
                                                             Soy
                                                        Chckn175g
                                                       WW Original
                                                                                                                              OLDER.
               2018-
         1004
                                       5
                                                 96
                                                     Stacked Chips
                                                                                     1.9
                                                                                                    WOOLWORTHS
                                                                                                                    SINGLES/COUPLES
               11-02
                                                             160g
In [37]: round(df.TOT_SALES.sum(),2)
Out[37]: 1933115
In [48]: print("\033[1m Total Sales {} $ \033[1m ".format(round(df.TOT_SALES.sum(),2)) )
            Total Sales 1933115.0 $
 In [ ]:
```

Total Number Of Customers

In [49]: df.head() Out[49]: PROD_NAME PROD_QTY TOT_SALES PACK_SIZE LYLTY_CARD_NBR DATE STORE_NBR TXN_ID PROD_NBR **BRAND** Natural Chip 2018-Compny SeaSalt175g 0 1000 5 2 6.0 175 NATURAL 10-17 Red Rock Deli 2018-1 1002 2 58 1 27 150 RRD 1 Chikn&Garlio S 09-16 Aioli 150g Grain Waves 2019-Sour GRNWVFS 2 1003 3 210 1 52 1 3.6 Cream&Chives 210G Natural 2019-03-08 ChipCo Hony Soy 3 1003 106 3.0 175 NATURAL Chckn175g WW Original 2018-160 WOOLWORTHS Stacked Chips 1.9 11-02 160g In []: In [53]: df["LYLTY_CARD_NBR"].nunique() Out[53]: 72636 In [55]: print("\033[1m Total Numbers of Customers {}. \033[0m".format(df["LYLTY_CARD_NBR"].nunique()))

Total Numbers of Customers 72636.

```
In [ ]:
```

Average Number Of Transactions Per Customer

```
In [57]: df.head()
Out[57]:
              LYLTY_CARD_NBR DATE STORE_NBR TXN_ID PROD_NBR PROD_NAME PROD_QTY TOT_SALES PACK_SIZE
                                                                                                                              BRAND
                                                                         Natural Chip
                                2018-
                                                                        Compny
SeaSalt175g
                                                                                                                            NATURAL S
           0
                          1000
                                                                    5
                                                                                             2
                                                                                                       6.0
                                                                                                                  175
                                10-17
                                                                       Red Rock Deli
                                2018-
                          1002
                                                        2
           1
                                                                   58
                                                                        Chikn&Garlio
                                                                                             1
                                                                                                       2.7
                                                                                                                  150
                                                                                                                                RRD
                                                                                                                                      S
                                09-16
                                                                           Aioli 150g
                                                                        Grain Waves
                                2019-
                                                                               Sour
           2
                          1003
                                                1
                                                        3
                                                                                             1
                                                                                                       3.6
                                                                                                                  210
                                                                                                                           GRNWVES
                                                                   52
                                03-07
                                                                       Cream&Chives
                                                                              210G
                                                                             Natural
                                2019-
                                                                        ChipCo Hony
Soy
           3
                          1003
                                                                  106
                                                                                                       3.0
                                                                                                                  175
                                                                                                                            NATURAL
                                03-08
                                                                          Chckn175g
                                                                         WW Original
                                2018-
11-02
                                                                                                                   160 WOOLWORTHS
                                                                       Stacked Chips
                                                                                                        1.9
                                                                              160g
In [94]: | avg_cust = df[["TOT_SALES"]].groupby(df["LYLTY_CARD_NBR"]).mean().sort_values("TOT_SALES",ascending= False)
          avg_cust
Out[94]:
                             TOT_SALES
           LYLTY_CARD_NBR
                      44350
                                    29.5
                      154199
                                    28.5
                      66014
                                    28.5
                      60198
                                    27.0
                     149267
                                    27.0
                     186138
                                     1.5
                      176370
                                     1.5
                     254180
                                     1.5
                      41089
                                     1.5
                      35191
                                     1.5
          72636 rows × 1 columns
In [89]: df[['TOT_SALES']].groupby(df['LYLTY_CARD_NBR']).count().mean()
Out[89]: TOT_SALES
                         3.646043
          dtype: float64
In [93]: print("\033[1m Average transactions per customer: {} \033[0m".format(round(average_transactions_per_customer))
           Average transactions per customer: 4
 In [ ]:
 In [ ]:
```