Performance Assessment for

D212: Data Mining II

Task 3 Attempt 2

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D212: Data Mining II

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D212_PA_MendezD_T3_A2

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1 Part I: Research Question

1.1 A. Purpose of Data Mining Report

1.1.1 A1. Research Question

Can Market Basket Analysis uncover which items are frequently purchased together by telecom customers?

1.1.2 A2. Goal of the Data Analysis

The goal of this analysis is to apply Market Basket Analysis which items are frequently purchased together in order to determine potential bundles of products or services. This could then be used to encourage purchases from the customer base and drive business growth.

2 Part II: Market Basket Justification

2.1 B. Reasons for using Market Basket Analysis

2.1.1 B1. How Market Basket Analyzes the Data Set

Market Basket Analysis is an unsupervised learning technique that can be used to identify purchasing patterns of customers by analyzing combinations of products purchased together (GeeksforGeeks, 2022). Market Basket Analysis uses the assocation rule, if the antecedent then the consequent, where the antecendent is an item in the data set and the consequent is an item found in combination with the antecendent (GeeksforGeeks, 2022).

The expected outcome is the discovery of combinations of items frequently purchased together. We will be able to measure each item's **support**, the rate at which an itemset appears in the data set, the **confidence**, or conditional probability representing the probability of finding the consequent in transactions with the antecedent, and the **lift**, or the ratio of observed support to that expected if the antecedent and consequent were independent.

For the antecedent, A, and the consequent, B, the formulas for determining support, confidence, and lift are as follows:

$$\text{support}(A \to B) = \frac{\text{number of transactions containing both } A \text{ and } B}{\text{total number of transactions}}$$

$$\text{confidence}(A \to B) = \frac{\text{support}(A \cup B)}{\text{support}(A)} = \frac{\text{number of transactions containing } A \text{ and } B}{\text{number of transactions containing } A}$$

$$\text{lift}(A \rightarrow B) = \frac{\text{support}(A \cup B)}{\text{support}(A) \times \text{support}(B)}$$

(Chaudhary, 2023)

2.1.2 B2. One Example of Transactions

One example of a transaction in the data set would be the 99th entry, as shown here. The code to obtain the 99th entry is given below. Items in the transaction include 'Dust-Off Compressed Gas 2 pack', 'HP 61 ink', and 'HP ENVY 5055 printer'.

2.1.3 B3. Assumptions of Market Basket Analysis

- Transaction Independence: each entry in the dataset is assumed to represent an independent transaction, as they would otherwise impact the reliability of the association rules.
- Complete and Accurate Item Descriptions: the item descriptions are assumed to be accurate and complete, as inaccuracies or missing information may impact the analysis.
- Consistent Data Entry Practices: it is assumed that data entry practices are consistent, as inconsistencies or errors may lead to difficulties in accurately identifying associations.
- Representative Sample: it is assumed that the dataset is representative of overall customer transactions, as any biases may result in an analysis that inaccurately reflects the customer base.

(Deniran, 2023)

3 Part III: Data Preparation and Analysis

3.1 C. Data Preparation

3.1.1 C1. Data Transformation for Market Basket Analysis

The cells below contain the code necessary to transform the data set to make it suitable for market basket analysis.

[2]:
```
import pandas as pd
from pandas import DataFrame
import numpy as np
from mlxtend.preprocessing import TransactionEncoder
from mlxtend.frequent_patterns import apriori
from mlxtend.frequent_patterns import association_rules
import matplotlib
import seaborn as sns
import matplotlib.pyplot as plt
%matplotlib inline

import warnings
warnings. filterwarnings('ignore')
```

[3]:
```python
## C1 The following cells include the annotated code used to prepare the data.
# See code attached, in D212_PA_MendezD_Task3.ipynb

# Load data into a data frame with Pandas' .read_csv() function
df_mba = pd.read_csv('/Users/drewmendez/Documents/WGU/D212/data/
↪teleco_market_basket.csv')

print(df_mba.shape)
df_mba.head(5)
```

```
(15002, 20)
```

[3]:
```
                             Item01                        Item02  \
0                               NaN                           NaN
1         Logitech M510 Wireless mouse                   HP 63 Ink
2                               NaN                           NaN
3  Apple Lightning to Digital AV Adapter  TP-Link AC1750 Smart WiFi Router
4                               NaN                           NaN

         Item03                     Item04                      Item05  \
0           NaN                        NaN                         NaN
1     HP 65 ink  nonda USB C to USB Adapter  10ft iPHone Charger Cable
2           NaN                        NaN                         NaN
3  Apple Pencil                        NaN                         NaN
4           NaN                        NaN                         NaN

         Item06                       Item07  \
0           NaN                          NaN
1  HP 902XL ink  Creative Pebble 2.0 Speakers
2           NaN                          NaN
3           NaN                          NaN
4           NaN                          NaN

                              Item08                        Item09  \
0                                NaN                           NaN
1  Cleaning Gel Universal Dust Cleaner  Micro Center 32GB Memory card
2                                NaN                           NaN
3                                NaN                           NaN
4                                NaN                           NaN

                                   Item10                          Item11  \
0                                     NaN                             NaN
1  YUNSONG 3pack 6ft Nylon Lightning Cable  TopMate C5 Laptop Cooler pad
2                                     NaN                             NaN
3                                     NaN                             NaN
4                                     NaN                             NaN
```

```
                   Item12                      Item13  \
0                     NaN                         NaN
1  Apple USB-C Charger cable  HyperX Cloud Stinger Headset
2                     NaN                         NaN
3                     NaN                         NaN
4                     NaN                         NaN

                    Item14                          Item15  \
0                      NaN                             NaN
1  TONOR USB Gaming Microphone  Dust-Off Compressed Gas 2 pack
2                      NaN                             NaN
3                      NaN                             NaN
4                      NaN                             NaN

                       Item16                 Item17  \
0                         NaN                    NaN
1  3A USB Type C Cable 3 pack 6FT  HOVAMP iPhone charger
2                         NaN                    NaN
3                         NaN                    NaN
4                         NaN                    NaN

                  Item18                              Item19  \
0                    NaN                                 NaN
1  SanDisk Ultra 128GB card  FEEL2NICE 5 pack 10ft Lighning cable
2                    NaN                                 NaN
3                    NaN                                 NaN
4                    NaN                                 NaN

                                Item20
0                                  NaN
1  FEIYOLD Blue light Blocking Glasses
2                                  NaN
3                                  NaN
4                                  NaN
```

[4]:

```python
# Remove Nulls

df_mba = df_mba[df_mba['Item01'].notna()]
df_mba.reset_index(drop=True, inplace=True)

print(df_mba.shape)
df_mba.head(5)
```

```
(7501, 20)
```

[4]:

```
                                  Item01  \
0              Logitech M510 Wireless mouse
1       Apple Lightning to Digital AV Adapter
```

```
2  UNEN Mfi Certified 5-pack Lightning Cable
3                        Cat8 Ethernet Cable
4              Dust-Off Compressed Gas 2 pack

                             Item02                        Item03  \
0                         HP 63 Ink                     HP 65 ink
1  TP-Link AC1750 Smart WiFi Router                  Apple Pencil
2                               NaN                           NaN
3                         HP 65 ink                           NaN
4     Screen Mom Screen Cleaner kit  Moread HDMI to VGA Adapter

                       Item04                    Item05        Item06  \
0  nonda USB C to USB Adapter  10ft iPHone Charger Cable  HP 902XL ink
1                         NaN                       NaN           NaN
2                         NaN                       NaN           NaN
3                         NaN                       NaN           NaN
4       HP 62XL Tri-Color ink  Apple USB-C Charger cable           NaN

                         Item07                              Item08  \
0  Creative Pebble 2.0 Speakers  Cleaning Gel Universal Dust Cleaner
1                           NaN                                 NaN
2                           NaN                                 NaN
3                           NaN                                 NaN
4                           NaN                                 NaN

                          Item09                                  Item10  \
0  Micro Center 32GB Memory card  YUNSONG 3pack 6ft Nylon Lightning Cable
1                            NaN                                      NaN
2                            NaN                                      NaN
3                            NaN                                      NaN
4                            NaN                                      NaN

                         Item11                     Item12  \
0  TopMate C5 Laptop Cooler pad  Apple USB-C Charger cable
1                           NaN                        NaN
2                           NaN                        NaN
3                           NaN                        NaN
4                           NaN                        NaN

                         Item13                       Item14  \
0  HyperX Cloud Stinger Headset  TONOR USB Gaming Microphone
1                           NaN                          NaN
2                           NaN                          NaN
3                           NaN                          NaN
4                           NaN                          NaN

                           Item15                          Item16  \
```

```
0  Dust-Off Compressed Gas 2 pack  3A USB Type C Cable 3 pack 6FT
1                             NaN                             NaN
2                             NaN                             NaN
3                             NaN                             NaN
4                             NaN                             NaN

                  Item17                    Item18  \
0  HOVAMP iPhone charger  SanDisk Ultra 128GB card
1                    NaN                       NaN
2                    NaN                       NaN
3                    NaN                       NaN
4                    NaN                       NaN

                               Item19                            Item20
0  FEEL2NICE 5 pack 10ft Lighning cable  FEIYOLD Blue light Blocking Glasses
1                                 NaN                               NaN
2                                 NaN                               NaN
3                                 NaN                               NaN
4                                 NaN                               NaN
```

[5]:

```
# List of Lists

rows = df_mba.astype(str).values.tolist()

# Encoder

DE = TransactionEncoder()
array = DE.fit(rows).transform(rows)

transaction = pd.DataFrame(array, columns = DE.columns_)

print(transaction.shape)
transaction.head(10)
```

```
(7501, 120)
```

[5]:

```
   10ft iPHone Charger Cable  10ft iPHone Charger Cable 2 Pack  \
0                      True                             False
1                     False                             False
2                     False                             False
3                     False                             False
4                     False                             False
5                     False                             False
6                     False                             False
7                     False                              True
8                     False                             False
9                     False                             False
```

```
   3 pack Nylon Braided Lightning Cable  3A USB Type C Cable 3 pack 6FT  \
0                               False                             True   
1                               False                            False   
2                               False                            False   
3                               False                            False   
4                               False                            False   
5                               False                            False   
6                               False                            False   
7                               False                            False   
8                               False                            False   
9                               False                            False   

   5pack Nylon Braided USB C cables  ARRIS SURFboard SB8200 Cable Modem  \
0                           False                               False   
1                           False                               False   
2                           False                               False   
3                           False                               False   
4                           False                               False   
5                           False                               False   
6                           False                               False   
7                           False                               False   
8                           False                               False   
9                           False                               False   

   Anker 2-in-1 USB Card Reader  Anker 4-port USB hub  \
0                         False                 False   
1                         False                 False   
2                         False                 False   
3                         False                 False   
4                         False                 False   
5                         False                 False   
6                          True                 False   
7                         False                 False   
8                         False                 False   
9                         False                 False   

   Anker USB C to HDMI Adapter  Apple Lightning to Digital AV Adapter  …  \
0                        False                                  False  …   
1                        False                                   True  …   
2                        False                                  False  …   
3                        False                                  False  …   
4                        False                                  False  …   
5                        False                                  False  …   
6                        False                                  False  …   
7                        False                                  False  …   
8                        False                                  False  …   
9                        False                                  False  …   
```

```
   iFixit Pro Tech Toolkit  iPhone 11 case  iPhone 12 Charger cable  \
0                    False           False                    False
1                    False           False                    False
2                    False           False                    False
3                    False           False                    False
4                    False           False                    False
5                    False           False                    False
6                    False           False                    False
7                    False           False                    False
8                    False           False                    False
9                    False           False                    False

   iPhone 12 Pro case  iPhone 12 case  iPhone Charger Cable Anker 6ft  \
0               False           False                           False
1               False           False                           False
2               False           False                           False
3               False           False                           False
4               False           False                           False
5               False           False                           False
6               False           False                           False
7               False           False                           False
8               False           False                           False
9               False           False                           False

   iPhone SE case    nan  nonda USB C to USB Adapter  seenda Wireless mouse
0           False  False                        True                  False
1           False   True                       False                  False
2           False   True                       False                  False
3           False   True                       False                  False
4           False   True                       False                  False
5           False   True                       False                  False
6           False   True                       False                  False
7           False   True                       False                  False
8           False   True                       False                  False
9           False   True                       False                  False

[10 rows x 120 columns]
```

[6]:
```
# Remove NAN column fron the dataset
cleaned_df = transaction.drop(['nan'], axis = 1)
cleaned_df.shape
```

[6]: (7501, 119)

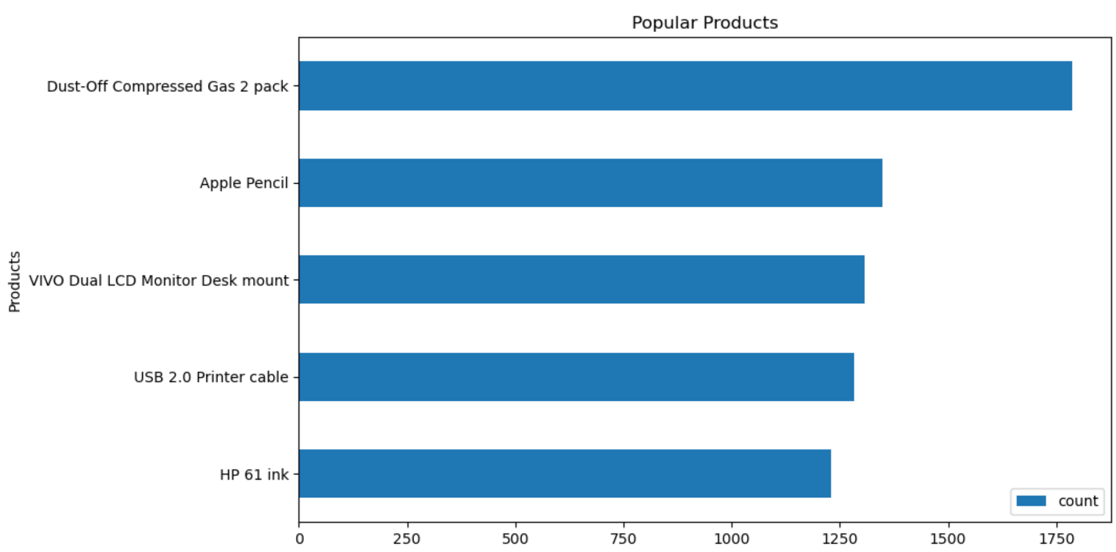
[7]:
```
# Cleaned Data Set
```

```
cleaned_df.to_csv('D212_PA_MendezD_Task3_variables.csv', sep = ',', encoding =␣
 ↪'utf-8', index = False)
```

[8]:
```
# Example Transaction

example_transaction = cleaned_df.iloc[100]

# Filter for True values and get the item names
items_in_transaction = example_transaction[example_transaction == True].index.
 ↪tolist()

print("Items in the transaction:", items_in_transaction)
```

```
Items in the transaction: ['Dust-Off Compressed Gas 2 pack', 'HP 61 ink', 'HP
ENVY 5055 printer']
```

[9]:
```
count = cleaned_df.loc[:, :].sum()
pop_item = count.sort_values(ascending = False).head(5)
pop_item = pop_item.to_frame()
pop_item = pop_item.reset_index()
pop_item = pop_item.rename(columns = {'index': 'Products', 0: 'count'})


%matplotlib inline
plt.rcParams['figure.figsize'] = (10, 6)
ax = pop_item.plot.barh(x = 'Products', y = 'count')
plt.title('Popular Products')
plt.gca().invert_yaxis()
```



3.1.2 C2. Association Rules with the Apriori Algorithm

Below is the code used to generate association rules with the Apriori algorithm.

[11]:
```
## C2 Creating Apriori Object

rules = apriori(cleaned_df, min_support = 0.02, use_colnames = True)
rules.head(5)
```

[11]:
```
   support                             itemsets
0  0.050527       (10ft iPHone Charger Cable 2 Pack)
1  0.042528         (3A USB Type C Cable 3 pack 6FT)
2  0.029463           (Anker 2-in-1 USB Card Reader)
3  0.068391            (Anker USB C to HDMI Adapter)
4  0.087188  (Apple Lightning to Digital AV Adapter)
```

3.1.3 C3. Support, Lift, and Confidence of the Association Rules Table

Values for the support, lift, and confidence of the association rules table. The complete rules table is provided in .csv format with the submission.

[40]:
```
## C3 Creating Rules Table

rules_table = association_rules(rules, metric = 'lift', min_threshold = 1)

rules_table.to_csv('D212_PA_MendezD_Task3_rules_table.csv', sep = ',', encoding␣
 ↪= 'utf-8', index = False)

rules_table.head(15)
```

[40]:
```
                                 antecedents  \
0          (Dust-Off Compressed Gas 2 pack)
1        (10ft iPHone Charger Cable 2 Pack)
2          (Dust-Off Compressed Gas 2 pack)
3             (Anker USB C to HDMI Adapter)
4        (VIVO Dual LCD Monitor Desk mount)
5             (Anker USB C to HDMI Adapter)
6   (Apple Lightning to Digital AV Adapter)
7                            (Apple Pencil)
8   (Apple Lightning to Digital AV Adapter)
9          (Dust-Off Compressed Gas 2 pack)
10                    (USB 2.0 Printer cable)
11  (Apple Lightning to Digital AV Adapter)
12  (Apple Lightning to Digital AV Adapter)
13       (VIVO Dual LCD Monitor Desk mount)
14              (Apple USB-C Charger cable)

                                 consequents  antecedent support  \
```

0	(10ft iPHone Charger Cable 2 Pack)	0.238368
1	(Dust-Off Compressed Gas 2 pack)	0.050527
2	(Anker USB C to HDMI Adapter)	0.238368
3	(Dust-Off Compressed Gas 2 pack)	0.068391
4	(Anker USB C to HDMI Adapter)	0.174110
5	(VIVO Dual LCD Monitor Desk mount)	0.068391
6	(Apple Pencil)	0.087188
7	(Apple Lightning to Digital AV Adapter)	0.179709
8	(Dust-Off Compressed Gas 2 pack)	0.087188
9	(Apple Lightning to Digital AV Adapter)	0.238368
10	(Apple Lightning to Digital AV Adapter)	0.170911
11	(USB 2.0 Printer cable)	0.087188
12	(VIVO Dual LCD Monitor Desk mount)	0.087188
13	(Apple Lightning to Digital AV Adapter)	0.174110
14	(Apple Pencil)	0.132116

	consequent support	support	confidence	lift	representativity	\
0	0.050527	0.023064	0.096756	1.914955	1.0	
1	0.238368	0.023064	0.456464	1.914955	1.0	
2	0.068391	0.024397	0.102349	1.496530	1.0	
3	0.238368	0.024397	0.356725	1.496530	1.0	
4	0.068391	0.020931	0.120214	1.757755	1.0	
5	0.174110	0.020931	0.306043	1.757755	1.0	
6	0.179709	0.028796	0.330275	1.837830	1.0	
7	0.087188	0.028796	0.160237	1.837830	1.0	
8	0.238368	0.024397	0.279817	1.173883	1.0	
9	0.087188	0.024397	0.102349	1.173883	1.0	
10	0.087188	0.021997	0.128705	1.476173	1.0	
11	0.170911	0.021997	0.252294	1.476173	1.0	
12	0.174110	0.021464	0.246177	1.413918	1.0	
13	0.087188	0.021464	0.123277	1.413918	1.0	
14	0.179709	0.025463	0.192735	1.072479	1.0	

	leverage	conviction	zhangs_metric	jaccard	certainty	kulczynski
0	0.011020	1.051182	0.627330	0.086760	0.048690	0.276610
1	0.011020	1.401255	0.503221	0.086760	0.286354	0.276610
2	0.008095	1.037830	0.435627	0.086402	0.036451	0.229537
3	0.008095	1.183991	0.356144	0.086402	0.155399	0.229537
4	0.009023	1.058905	0.521973	0.094465	0.055628	0.213129
5	0.009023	1.190117	0.462740	0.094465	0.159746	0.213129
6	0.013128	1.224818	0.499424	0.120941	0.183552	0.245256
7	0.013128	1.086988	0.555754	0.120941	0.080026	0.245256
8	0.003614	1.057552	0.162275	0.081009	0.054420	0.191083
9	0.003614	1.016889	0.194486	0.081009	0.016609	0.191083
10	0.007096	1.047650	0.389069	0.093168	0.045482	0.190499
11	0.007096	1.108844	0.353384	0.093168	0.098160	0.190499
12	0.006283	1.095602	0.320707	0.089494	0.087260	0.184727

```
13  0.006283     1.041163        0.354460  0.089494   0.039536     0.184727
14  0.001721     1.016135        0.077869  0.088920   0.015879     0.167213
```

3.1.4 C4. Top Three Rules Generated by the Apriori algorithm

Explain the top three relevant rules generated by the Apriori algorithm. Include a screenshot of the top three relevant rules.

[15]:
```python
# Top Three by Support

top_three_supp = rules_table.sort_values('support', ascending = False).head(3)
top_three_supp
```

[15]:
```
                             antecedents                       consequents  \
62  (VIVO Dual LCD Monitor Desk mount)    (Dust-Off Compressed Gas 2 pack)
63    (Dust-Off Compressed Gas 2 pack)  (VIVO Dual LCD Monitor Desk mount)
41    (Dust-Off Compressed Gas 2 pack)                       (HP 61 ink)

    antecedent support  consequent support   support  confidence      lift  \
62            0.174110            0.238368  0.059725    0.343032  1.439085
63            0.238368            0.174110  0.059725    0.250559  1.439085
41            0.238368            0.163845  0.052660    0.220917  1.348332

    representativity  leverage  conviction  zhangs_metric   jaccard  \
62               1.0  0.018223    1.159314       0.369437  0.169312
63               1.0  0.018223    1.102008       0.400606  0.169312
41               1.0  0.013604    1.073256       0.339197  0.150648

    certainty  kulczynski
62   0.137421    0.296796
63   0.092566    0.296796
41   0.068256    0.271158
```

[16]:
```python
# Top Three by Confidence

top_three_conf = rules_table.sort_values('confidence', ascending = False).
 ↪head(3)
top_three_conf
```

[16]:
```
                                antecedents                     consequents  \
1      (10ft iPHone Charger Cable 2 Pack)  (Dust-Off Compressed Gas 2 pack)
36  (FEIYOLD Blue light Blocking Glasses)  (Dust-Off Compressed Gas 2 pack)
52              (SanDisk Ultra 64GB card)  (Dust-Off Compressed Gas 2 pack)

    antecedent support  consequent support   support  confidence      lift  \
1             0.050527            0.238368  0.023064    0.456464  1.914955
36            0.065858            0.238368  0.027596    0.419028  1.757904
52            0.098254            0.238368  0.040928    0.416554  1.747522
```

```
    representativity  leverage  conviction  zhangs_metric   jaccard  \
1                1.0  0.011020    1.401255       0.503221  0.086760
36               1.0  0.011898    1.310962       0.461536  0.099759
52               1.0  0.017507    1.305401       0.474369  0.138413

    certainty  kulczynski
1    0.286354    0.276610
36   0.237201    0.267400
52   0.233952    0.294127
```

[17]:
```python
# Top Three by Lift

top_three_lift = rules_table.sort_values('lift', ascending = False).head(3)
top_three_lift
```

[17]:
```
                              antecedents                      consequents  \
85     (VIVO Dual LCD Monitor Desk mount)           (SanDisk Ultra 64GB card)
84              (SanDisk Ultra 64GB card)  (VIVO Dual LCD Monitor Desk mount)
65  (FEIYOLD Blue light Blocking Glasses)  (VIVO Dual LCD Monitor Desk mount)

    antecedent support  consequent support   support  confidence      lift  \
85            0.174110            0.098254  0.039195    0.225115  2.291162
84            0.098254            0.174110  0.039195    0.398915  2.291162
65            0.065858            0.174110  0.022930    0.348178  1.999758

    representativity  leverage  conviction  zhangs_metric   jaccard  \
85               1.0  0.022088    1.163716       0.682343  0.168096
84               1.0  0.022088    1.373997       0.624943  0.168096
65               1.0  0.011464    1.267048       0.535186  0.105651

    certainty  kulczynski
85   0.140684    0.312015
84   0.272197    0.312015
65   0.210764    0.239939
```

4 Part IV: Data Summary and Implications

4.1 D. Summary of the Data Analysis

4.1.1 D1. Significance of Support, Lift, and Confidence

Support is an important metric used in identifying frequently purchased itemsets. In this data set, the most frequently co-occurring items were `10ft iPHone Charger Cable 2 Pack` and `Dust-Off Compressed Gas 2 pack`, `FEIYOLD Blue light Blocking Glasses` and `Dust-Off Compressed Gas 2 pack`, and `SanDisk Ultra 64GB card` and `Dust-Off Compressed Gas 2 pack`. Since the support values range from 2.3% - 4.1%, they are relatively low, so they are not necessarily common but are still significant.

Confidence is a metric used for evaluating directional rules, such as if A is purchased then B is purchased. The pair of items with the highest confidence value of 0.456, `10ft iPHone Charger Cable 2 Pack` and `Dust-Off Compressed Gas 2 pack`, indicates that 45.6% of transactions of the charging cable also included the compressed gas. The pair `FEIYOLD Blue light Blocking Glasses` and `Dust-Off Compressed Gas 2 pack` has the second highest confidence of 0.419, indicating that 41.9% of transcations of the bluelight glasses also contained the compressed gas. The third highest pair with a confidence of 0.416, `SanDisk Ultra 64GB card` and `Dust-Off Compressed Gas 2 pack`, indicates that 41.7% of transactions of SD cards included the compressed gas yet again.

The Lift metric measures the strength of association between items. The two pairs of items, `VIVO Dual LCD Monitor Desk mount` and `SanDisk Ultra 64GB card` are 2.29 times more likely to be purchased together than expected by chance. The items `SanDisk Ultra 64GB card` and `VIVO Dual LCD Monitor Desk mount` are also 2.29 times more likely to be purchased together than expected by chance. The items `FEIYOLD Blue light Blocking Glasses` and `VIVO Dual LCD Monitor Desk mount` are 1.99 times more likely to be purchased together than expected by chance.

4.1.2 D2. Practical Significance of the Findings

The practical significance of support lies in its use in identifying popular itemsets and bundling opportunities, as it describes how frequently an itemset is purchased together. The practical significance of confidence consists of cross-selling strategies between items, as well as targeted marketing campaigns such as offering discounts for consequents to customers that have purchased antecedents. The lift metric also has practical significance, as measuring the assocation between items can also be used in bundling opportunities and targeted marketed campaigns as well.

4.1.3 D3. Recommended a Course of Action

By employing Market Basket Analysis, it was possible to uncover pairs of items that were frequently purchased together by telecom customers. It was shown that the most common consequent, based on support and confidence, was the `Dust-Off Compressed Gas 2 pack`. This may indicate that the compressed gas is sold with many items, so it could potentially be offered at a discount with a coupon with the purchase of any item. Additionally, the compressed gas could be strategically placed in the checkout aisles or in the "Frequently Bought Together" recommendations on the website to encourage purchases.

5 Part V: Attachments

5.1 E.Panopto Video

https://wgu.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=0ef53562-94f0-4543-99a4-b29b002c1dff

5.2 F. Acknowledgement of Web Sources

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5.3 G. Acknowledgement of Sources

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