conjoint to understand the customer preferences

```
In [1]: import pandas as pd
        data= pd.read_csv('conjoint_pizza.csv')
```

```
In [2]: data.columns
```

```
Out[2]: Index(['Rating', 'Type', 'Price', 'Container', 'Brand', 'Healthiness'], dtype
        ='object')
```

```
In [3]: data.shape
```

```
Out[3]: (18, 6)
```

```
In [4]: print(data['Type'].nunique())
        data['Type'].unique()
```

```
        3

Out[4]: array(['Paneer', 'Onion', 'Cheese'], dtype=object)
```

```
In [5]: print(data['Price'].nunique())
        data['Price'].unique()
```

```
        3

Out[5]: array(['Rs.150', 'Rs.190', 'Rs.170'], dtype=object)
```

```
In [6]: print(data['Container'].nunique())
        data['Container'].unique()
```

```
        4

Out[6]: array(['Cone', 'Box', 'Burger', 'Buger'], dtype=object)
```

```
In [7]: Y = data['Rating']
        X = data.drop(columns='Rating')
```

```
In [8]: X.shape
```

```
Out[8]: (18, 5)
```

```
In [9]: import statsmodels.api as sm
```

In [10]:
```
Xnew=pd.get_dummies(X)
print(Xnew)
```

```
    Type_Cheese  Type_Onion  Type_Paneer  Price_Rs.150  Price_Rs.170  \
0             0           0            1             1             0   
1             0           1            0             0             0   
2             0           1            0             1             0   
3             1           0            0             0             0   
4             0           1            0             0             1   
5             0           0            1             1             0   
6             1           0            0             1             0   
7             0           1            0             0             1   
8             1           0            0             0             1   
9             0           0            1             0             0   
10            0           0            1             0             1   
11            1           0            0             1             0   
12            0           1            0             1             0   
13            0           0            1             0             0   
14            0           1            0             0             0   
15            0           0            1             0             1   
16            1           0            0             0             1   
17            1           0            0             0             0   

    Price_Rs.190  Container_Box  Container_Buger  Container_Burger  \
0              0              0                0                 0   
1              1              0                0                 0   
2              0              1                0                 0   
3              1              0                0                 0   
4              0              0                0                 1   
5              0              0                0                 1   
6              0              1                0                 0   
7              0              1                0                 0   
8              0              0                0                 0   
9              1              1                0                 0   
10             0              1                0                 0   
11             0              0                0                 1   
12             0              0                0                 0   
13             1              0                0                 1   
14             1              1                0                 0   
15             0              1                0                 0   
16             0              1                0                 0   
17             1              0                1                 0   

    Container_Cone  Brand_Brand_A  Brand_Brand_B  Brand_Brand_C  \
0                1              1              0              0   
1                1              0              1              0   
2                0              0              0              1   
3                1              1              0              0   
4                0              0              1              0   
5                0              0              1              0   
6                0              0              1              0   
7                0              1              0              0   
8                1              0              0              1   
9                0              0              0              1   
10               0              0              1              0   
```

```
11               0              0              0              1
12               1              1              0              0
13               0              1              0              0
14               0              0              0              1
15               0              0              0              1
16               0              1              0              0
17               0              0              1              0

    Healthiness_ExtraFat  Healthiness_LessFat  Healthiness_Normal
0                      0                    1                   0
1                      1                    0                   0
2                      1                    0                   0
3                      0                    1                   0
4                      0                    1                   0
5                      1                    0                   0
6                      0                    0                   1
7                      0                    0                   1
8                      1                    0                   0
9                      0                    0                   1
10                     0                    1                   0
11                     0                    1                   0
12                     0                    0                   1
13                     1                    0                   0
14                     0                    1                   0
15                     0                    0                   1
16                     1                    0                   0
17                     0                    0                   1
```

In [11]:

```
Xnew.columns
```

Out[11]:

```
Index(['Type_Cheese', 'Type_Onion', 'Type_Paneer', 'Price_Rs.150',
       'Price_Rs.170', 'Price_Rs.190', 'Container_Box', 'Container_Buger',
       'Container_Burger', 'Container_Cone', 'Brand_Brand_A', 'Brand_Brand_B',
       'Brand_Brand_C', 'Healthiness_ExtraFat', 'Healthiness_LessFat',
       'Healthiness_Normal'],
      dtype='object')
```

In [12]:

```
colsnot=['Type_Cheese','Price_Rs.150','Container_Cone','Brand_Brand_A','Healthine
Xfinal=Xnew.drop(columns=colsnot,axis=1)
```

In [13]:

```
Xfinal.shape
```

Out[13]:

```
(18, 11)
```

In [14]:

```
model=sm.OLS(Y,Xfinal).fit()
```

In [15]:

```
model.summary()
```

```
C:\Users\manoj\anaconda3\lib\site-packages\scipy\stats\stats.py:1603: UserWarni
ng: kurtosistest only valid for n>=20 ... continuing anyway, n=18
  warnings.warn("kurtosistest only valid for n>=20 ... continuing "
```

Out[15]:

OLS Regression Results

Dep. Variable:	Rating	**R-squared (uncentered):**	0.984
Model:	OLS	**Adj. R-squared (uncentered):**	0.958
Method:	Least Squares	**F-statistic:**	38.30
Date:	Thu, 18 Mar 2021	**Prob (F-statistic):**	3.49e-05
Time:	15:42:32	**Log-Likelihood:**	-7.5988
No. Observations:	18	**AIC:**	37.20
Df Residuals:	7	**BIC:**	46.99
Df Model:	11		
Covariance Type:	nonrobust		

	coef	**std err**	**t**	**P>|t|**	**[0.025**	**0.975]**
Type_Onion	-0.3856	0.347	-1.112	0.303	-1.205	0.434
Type_Paneer	0.2493	0.364	0.685	0.515	-0.611	1.110
Price_Rs.170	2.1573	0.335	6.431	0.000	1.364	2.950
Price_Rs.190	2.1150	0.344	6.149	0.000	1.302	2.928
Container_Box	1.5600	0.395	3.950	0.006	0.626	2.494
Container_Buger	0.3733	0.877	0.425	0.683	-1.701	2.448
Container_Burger	2.1904	0.412	5.319	0.001	1.217	3.164
Brand_Brand_B	-1.9484	0.369	-5.280	0.001	-2.821	-1.076
Brand_Brand_C	-0.8745	0.349	-2.504	0.041	-1.700	-0.049
Healthiness_ExtraFat	0.8122	0.315	2.576	0.037	0.067	1.558
Healthiness_Normal	1.4601	0.377	3.876	0.006	0.569	2.351

Omnibus:	1.075	**Durbin-Watson:**	1.529
Prob(Omnibus):	0.584	**Jarque-Bera (JB):**	0.973
Skew:	0.416	**Prob(JB):**	0.615
Kurtosis:	2.223	**Cond. No.**	7.83

Warnings:
[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.

```
In [ ]:
```

```
In [ ]:
```