Mc Donald segmentation case study

This case study has been derived from the book Market segmentation analysis with the aim to classify fast food consumers into different segments according to various factors like age, profession,frequency of visit etc.

```
# Importing packages
import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib as mp
import matplotlib.pyplot as plt
from sklearn.preprocessing import LabelEncoder
from sklearn.cluster import KMeans
from sklearn.decomposition import PCA
from sklearn.cluster import AgglomerativeClustering
from scipy.cluster.hierarchy import dendrogram
from scipy.cluster.hierarchy import linkage
from sklearn.cluster import DBscan
from sklearn.metrics.cluster.unsupervised_evaluation import silhouette_score
from sklearn.metrics.cluster.supervised_evaluation import adjusted_rand_score
from sklearn.metrics.cluster.supervised_evaluation import adjusted_mutual_info_score
%matplotlib inline
# Importing dataset
mcdonald = pd.read_csv("/content/drive/MyDrive/Colab Notebooks/Machine Learning/Datasets/mcdonald.csv")
mcdonald.head()
```

	yummy	convenient	spicy	fattening	greasy	fast	cheap	tasty	expensive	healthy	disgusting	Like	Age	VisitFrequency	Gender
0	No	Yes	No	Yes	No	Yes	Yes	Yes	Yes	No	No	I	61	Every three months	Female
1	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	Yes	No	I	62	Every three months	Female
2	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	I	63	Every three months	Male
3	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	No	No	I	20	Once a month	Female
4	No	No	No	No	No	No	No	No	No	No	No	I	26	Once a month	Male

```
# checking for null data
mcdonald.isnull()
mcdonald.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1453 entries, 0 to 1452
Data columns (total 15 columns):
 0   yummy        1453 non-null   object
 1   convenient   1453 non-null   object
 2   spicy        1453 non-null   object
 3   fattening    1453 non-null   object
 4   greasy       1453 non-null   object
 5   fast         1453 non-null   object
 6   cheap        1453 non-null   object
 7   tasty        1453 non-null   object
 8   expensive    1453 non-null   object
 9   healthy      1453 non-null   object
 10  disgusting   1453 non-null   object
 11  Like         1453 non-null   object
 12  Age          1453 non-null   int64
 13  VisitFrequency  1453 non-null   object
 14  Gender       1453 non-null   object
dtypes: int64(1), object(14)
memory usage: 170.3+ KB
None
```

```
# Checking data types
mcdonald.dtypes
```

```
yummy          object
convenient     object
spicy          object
fattening      object
greasy         object
fast           object
cheap          object
tasty          object
expensive      object
healthy        object
disgusting     object
Like           object
Age            int64
VisitFrequency    object
Gender         object
dtype: object
```

```
# Checking value counts
mcdonald.value_counts()
```

```
yummy  convenient  spicy  fattening  greasy  fast  cheap  tasty  expensive  healthy  disgusting  Like  Age  VisitFrequency  Gender
No     Yes         No     Yes        No      Yes   Yes    Yes    Yes        No       No          I     61   Every three months  Female
Yes    Yes         No     No         Yes     Yes   Yes    Yes    No         Yes      No          I     62   Every three months  Female
No     Yes         Yes    Yes        Yes     Yes   Yes    Yes    Yes        No       Yes         I     63   Every three months  Male
Yes    Yes         No     Yes        Yes     Yes   Yes    Yes    No         No       No          I     20   Once a month       Female
No     No          No     No         No      No    No     No     No         No       No          I     26   Once a month       Male
                                                                                                                                   ...
Yes    No          No     No         No      No    No     No     No         No       No          I     47   Once a month       Male
No     No          No     No         No      No    No     No     No         No       No          I     49   Once a month       Female
Yes    No          No     No         No      No    No     No     No         No       No          I     50   Once a month       Female
No     No          No     No         No      No    No     No     No         No       No          I     51   Every two weeks    Male
Yes    No          No     No         No      No    No     No     No         No       No          I     55   Every two weeks    Male
Name: count, Length: 1453, dtype: int64
```

```
# Checking null values
mcdonald.isnull().sum()
```

```
yummy          0
convenient     0
spicy          0
fattening      0
greasy         0
fast           0
cheap          0
tasty          0
expensive      0
healthy        0
disgusting     0
Like           0
Age            0
VisitFrequency    0
Gender         0
dtype: int64
```

```
# Checking value counts
mcdonald.value_counts()
```

```
yummy  convenient  spicy  fattening  greasy  fast  cheap  tasty  expensive  healthy  disgusting
No     Yes         No     Yes        No      Yes   Yes    Yes    Yes        No       No          I
Yes    Yes         No     No         Yes     Yes   Yes    Yes    No         Yes      No          I
No     Yes         Yes    Yes        Yes     Yes   Yes    Yes    Yes        No       Yes         I
Yes    Yes         No     Yes        Yes     Yes   Yes    Yes    No         No       No          I
No     No          No     No         No      No    No     No     No         No       No          I
                                                                                                  ...
Yes    No          No     No         No      No    No     No     No         No       No          I
No     No          No     No         No      No    No     No     No         No       No          I
Yes    No          No     No         No      No    No     No     No         No       No          I
No     No          No     No         No      No    No     No     No         No       No          I
Yes    No          No     No         No      No    No     No     No         No       No          I
Name: count, Length: 1453, dtype: int64
```

```
# Checking value counts
mcdonald.value_counts()
```

```
yummy  convenient  spicy  fattening  greasy  fast  cheap  tasty  expensive  healthy  disgusting  Like  Age  VisitFrequency  Gender
No     Yes         No     Yes        No      Yes   Yes    Yes    Yes        No       No          I     61   Every three months  Female
Yes    Yes         No     No         Yes     Yes   Yes    Yes    No         Yes      No          I     62   Every three months  Female
No     Yes         Yes    Yes        Yes     Yes   Yes    Yes    Yes        No       Yes         I     63   Every three months  Male
Yes    Yes         No     Yes        Yes     Yes   Yes    Yes    No         No       No          I     20   Once a month       Female
No     No          No     No         No      No    No     No     No         No       No          I     26   Once a month       Male
                                                                                                                                   ...
Yes    No          No     No         No      No    No     No     No         No       No          I     47   Once a month       Male
No     No          No     No         No      No    No     No     No         No       No          I     49   Once a month       Female
Yes    No          No     No         No      No    No     No     No         No       No          I     50   Once a month       Female
No     No          No     No         No      No    No     No     No         No       No          I     51   Every two weeks    Male
Yes    No          No     No         No      No    No     No     No         No       No          I     55   Every two weeks    Male
Name: count, Length: 1453, dtype: int64
```

```
# Checking dimensions
mcdonald.shape
```

```
(1453, 15)
```

```
# Checking data types
mcdonald.dtypes
```

```
yummy          object
convenient     object
spicy          object
fattening      object
greasy         object
fast           object
cheap          object
tasty          object
expensive      object
healthy        object
disgusting     object
Like           object
Age            int64
VisitFrequency    object
Gender         object
dtype: object
```