# ANALYSIS OF THE GUARDIAN LEAGUE TABLE

The purpose of this writeup is to review and analyse the criteria used by universities to determine how they are being ranked. One major question that needs to be answered is whether or not the ranking is based on the quality of the institution or the quality of the students. Another question is whether the ranking is based on the university's reputation with other countries. This writeup will show how UWE is being compared both previously and currently with other universities in the UK. The dataset which was obtained from the National Students Survey was analysed by The Guardian league table has 12 years work of guardian data (The Guardian, 2021). Different libraries will be use to analyze the data set, such as Python, pandas and seaborn. The relevant key stakeholders who will be interested in this visualization will be identified, and lastly, some recommendations will be provided on how UWE can improve their system in order to go higher in their ranking. The screenshot shown below shows the guardian league table analysis for the UK.
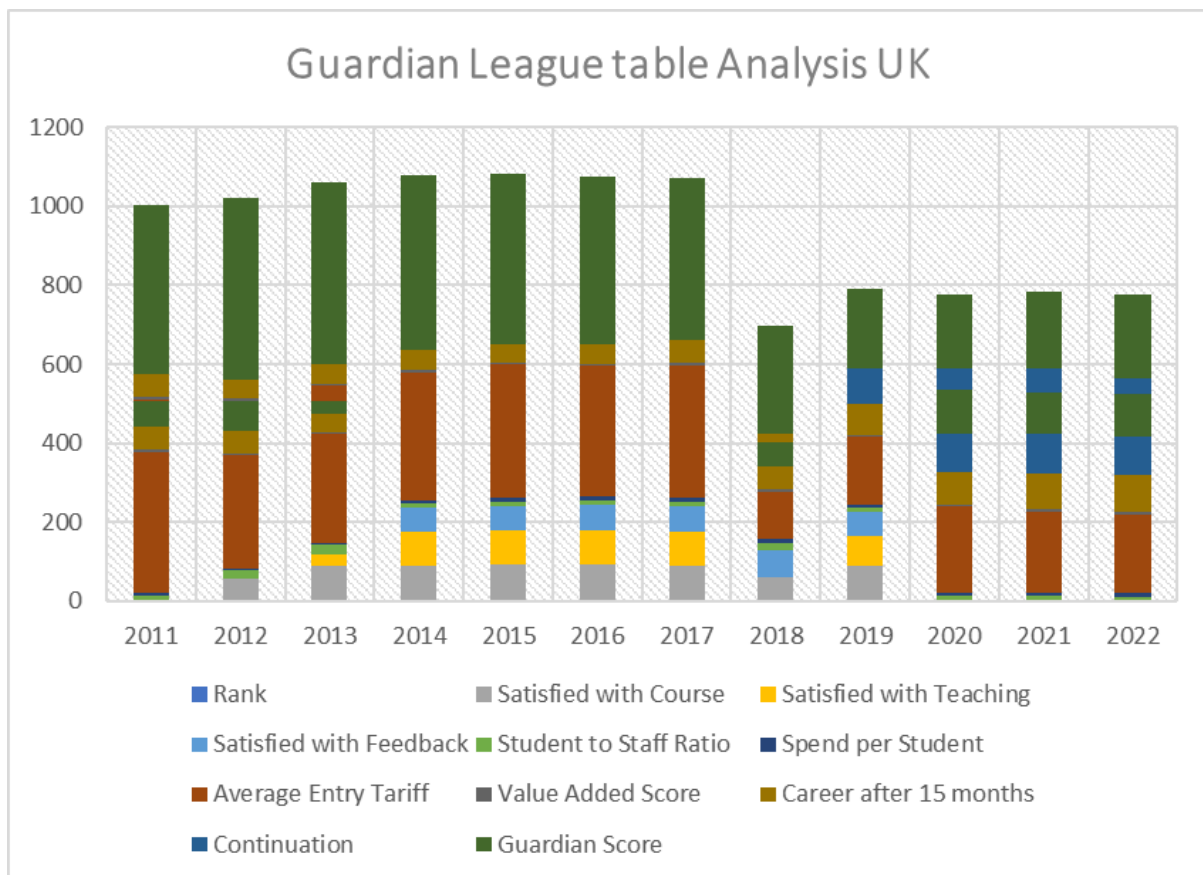
Businesses do not operate in a vacuum but rather in a dynamic environment that has a direct influence on how they operate and whether they will achieve their objectives. There are external and internal business environment. The external business environment is composed of numerous outside organizations and forces that we can group into seven key sub environments: economic, political and legal, demographic, social, competitive, global, and technological.

Each of these sectors creates a unique set of challenges and opportunities for businesses and for the stakeholders that constitute the internal environments – entrepreneur, managers, workers, and customers (Brandell, 2016). In the context of the dataset adopted for this essay, therefore, the external environment of the UWE, Bristol includes the economic, political, legal, demographic, social, global, competitive, and technological factors that either make or mar the achievement of the institution. For the purpose of this writing, the global and competitive external environment are crucial. This is because the dataset speaks of the global ranking of the UWE among other competing higher institutions of learning across the world. The internal environment of the UWE represented in the dataset of this essay comprises the stakeholders, which are identified in the next subsection.

Identify the stakeholders

The stakeholder is the:

- Vice Chancellor
- Staff
- Students

TECHNICAL STACK(PYTHON)

- Import Libraries

```
In [9]:  import pandas as pd
         import numpy as np
         import matplotlib.pyplot as plt
         %matplotlib inline
         import seaborn as sns
         plt.rcParams['figure.figsize'] = (5, 5)
```

- Read data file

```
In [2]:  ▶ data=pd.read_csv('twelve_year_guardian_league_table.csv')
```

```
In [3]:  ▶ data
```

Out[3]:

	Year	Rank	Institution	Satisfied_with_Course	Satisfied_with_Teaching	Satisfied_with_Feedback	Student_to Staff_Ratio	Spend_per_Student	Average_Entry_Tariff
0	2021	20	Aberdeen	87	86	69	16.0	4.4	183.0
1	2020	34	Aberdeen	86	87	71	16.0	4.3	184.0
2	2019	51	Aberdeen	86	88	67	15.0	4.5	181.0
3	2018	46	Aberdeen	86	88	68	14.0	4.5	168.0
4	2017	36	Aberdeen	84	86	65	13.0	5.8	442.0
...	...	...	...	...	...	...	...	...	...
1430	2014	94	York St John	82	86	67	20.0	5.9	301.0
1431	2013	98	York St John	84	87	71	21.0	5.4	281.0
1432	2012	96	York St John	81	84	72	21.0	5.8	280.0
1433	2011	90	York St John	80	83	69	20.0	5.3	278.0
1434	2022	84	York St John	81	83	77	18.0	3.4	108.0

1435 rows × 13 columns

- ## Exploratory Data Analysis(EDA)

EDA

```
In [4]:  ▶ #descriptive statistics
            data.shape
```

Out[4]: (1435, 13)

```
In [5]:  ▶ data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1435 entries, 0 to 1434
Data columns (total 13 columns):
 #   Column                   Non-Null Count   Dtype
---  ------                   --------------   -----
 0   Year                     1435 non-null    int64
 1   Rank                     1435 non-null    int64
 2   Institution              1435 non-null    object
 3   Satisfied_with_Course    1435 non-null    int64
 4   Satisfied_with_Teaching  1435 non-null    int64
 5   Satisfied_with_Feedback  1435 non-null    int64
 6   Student_to Staff_Ratio   1435 non-null    float64
 7   Spend_per_Student        1435 non-null    float64
 8   Average_Entry_Tariff     1435 non-null    float64
 9   Value_Added_Score        1435 non-null    float64
 10  Career_after_15 months   1435 non-null    int64
 11  Continuation             1435 non-null    int64
 12  Guardian Score           1435 non-null    float64
dtypes: float64(5), int64(7), object(1)
memory usage: 145.9+ KB
```

```
In [6]:   data.isnull().sum()
```

```
Out[6]:   Year                       0
          Rank                       0
          Institution                0
          Satisfied_with_Course      0
          Satisfied_with_Teaching    0
          Satisfied_with_Feedback    0
          Student_to Staff_Ratio     0
          Spend_per_Student          0
          Average_Entry_Tariff       0
          Value_Added_Score          0
          Career_after_15 months     0
          Continuation               0
          Guardian Score             0
          dtype: int64
```

```
In [7]:   data.describe()
```

Out[7]:

	Year	Rank	Satisfied_with_Course	Satisfied_with_Teaching	Satisfied_with_Feedback	Student_to Staff_Ratio	Spend_per_Student	Average_Entry_T
count	1435.00000	1435.000000	1435.000000	1435.000000	1435.000000	1435.000000	1435.000000	1435.000
mean	2016.52892	60.149129	82.437631	84.000697	69.004878	16.336307	5.242509	255.615
std	3.45660	34.527394	9.491359	9.136002	8.800396	3.105738	1.770305	121.356
min	2011.00000	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000
25%	2014.00000	30.000000	80.000000	82.000000	66.000000	14.000000	3.900000	135.500
50%	2017.00000	60.000000	84.000000	85.000000	70.000000	16.000000	5.100000	258.000
75%	2020.00000	90.000000	87.000000	88.000000	73.000000	18.000000	6.400000	334.000
max	2022.00000	121.000000	94.000000	95.000000	85.000000	26.000000	10.000000	615.000

```
In [8]:   data['Satisfied_with_Course'].mean()
```

```
Out[8]:   82.43763066202091
```

```
In [15]:  data['Satisfied_with_Course'] = np.where(data['Satisfied_with_Course'] == 0.000000, data['Satisfied_with_Course'].mean(), dat
          data['Satisfied_with_Teaching'] = np.where(data['Satisfied_with_Teaching'] == 0.000000, data['Satisfied_with_Teaching'].mean(
          data['Satisfied_with_Feedback'] = np.where(data['Satisfied_with_Feedback'] == 0.000000, data['Satisfied_with_Feedback'].mean(
          data['Student_to Staff_Ratio'] = np.where(data['Student_to Staff_Ratio'] == 0.000000, data['Student_to Staff_Ratio'].mean(),
          data['Spend_per_Student'] = np.where(data['Spend_per_Student'] == 0.000000, data['Spend_per_Student'].mean(), data['Spend_per
          data['Average_Entry_Tariff'] = np.where(data['Average_Entry_Tariff'] == 0.000000, data['Average_Entry_Tariff'].mean(), data['
          data['Value_Added_Score'] = np.where(data['Value_Added_Score'] == 0.000000, data['Value_Added_Score'].mean(), data['Value_Add
          data['Career_after_15 months'] = np.where(data['Career_after_15 months'] == 0.000000, data['Career_after_15 months'].mean(),
          data['Continuation'] = np.where(data['Continuation'] == 0.000000, data['Continuation'].mean(), data['Continuation'])
          data['Guardian Score'] = np.where(data['Guardian Score'] == 0.000000, data['Guardian Score'].mean(), data['Guardian Score'])

          data.head()
```

Out[15]:

|	Year	Rank	Institution	Satisfied_with_Course	Satisfied_with_Teaching	Satisfied_with_Feedback	Student_to Staff_Ratio	Spend_per_Student	Average_Entry_Tariff	V
0	2021	20	Aberdeen	87.0	86.0	69.0	16.0	4.4	183.0	
1	2020	34	Aberdeen	86.0	87.0	71.0	16.0	4.3	184.0	
2	2019	51	Aberdeen	86.0	88.0	67.0	15.0	4.5	181.0	
3	2018	46	Aberdeen	86.0	88.0	68.0	14.0	4.5	168.0	
4	2017	36	Aberdeen	84.0	86.0	65.0	13.0	5.8	442.0	

Exploratory Graph

Exploratory graphs

Data Distribution

```
In [16]:  #plot the histogram to see the distribution of the point data.
          sns.displot(data, x="Guardian Score")
```

```
Out[16]:  <seaborn.axisgrid.FacetGrid at 0x21ea6a63c70>
```
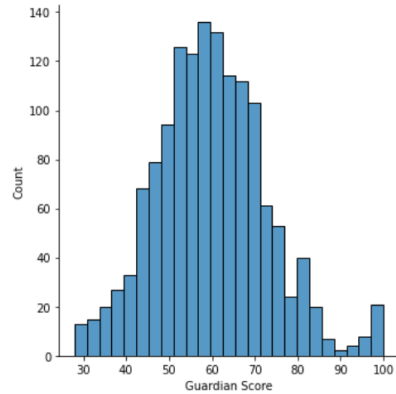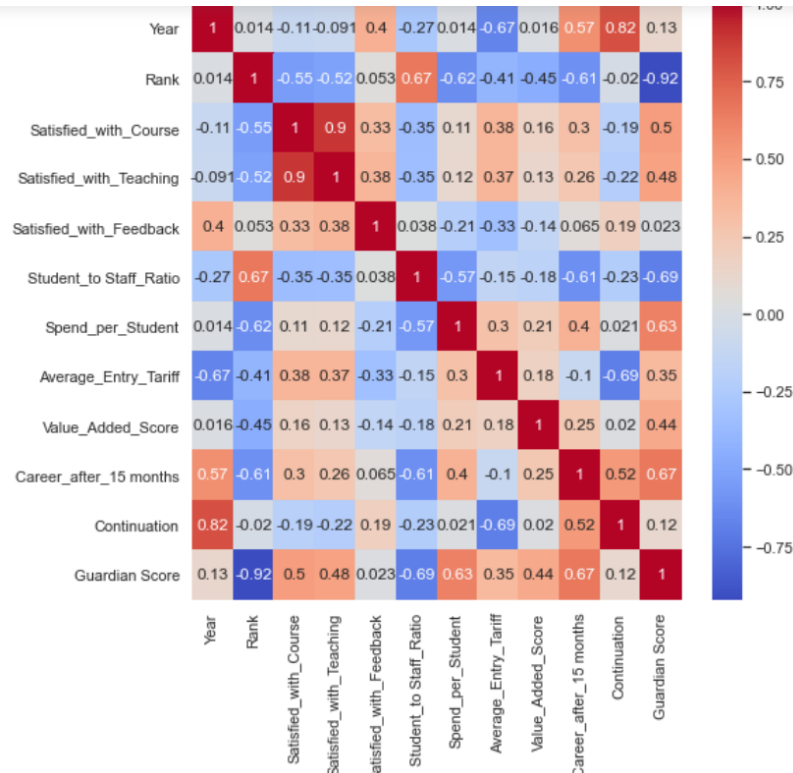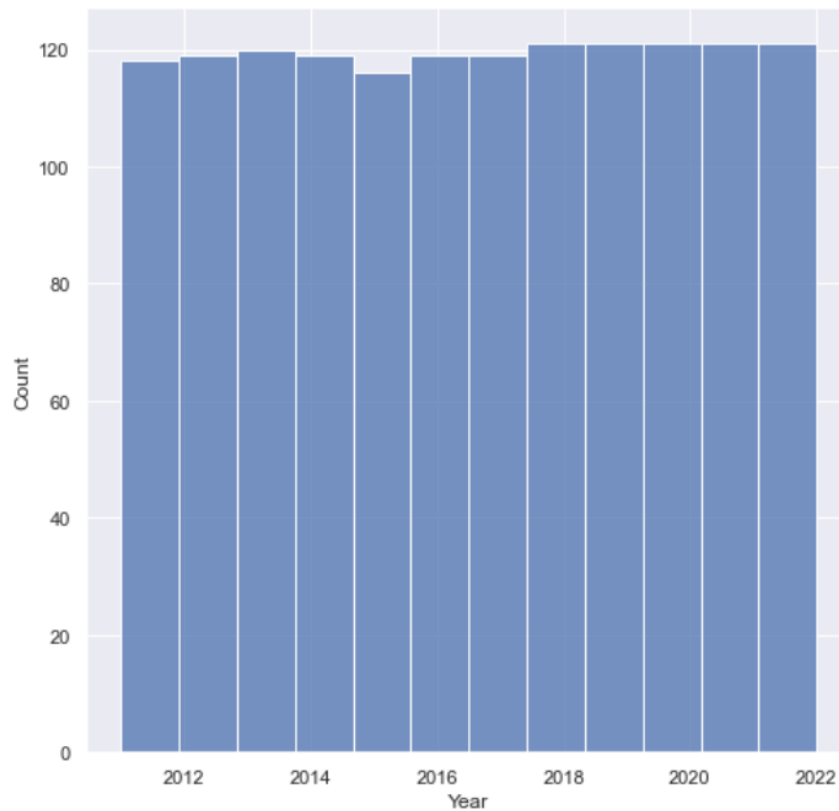

Correlation

```
In [24]:  corrMatrix = data.corr()
          sns.set(rc = {'figure.figsize':(8,8)})
          sns.heatmap(corrMatrix, annot = True, cmap= 'coolwarm')
```

Output

charts comparing variables

```
In [28]:  ▶  sns.histplot(x='Year', data=data);
```



```
In [38]:  ▶  data_2021.shape

Out[38]:  (121, 13)
```

STEPS TO FOLLOW(CODE REQUIRED)

-Import Libraries

- import pandas as pd
- import numpy as np
- import matplotlib.pyplot as plt
- %matplotlib inline
- import seaborn as sns

-   Descriptive statistics

- plt.rcParams['figure.figsize'] = (5, 5)
- data.shape
- data.info()
- data.isnull().sum()
- data.describe()
- data['Satisfied_with_Course'].mean()

- #plot the histogram to see the distribution of the point data.:(sns.displot(data, x="Guardian Score"))
- Correlation

corrMatrix = data.corr()

sns.set(rc = {'figure.figsize':(8,8)})

sns.heatmap(corrMatrix, annot = True, cmap= 'coolwarm')

- **Chart comparing variable**

sns.histplot(x='Year', data=data);

- **Sorting the data into year**

#2021 Guardian Scores

data_2021 =data.loc[data['Year'] == 2021]

data_2021=data_2021.head(18)

sns.set(rc = {'figure.figsize':(20,20)})

#sns.histplot(x='Institution', y ='Guardian Score', data=data_2021);

sns.scatterplot(x='Institution', y ='Guardian Score', s= 100, palette="deep", data=data_2021);

CONCLUSION

In conclusion, UWE management team should conduct a review study on the strengths of the institution in 2021 when it received it highest ranking so far and the weaknesses of the institution in 2016 when it received it lowest ranking so far. The result of this review of strengths and weaknesses will enable the institution to plan adequately for future competitive ranking.

Teaching staff across all subject areas in UWE should be encouraged to embrace personal and professional development that will enhance their teaching skills and motivate students to learn their individual chosen subject to their satisfaction.

The processes of accessing the data and visualising them in line with the focus of this essay presented some challenges. Among these challenges was the rigor of visualising the data in Jupyter notebook. Since there is no scheduling option in Jupyter notebook, I must then

manually refresh than automatically refresh. However, this did not so much affect the process, as I took my time to refresh manually every necessary time. Therefore, the use of Jupyter notebook for the visualisation was both rigorous and time consuming. Similarly, the use of Jupyter notebook for the visualisation also was challenging because it is not a completely open platform. In other visualization tools such as Power BI and Tableau, developers can import the visuals rather than recreating them. However, in Jupyter notebook, one must recreate the visuals rather than importing. So, it takes time to recreate.

REFERENCES

Brandell, B., 2016. *Business 2 Community "What is business process Management".* [Online] Available at: https://www.business2community.com, [Accessed 15 August 2022].

The Guardian, 2021. *The Guardian.* [Online] Available at: https://www.theguardian.com/education/2021/sep/11/how-to-use-the-guardian-university-guide2022#:~:text=The%20Guardian%20score%2C%20out%20of,students%20in%20the%20latest%20NSS. [Accessed 19 FEBRUARY 2022].

UWE Bristol , 2022. *UWE Bristol rises to 21st place in UK in Guardian University Guide 2021.* [Online] Available at: https://info.uwe.ac.uk/news/uwenews/news.aspx?id=4066

[Accessed 12 March 2022].