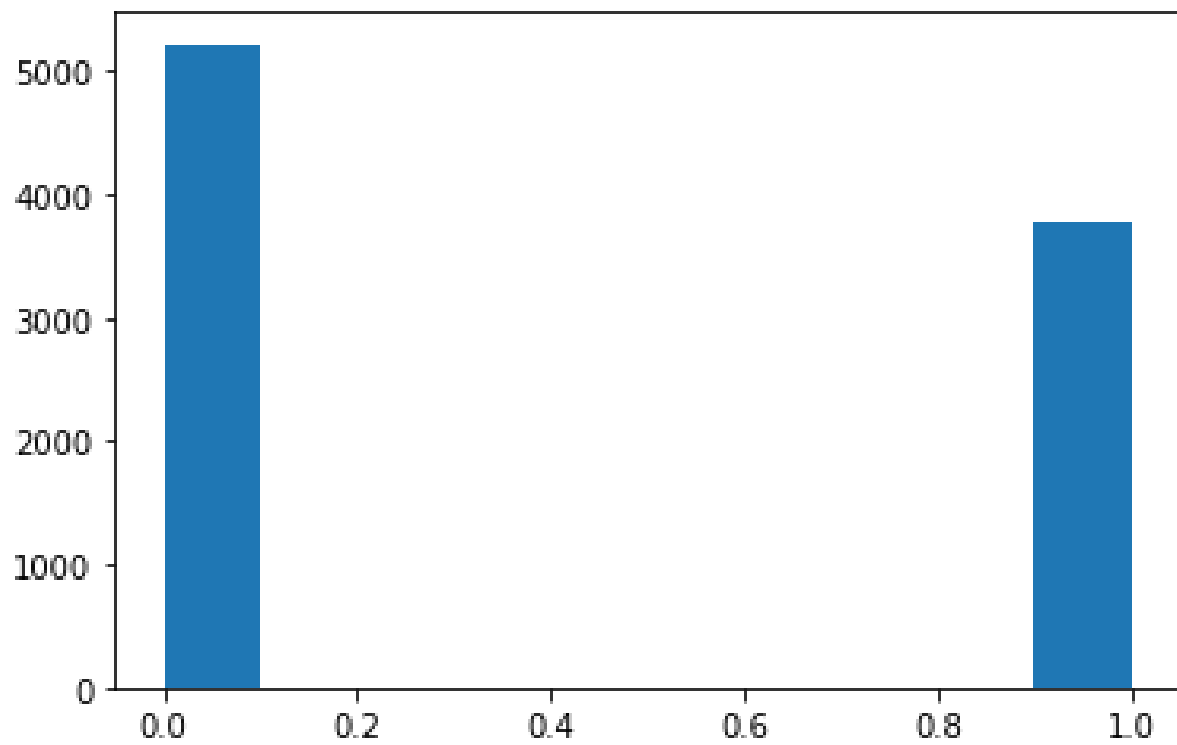


The Given Dataset is Unbalanced:-

```
0    5217  
1    3783  
Name: HS, dtype: int64
```



Using Bag of Words Model

Naive-Bayes

```
[[1115  625]
 [ 882  378]]
```

	precision	recall	f1-score	support
0	0.56	0.64	0.60	1740
1	0.38	0.30	0.33	1260
accuracy			0.50	3000
macro avg	0.47	0.47	0.47	3000
weighted avg	0.48	0.50	0.49	3000

0.4976666666666665

Logistic Regression

```
[[1339  401]
 [1010  250]]
```

	precision	recall	f1-score	support
0	0.57	0.77	0.65	1740
1	0.38	0.20	0.26	1260
accuracy			0.53	3000
macro avg	0.48	0.48	0.46	3000
weighted avg	0.49	0.53	0.49	3000

0.5296666666666666

K-NN

```
[[1724  16]
 [1251   9]]
```

	precision	recall	f1-score	support
0	0.58	0.99	0.73	1740
1	0.36	0.01	0.01	1260
accuracy			0.58	3000
macro avg	0.47	0.50	0.37	3000
weighted avg	0.49	0.58	0.43	3000

0.5776666666666667

SVM-Linear

```
[[1270 470]
 [ 971 289]]
```

	precision	recall	f1-score	support
0	0.57	0.73	0.64	1740
1	0.38	0.23	0.29	1260
accuracy			0.52	3000
macro avg	0.47	0.48	0.46	3000
weighted avg	0.49	0.52	0.49	3000

0.5196666666666667

SVM - rbf

```
[[1437 303]
 [1089 171]]
```

	precision	recall	f1-score	support
0	0.57	0.83	0.67	1740
1	0.36	0.14	0.20	1260
accuracy			0.54	3000
macro avg	0.46	0.48	0.44	3000
weighted avg	0.48	0.54	0.47	3000

0.536

Decision Tree

```
[[1001 739]
 [ 779 481]]
```

	precision	recall	f1-score	support
0	0.56	0.58	0.57	1740
1	0.39	0.38	0.39	1260
accuracy			0.49	3000
macro avg	0.48	0.48	0.48	3000
weighted avg	0.49	0.49	0.49	3000

0.494

Random Forest

```
[[1196 544]
 [ 867 393]]
```

	precision	recall	f1-score	support
0	0.58	0.69	0.63	1740
1	0.42	0.31	0.36	1260
accuracy			0.53	3000
macro avg	0.50	0.50	0.49	3000
weighted avg	0.51	0.53	0.52	3000

0.5296666666666666

Using TF-IDF Model

Logistic Regression

```
[[1388 352]
 [1053 207]]
```

	precision	recall	f1-score	support
0	0.57	0.80	0.66	1740
1	0.37	0.16	0.23	1260
accuracy			0.53	3000
macro avg	0.47	0.48	0.45	3000
weighted avg	0.49	0.53	0.48	3000

0.5316666666666666

Naive-Bayes

```
[[1035 705]
 [ 810 450]]
```

	precision	recall	f1-score	support
0	0.56	0.59	0.58	1740
1	0.39	0.36	0.37	1260
accuracy			0.49	3000
macro avg	0.48	0.48	0.48	3000
weighted avg	0.49	0.49	0.49	3000

0.495

K-NN

```
[[1739  1]  
 [1260  0]]
```

	precision	recall	f1-score	support
0	0.58	1.00	0.73	1740
1	0.00	0.00	0.00	1260
accuracy			0.58	3000
macro avg	0.29	0.50	0.37	3000
weighted avg	0.34	0.58	0.43	3000

0.5796666666666667

SVM-Linear

```
[[1313 427]  
 [ 977 283]]
```

	precision	recall	f1-score	support
0	0.57	0.75	0.65	1740
1	0.40	0.22	0.29	1260
accuracy			0.53	3000
macro avg	0.49	0.49	0.47	3000
weighted avg	0.50	0.53	0.50	3000

0.532

SVM - rbf

```
[[1389 351]  
 [1041 219]]
```

	precision	recall	f1-score	support
0	0.57	0.80	0.67	1740
1	0.38	0.17	0.24	1260
accuracy			0.54	3000
macro avg	0.48	0.49	0.45	3000
weighted avg	0.49	0.54	0.49	3000

0.536

Decision Tree

```
[[1263  477]
 [ 883  377]]
```

	precision	recall	f1-score	support
0	0.59	0.73	0.65	1740
1	0.44	0.30	0.36	1260
accuracy			0.55	3000
macro avg	0.51	0.51	0.50	3000
weighted avg	0.53	0.55	0.53	3000

0.5466666666666666

Random Forest

```
[[1212  528]
 [ 906  354]]
```

	precision	recall	f1-score	support
0	0.57	0.70	0.63	1740
1	0.40	0.28	0.33	1260
accuracy			0.52	3000
macro avg	0.49	0.49	0.48	3000
weighted avg	0.50	0.52	0.50	3000

0.522

Using Word2Vec Model

Logistic Regression

```
[[ 611 1129]
 [ 470  790]]
```

	precision	recall	f1-score	support
0	0.57	0.35	0.43	1740
1	0.41	0.63	0.50	1260
accuracy			0.47	3000
macro avg	0.49	0.49	0.47	3000
weighted avg	0.50	0.47	0.46	3000

0.467

Naive-Bayes

```
[[1170 570]
 [ 832 428]]
precision recall f1-score support

0 0.58 0.67 0.63 1740
1 0.43 0.34 0.38 1260

accuracy 0.53 3000
macro avg 0.51 0.51 0.50 3000
weighted avg 0.52 0.53 0.52 3000

0.5326666666666666
```

K-NN

```
[[1063 677]
 [ 696 564]]
precision recall f1-score support

0 0.60 0.61 0.61 1740
1 0.45 0.45 0.45 1260

accuracy 0.54 3000
macro avg 0.53 0.53 0.53 3000
weighted avg 0.54 0.54 0.54 3000

0.5423333333333333
```

SVM-Linear

```
[[823 917]
 [618 642]]
precision recall f1-score support

0 0.57 0.47 0.52 1740
1 0.41 0.51 0.46 1260

accuracy 0.49 3000
macro avg 0.49 0.49 0.49 3000
weighted avg 0.50 0.49 0.49 3000

0.48833333333333334
```

SVM - rbf

```
[[1177 563]
 [ 789 471]]
```

	precision	recall	f1-score	support
0	0.60	0.68	0.64	1740
1	0.46	0.37	0.41	1260
accuracy			0.55	3000
macro avg	0.53	0.53	0.52	3000
weighted avg	0.54	0.55	0.54	3000

0.5493333333333333

Decision Tree

```
[[ 739 1001]
 [ 491  769]]
```

	precision	recall	f1-score	support
0	0.60	0.42	0.50	1740
1	0.43	0.61	0.51	1260
accuracy			0.50	3000
macro avg	0.52	0.52	0.50	3000
weighted avg	0.53	0.50	0.50	3000

0.5026666666666667

Random Forest

```
[[795 945]
 [477 783]]
```

	precision	recall	f1-score	support
0	0.62	0.46	0.53	1740
1	0.45	0.62	0.52	1260
accuracy			0.53	3000
macro avg	0.54	0.54	0.53	3000
weighted avg	0.55	0.53	0.53	3000

0.526