Bharathreddy / Untitled12.ipynb

bharath-cyber Created using Colaboratory 4 minutes ago

2996 lines (2996 loc) · 571 KB

Preview Code Blame Raw

Open in Colab

In [4]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

In [5]:
```
google_data = pd.read_csv("GooglePayIndia.csv")
paytm_data = pd.read_csv("PaytmIndia.csv")
phonepay_data = pd.read_csv("PhonePayIndia.csv")
```

In [6]:
```
google_data.head()
```

Out[6]:

	Unnamed: 0	reviewId	userName	
0	0	gp:AOqpTOEdT_VactGi_J9Q2PEWY7J4XlD7BINhOj9xwOr...	Len Pagnam	lh.googleusercontent.
1	1	gp:AOqpTOHltpCzXurPoFUgj-a3L-wApC93-fTvocbF9K7...	Benjamin Silva	lh.googleusercontent.
2	2	gp:AOqpTOGTiyxy_FWSQe7eCONa7PsIP6v7cS-xWCL6jFF...	PARVESH MIAR	lh.googleusercontent.
3	3	gp:AOqpTOHllyGnmLGZqPUGokxYncq9kOKoY3Zz_4ZF6b0...	Mikko L.	lh.googleusercontent.
4	4	gp:AOqpTOHjnJ6gAF4NzruhLDGVszAaTKSerVeKt-UtJfM...	A Google user	lh.googleusercontent.c

In [7]:
```
google_data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 34228 entries, 0 to 34227
Data columns (total 11 columns):
 #   Column               Non-Null Count  Dtype 
---  ------               --------------  ----- 
 0   Unnamed: 0           34228 non-null  int64 
 1   reviewId             34228 non-null  object
 2   userName             34227 non-null  object
 3   userImage            34228 non-null  object
 4   content              34223 non-null  object
 5   score                34228 non-null  int64 
 6   thumbsUpCount        34228 non-null  int64 
 7   reviewCreatedVersion  29987 non-null  object
 8   at                   34228 non-null  object
```

```
 8   at                  34228 non-null  object
 9   replyContent        6112 non-null   object
 10  repliedAt           6112 non-null   object
dtypes: int64(3), object(8)
memory usage: 2.9+ MB
```

In [8]:
```
num_category = [feature for feature in google_data.columns if google_data[feature].dtypes
google_data[num_category].isnull().sum()
```

Out[8]:
```
Unnamed: 0      0
score           0
thumbsUpCount   0
dtype: int64
```

In [9]:
```
num_category = [feature for feature in paytm_data.columns if paytm_data[feature].dtypes !=
paytm_data[num_category].isnull().sum()
```

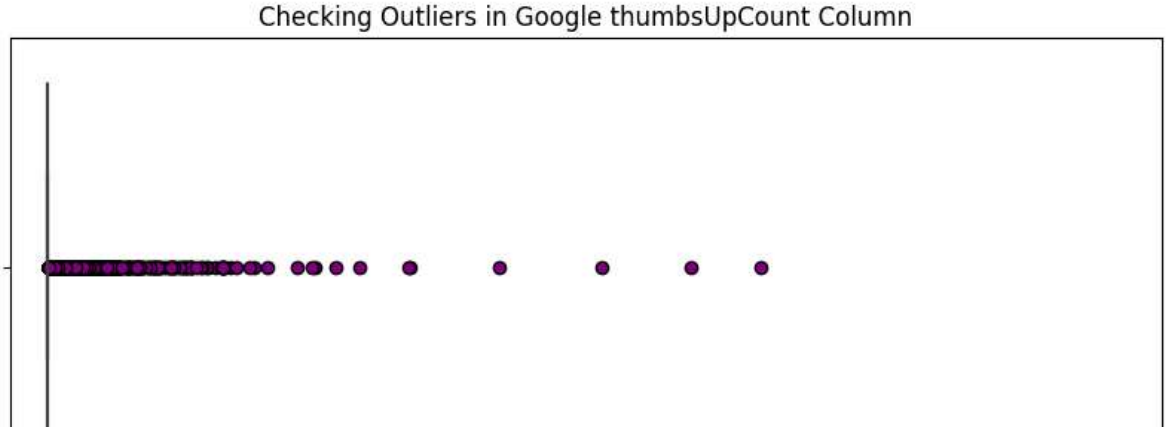
Out[9]:
```
Unnamed: 0      0
score           1
thumbsUpCount   1
dtype: int64
```

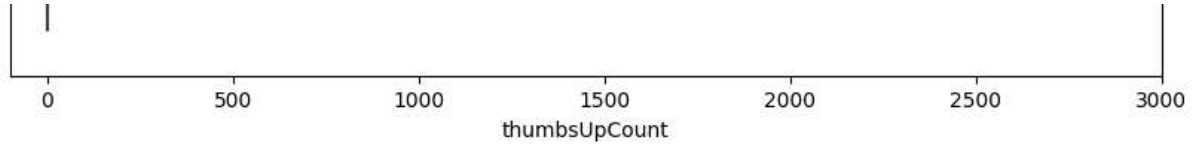
In [10]:
```
num_category = [feature for feature in phonepay_data.columns if phonepay_data[feature].dty
phonepay_data[num_category].isnull().sum()
```

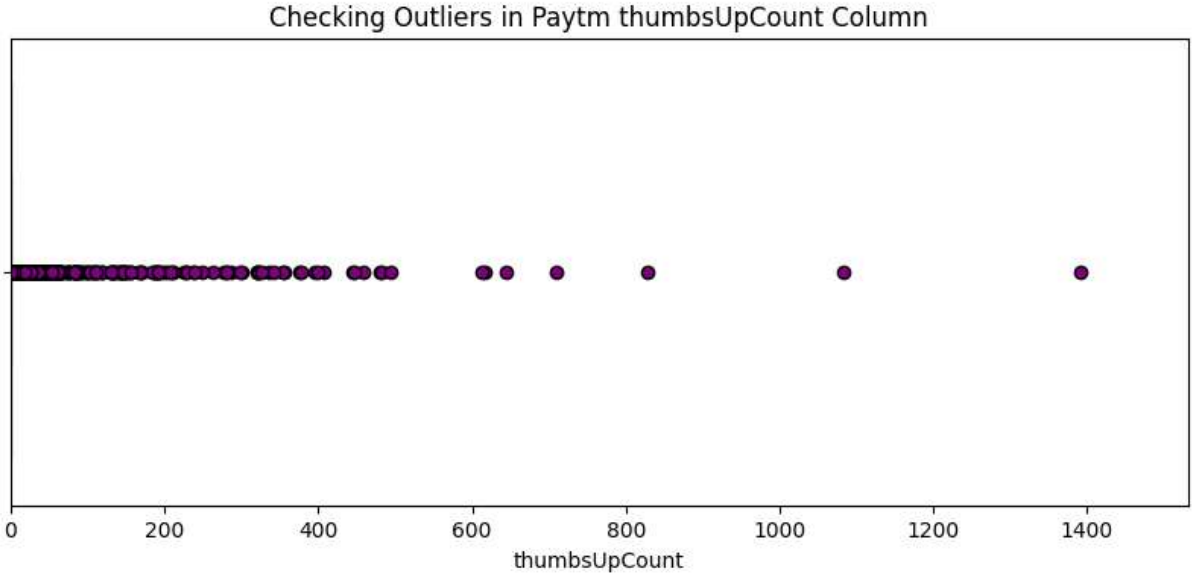
Out[10]:
```
Unnamed: 0      0
score           0
thumbsUpCount   0
dtype: int64
```

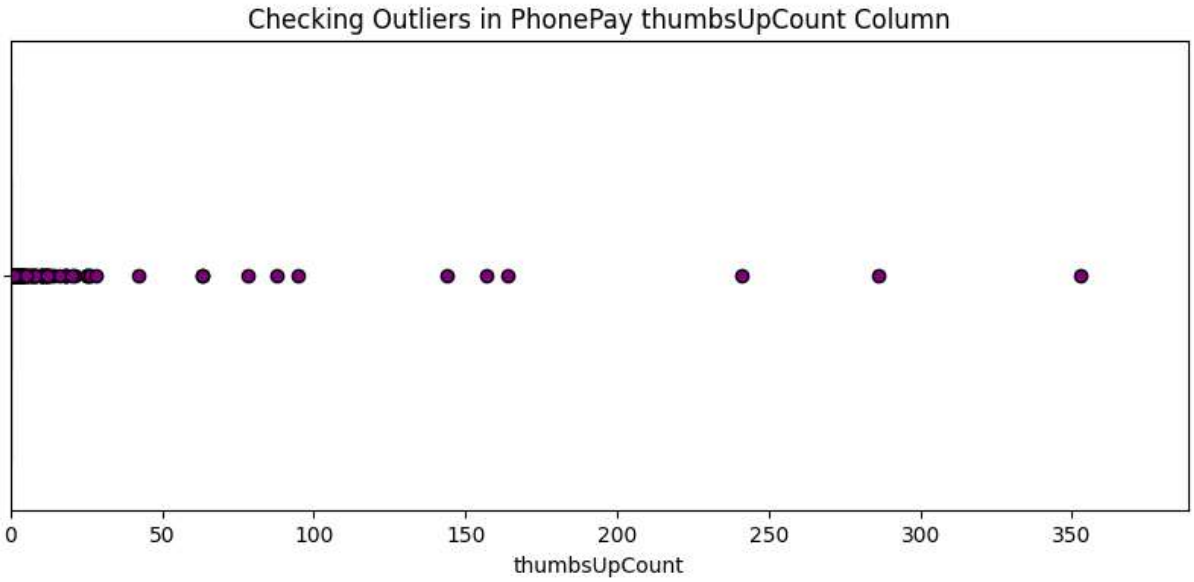
In [11]:
```
plt.figure(figsize=(10,4))
plt.xlim(-100, 3000)
flierprops = dict(marker='o', markerfacecolor='purple', markersize=6,
                  linestyle='none', markeredgecolor='black')
plt.title("Checking Outliers in Google thumbsUpCount Column")
sns.boxplot(x=google_data.thumbsUpCount, flierprops=flierprops)

plt.figure(figsize=(10,4))
plt.title("Checking Outliers in Paytm thumbsUpCount Column")
plt.xlim(paytm_data.thumbsUpCount.min(), paytm_data.thumbsUpCount.max()*1.1)
sns.boxplot(x=paytm_data.thumbsUpCount, flierprops=flierprops)

plt.figure(figsize=(10,4))
plt.title("Checking Outliers in PhonePay thumbsUpCount Column")
plt.xlim(phonepay_data.thumbsUpCount.min(), phonepay_data.thumbsUpCount.max()*1.1)
sns.boxplot(x=phonepay_data.thumbsUpCount, flierprops=flierprops)
```

Out[11]:
```
<Axes: title={'center': 'Checking Outliers in PhonePay thumbsUpCount Column'}, xlabel='thum
bsUpCount'>
```









In [12]:
```
google_data = google_data[google_data["thumbsUpCount"] <=500]
paytm_data = paytm_data[paytm_data["thumbsUpCount"] <=550]
phonepay_data = phonepay_data[phonepay_data["thumbsUpCount"] <=100]
google_data.head()
```

Out[12]:

	Unnamed: 0		reviewId	userName	
0	0	gp:AOqpTOEdT_VactGi_J9Q2PEWY7J4XlD7BINhOj9xwOr...		Len Pagnam	lh.googleusercontent.
1	1	gp:AOqpTOHltpCzXurPoFUgj-a3L-wApC93-fTvocbF9K7...		Benjamin Silva	lh.googleusercontent.

2	2	gp:AOqpTOGTiyxy_FWSQe7eCONa7PsIP6v7cS-xWCL6jFF...	PARVESH MIAR	lh.googleusercontent.
3	3	gp:AOqpTOHllyGnmLGZqPUGokxYncq9kOKoY3Zz_4ZF6b0...	Mikko L.	lh.googleusercontent.
4	4	gp:AOqpTOHjnJ6gAF4NzruhLDGVszAaTKSerVeKt-UtJfM...	A Google user	lh.googleusercontent.c

In [13]:
```
cat_category = [feature for feature in google_data.columns if google_data[feature].dtypes
google_data[cat_category].isnull().sum()
```

Out[13]:
```
reviewId                   0
userName                   1
userImage                  0
content                    5
reviewCreatedVersion    4241
at                         0
replyContent           28106
repliedAt              28106
dtype: int64
```

In [14]:
```
google_data = google_data.drop(columns=["reviewCreatedVersion", "repliedAt"])
google_data["replyContent"] = google_data["replyContent"].fillna("No_reply/No_data")
```

In [15]:
```
cat_category = [feature for feature in paytm_data.columns if paytm_data[feature].dtypes ==
paytm_data[cat_category].isnull().sum()
```

Out[15]:
```
reviewId                   0
userName                   0
userImage                  0
content                    2
reviewCreatedVersion    20073
at                         0
replyContent           59569
repliedAt              59569
dtype: int64
```

In [16]:
```
paytm_data = paytm_data.drop(columns=["reviewCreatedVersion","repliedAt"])
paytm_data["replyContent"] = paytm_data["replyContent"].fillna("No_reply/No_data")
```

In [17]:
```
cat_category = [feature for feature in phonepay_data.columns if phonepay_data[feature].dty
phonepay_data[cat_category].isnull().sum()
```

Out[17]:
```
reviewId                   0
userName                   0
userImage                  0
content                    0
reviewCreatedVersion    2136
at                         0
replyContent           8803
repliedAt              8803
dtype: int64
```

dtype: int64

In [18]:
```
phonepay_data = phonepay_data.drop(columns=["reviewCreatedVersion", "repliedAt"])
phonepay_data["replyContent"] = phonepay_data["replyContent"].fillna("No_reply/No_data")
```

In [19]:
```
google_data = google_data.drop(["Unnamed: 0", "reviewId", "userName", "userImage"],axis=1)
paytm_data = paytm_data.drop(["Unnamed: 0", "reviewId", "userName", "userImage"],axis=1)
phonepay_data = phonepay_data.drop(["Unnamed: 0", "reviewId", "userName", "userImage"],axi
```

In [20]:
```
google_data["upi_company"] = "Google"
paytm_data["upi_company"] = "paytm"
phonepay_data["upi_company"] = "phonepay"
```

In [21]:
```
google_data = google_data.sample(frac=1).reset_index(drop=True)
paytm_data = paytm_data.sample(frac=1).reset_index(drop=True)
phonepay_data = phonepay_data.sample(frac=1).reset_index(drop=True)

data = phonepay_data.append([paytm_data[:11735 ], google_data[:11735]], ignore_index=True)

data = data.rename(columns={"at": "review_created_at"})
data.head()
```

```
<ipython-input-21-c31b31664535>:5: FutureWarning: The frame.append method is deprecated and w
ill be removed from pandas in a future version. Use pandas.concat instead.
  data = phonepay_data.append([paytm_data[:11735 ], google_data[:11735]], ignore_index=True)
```

Out[21]:

	content	score	thumbsUpCount	review_created_at	replyContent	upi_company
0	🤣🤣🤣🤣	1.0	0.0	2021-11-16 19:18:15	No_reply/No_data	phonepay
1	You should do work on your fonpe like Paytm sm...	3.0	0.0	2021-11-12 14:32:44	Hi Bipin, we're sorry to know that you've had ...	phonepay
2	Praud of you	5.0	0.0	2021-11-17 15:03:59	Thank you for the review about our application...	phonepay
3	Achha hai	5.0	0.0	2021-11-17 10:30:00	No_reply/No_data	phonepay
4	Godnks	5.0	0.0	2021-11-14 19:12:03	No_reply/No_data	phonepay

In [22]:
```
data = data.sample(frac=1).reset_index(drop=True)
data.head()
```

Out[22]:

	content	score	thumbsUpCount	review_created_at	replyContent	upi_company
0	Good	5.0	0.0	2021-11-02 10:39:52	Awesome! It's been our pleasure. You can also ...	paytm
1	Good	5.0	0.0	2021-11-11 20:32:07	No_reply/No_data	phonepay
2	How do I make this app download at 3am when I'...	3.0	0.0	2019-10-27 02:25:00	No_reply/No_data	Google

3	Dont know what I'd do with out it. #dopesickdo...	5.0	0.0	2020-02-03 01:05:12	No_reply/No_data	Google
4	fantastic	5.0	0.0	2021-10-05 22:31:27	Awesome! It's been our pleasure. You can also ...	paytm

In [23]:
```
data["review_created_at"] = pd.to_datetime(data["review_created_at"])
data["Year"] = data['review_created_at'].dt.year
data["month"] = data['review_created_at'].dt.month
data = data[["upi_company", "Year", "month", "content", "score", "thumbsUpCount", "replyCo
data.head()
```

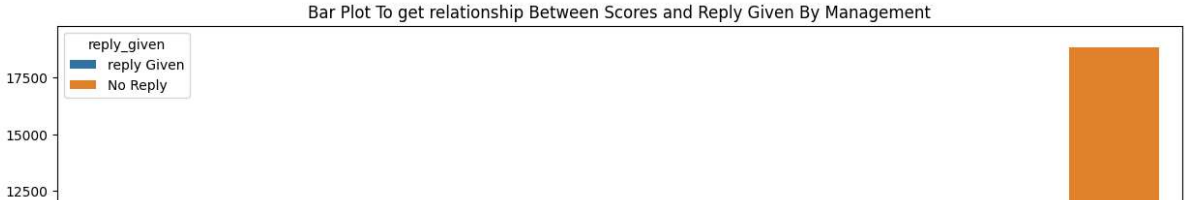
Out[23]:

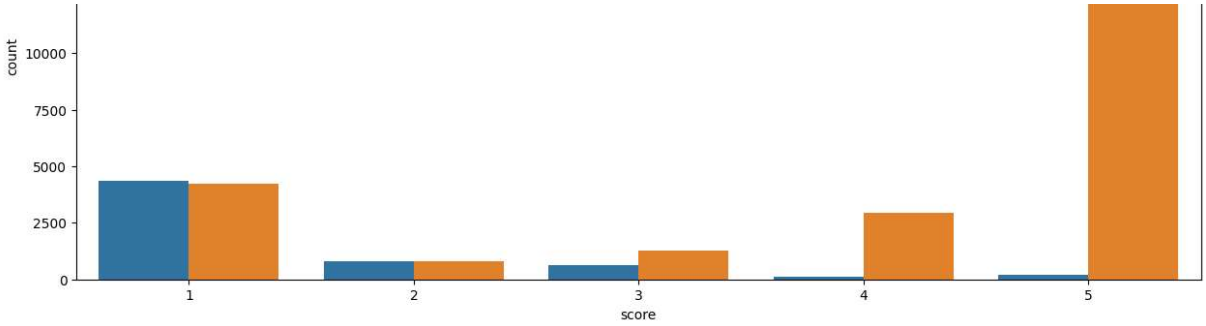
	upi_company	Year	month	content	score	thumbsUpCount	replyContent
0	paytm	2021	11	Good	5.0	0.0	Awesome! It's been our pleasure. You can also ...
1	phonepay	2021	11	Good	5.0	0.0	No_reply/No_data
2	Google	2019	10	How do I make this app download at 3am when I'...	3.0	0.0	No_reply/No_data
3	Google	2020	2	Dont know what I'd do with out it. #dopesickdo...	5.0	0.0	No_reply/No_data
4	paytm	2021	10	fantastic	5.0	0.0	Awesome! It's been our pleasure. You can also ...

In [24]:
```
scores = [0, 1, 2, 3, 4, 5]
scores_name = ["very Negative", "Negative", "Average", "Positive", "Excellent"]
data["score"] = pd.cut(data["score"],scores, labels=scores_name)
data.head()
backup_data = data.copy()
```

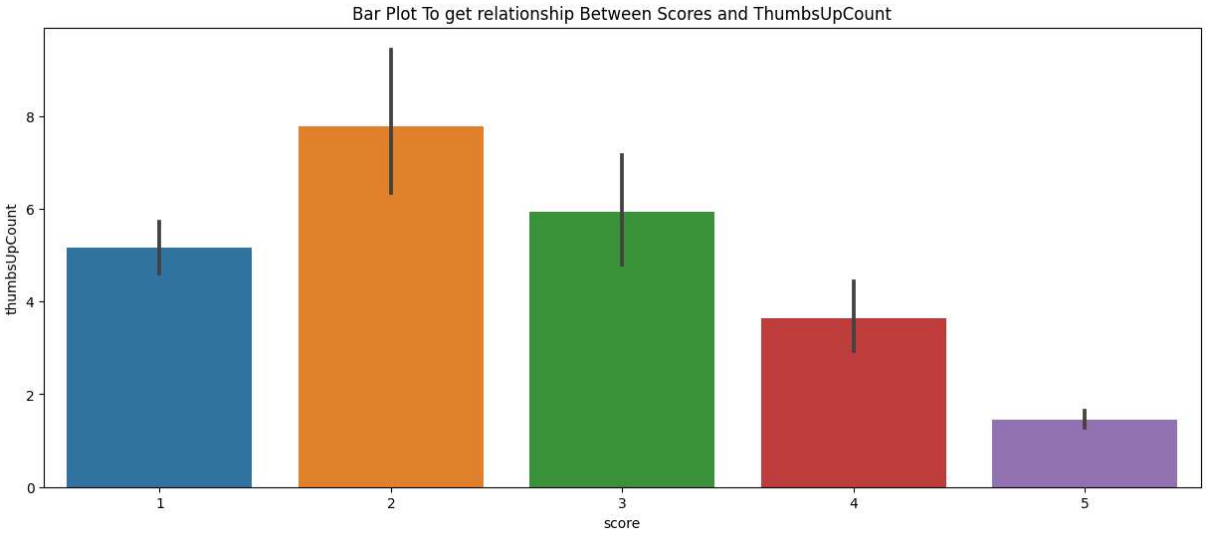
```
<ipython-input-24-34442c0fb39e>:3: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guid
e/indexing.html#returning-a-view-versus-a-copy
  data["score"] = pd.cut(data["score"],scores, labels=scores_name)
```

In [25]:
```
google_data["reply_given"] = google_data["replyContent"].apply(lambda x: "reply Given" if

plt.figure(figsize=(15,6))
sns.countplot(x="score", hue="reply_given", data=google_data)
plt.title('Bar Plot To get relationship Between Scores and Reply Given By Management')
plt.show()
```

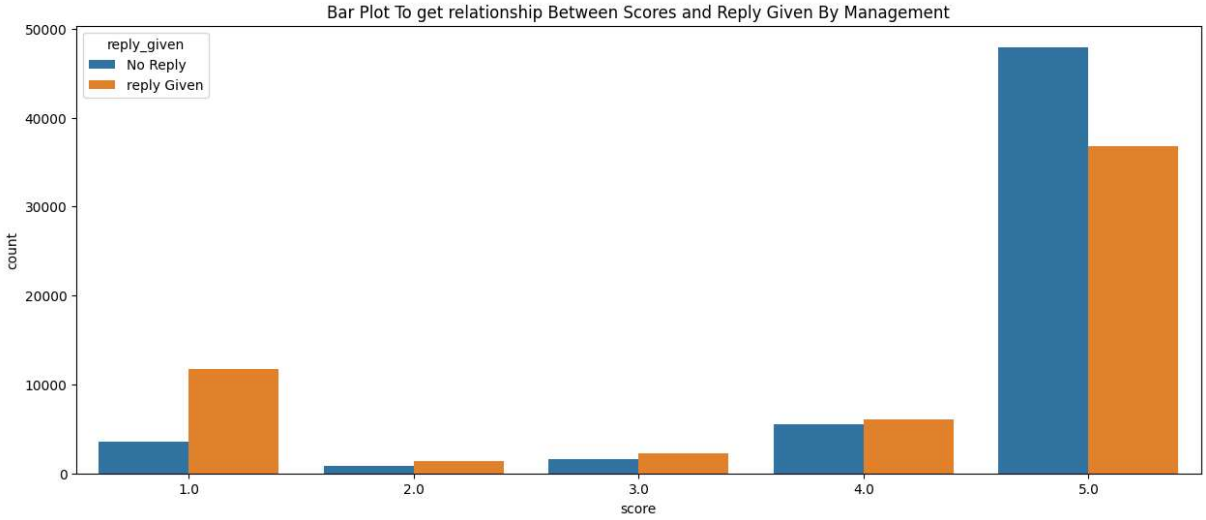




In [26]:
```
plt.figure(figsize=(15,6))
sns.barplot(x="score", y="thumbsUpCount", data=google_data)
plt.title('Bar Plot To get relationship Between Scores and ThumbsUpCount')
plt.show()
```

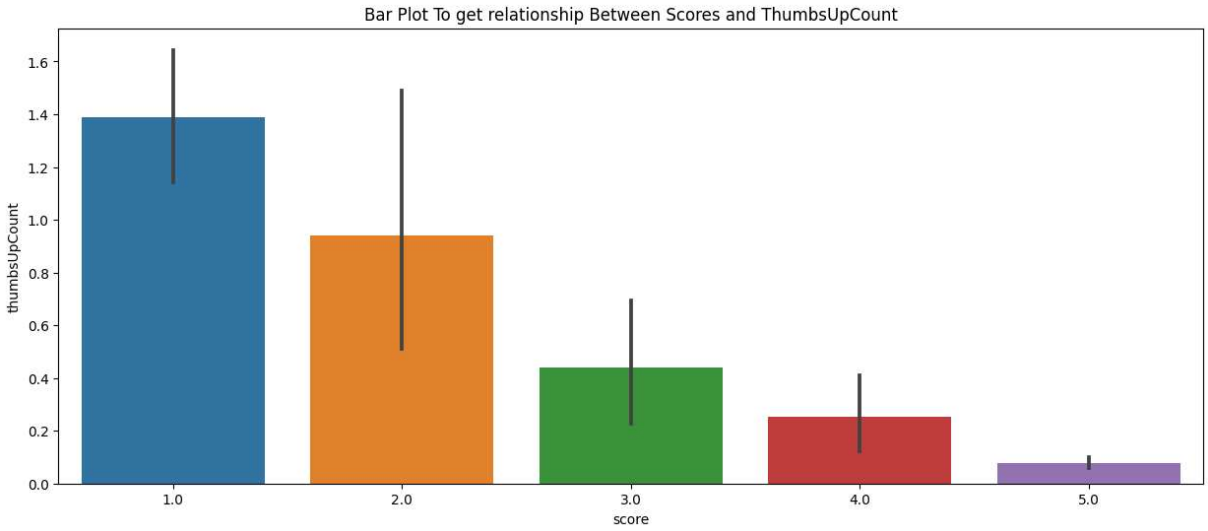


In [27]:
```
paytm_data["reply_given"] = paytm_data["replyContent"].apply(lambda x: "reply Given" if x

plt.figure(figsize=(15,6))
sns.countplot(x="score", hue="reply_given", data=paytm_data)
plt.title('Bar Plot To get relationship Between Scores and Reply Given By Management')
plt.show()
```



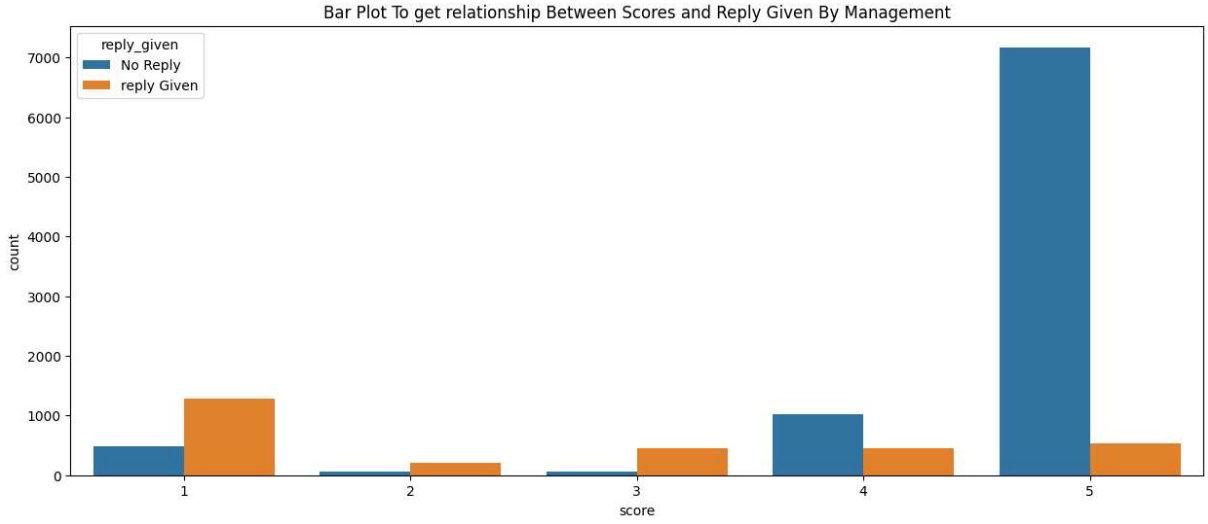
In [28]:
```
plt.figure(figsize=(15,6))
sns.barplot(x="score", y="thumbsUpCount", data=paytm_data)
```

```
plt.title('Bar Plot To get relationship Between Scores and ThumbsUpCount')
plt.show()
```



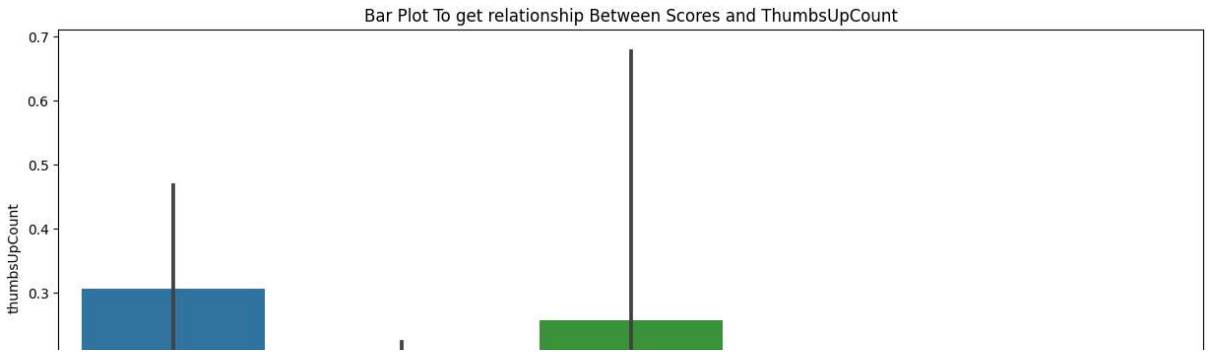
In [29]:

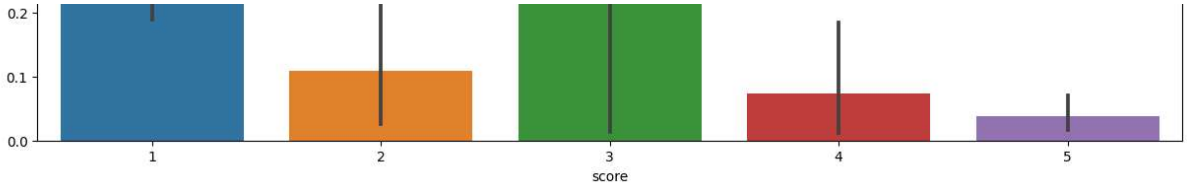
```
phonepay_data["reply_given"] = phonepay_data["replyContent"].apply(lambda x: "reply Given"

plt.figure(figsize=(15,6))
sns.countplot(x="score", hue="reply_given", data=phonepay_data)
plt.title('Bar Plot To get relationship Between Scores and Reply Given By Management')
plt.show()
```



In [30]:

```
plt.figure(figsize=(15,6))
sns.barplot(x="score", y="thumbsUpCount", data=phonepay_data)
plt.title('Bar Plot To get relationship Between Scores and ThumbsUpCount')
plt.show()
```



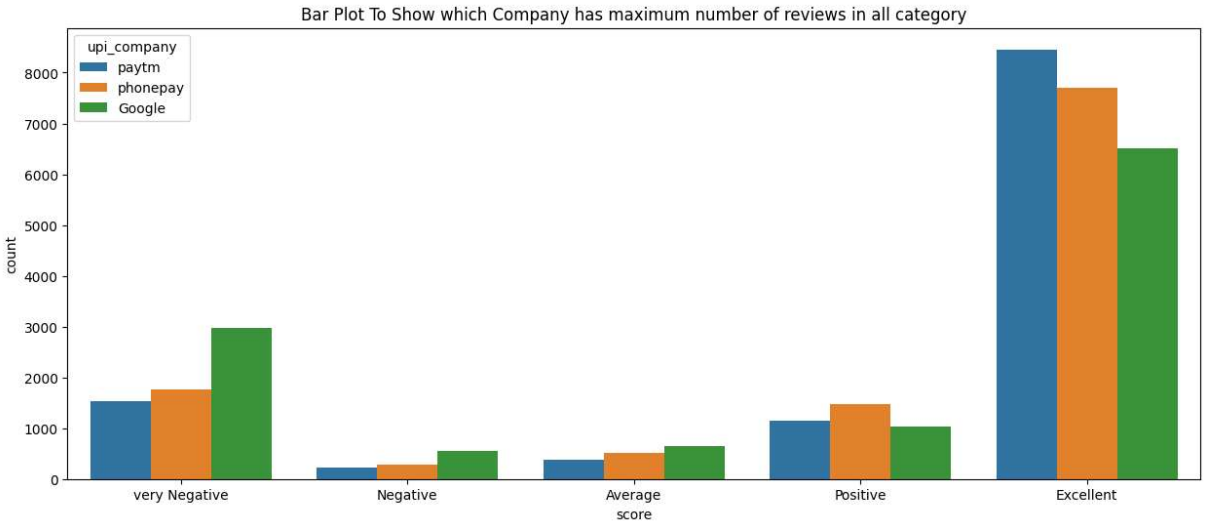


In [31]:
```
data.head()
```

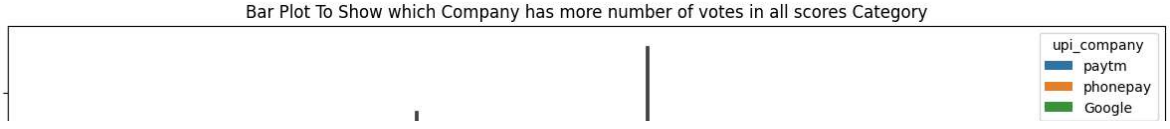
Out[31]:

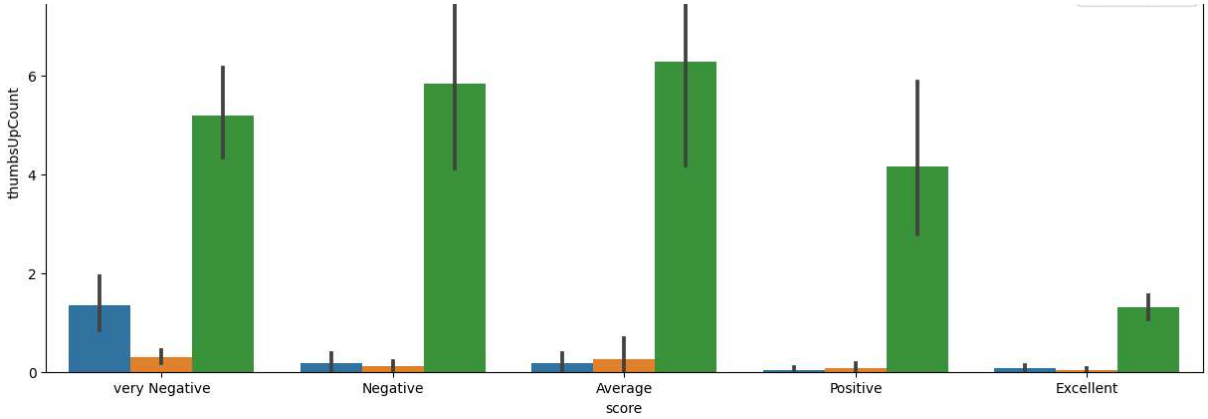
	upi_company	Year	month	content	score	thumbsUpCount	replyContent
0	paytm	2021	11	Good	Excellent	0.0	Awesome! It's been our pleasure. You can also ...
1	phonepay	2021	11	Good	Excellent	0.0	No_reply/No_data
2	Google	2019	10	How do I make this app download at 3am when I'...	Average	0.0	No_reply/No_data
3	Google	2020	2	Dont know what I'd do with out it. #dopesickdo...	Excellent	0.0	No_reply/No_data
4	paytm	2021	10	fantastic	Excellent	0.0	Awesome! It's been our pleasure. You can also ...

In [32]:
```
plt.figure(figsize=(15,6))
sns.countplot(x="score", hue="upi_company", data=data)
plt.title('Bar Plot To Show which Company has maximum number of reviews in all category')
plt.show()
```

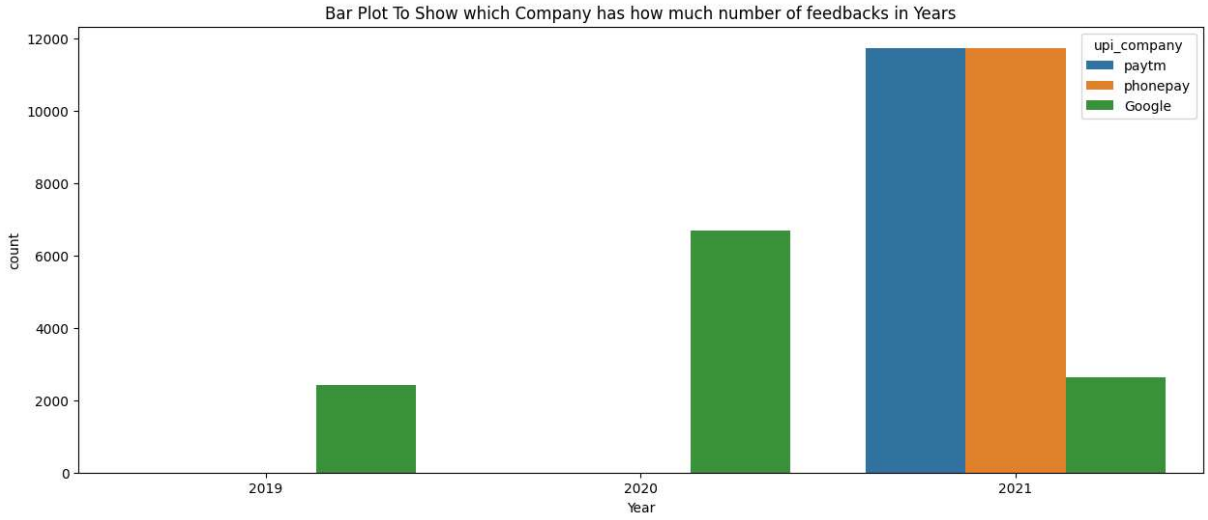


In [33]:
```
plt.figure(figsize=(15,6))
sns.barplot(x="score", y="thumbsUpCount", hue="upi_company", data=data)
plt.title('Bar Plot To Show which Company has more number of votes in all scores Category'
plt.show()
```

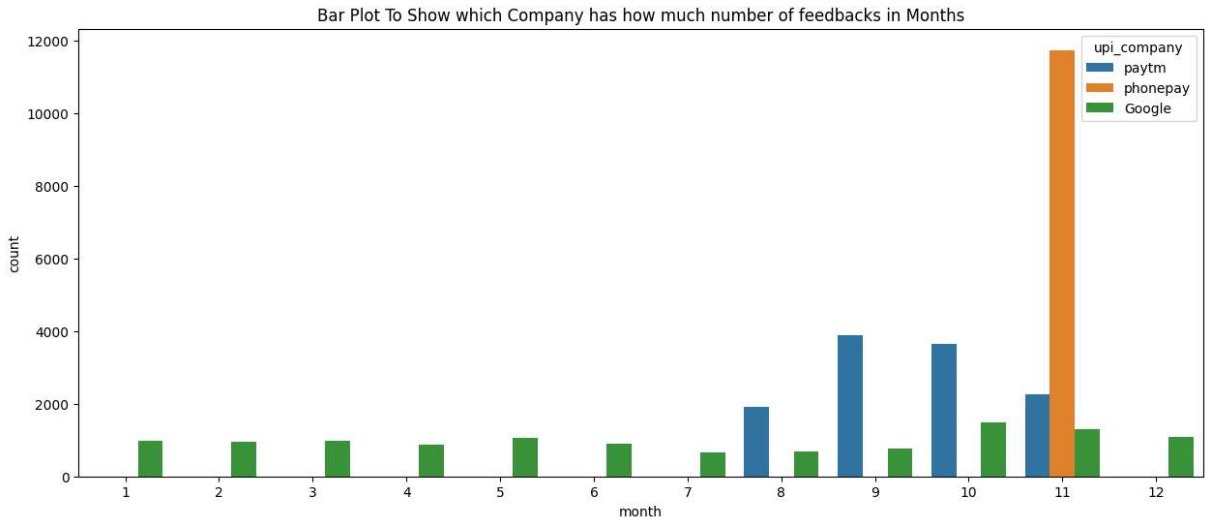




In [34]:
```
plt.figure(figsize=(15,6))
sns.countplot(data=data, x="Year", hue="upi_company")
plt.title('Bar Plot To Show which Company has how much number of feedbacks in Years')
plt.show()
```



In [35]:
```
plt.figure(figsize=(15,6))
sns.countplot(data=data, x="month", hue="upi_company")
plt.title('Bar Plot To Show which Company has how much number of feedbacks in Months')
plt.show()
```



In [42]:
```
from keras.preprocessing.text import Tokenizer
from keras.preprocessing.sequence import pad_sequences
```

```
from keras.preprocessing.sequence import pad_sequences
from keras.models import Sequential
from keras.layers import Embedding, SpatialDropout1D, LSTM, Dense
from sklearn.model_selection import train_test_split
from keras.optimizers import Adam
```

In [43]:

```
data_model = data[['content','score']]
data_model['content'].fillna('', inplace=True)
token = Tokenizer(num_words=5000,split=' ')
token.fit_on_texts(data_model['content'].values)
X=token.texts_to_sequences(data_model['content'].values)
X = pad_sequences(X)
Y = pd.get_dummies(data_model['score'])
from sklearn.model_selection import train_test_split
x_train,x_test,y_train,y_test=train_test_split(X,Y,test_size=0.3,random_state = 1)
modelf = Sequential()
modelf.add(Embedding(5000, 240, input_length = X.shape[1]))
modelf.add(SpatialDropout1D(0.2))
modelf.add(LSTM(176, dropout=0.2, recurrent_dropout=0.2))
modelf.add(Dense(5,activation='softmax'))
modelf.compile(loss = 'categorical_crossentropy', optimizer= Adam(learning_rate=0.1), metr
print(modelf.summary())
modelf.fit(x_train,y_train, epochs = 10, batch_size=1024, verbose = 'auto')
modelf.evaluate(x_test,y_test)
```

```
<ipython-input-43-a74efc1a8ee9>:2: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guid
e/indexing.html#returning-a-view-versus-a-copy
  data_model['content'].fillna('', inplace=True)
Model: "sequential_1"
_________________________________________________________________
 Layer (type)                Output Shape              Param #
=================================================================
 embedding_1 (Embedding)     (None, 164, 240)          1200000

 spatial_dropout1d_1 (Spati  (None, 164, 240)          0
 alDropout1D)

 lstm_1 (LSTM)               (None, 176)               293568

 dense_1 (Dense)             (None, 5)                 885

=================================================================
Total params: 1494453 (5.70 MB)
Trainable params: 1494453 (5.70 MB)
Non-trainable params: 0 (0.00 Byte)
_________________________________________________________________
None
Epoch 1/10
25/25 [==============================] - 257s 10s/step - loss: 1.8706 - accuracy: 0.5713
Epoch 2/10
25/25 [==============================] - 242s 10s/step - loss: 1.0398 - accuracy: 0.6778
Epoch 3/10
25/25 [==============================] - 239s 10s/step - loss: 0.9499 - accuracy: 0.6931
Epoch 4/10
25/25 [==============================] - 240s 10s/step - loss: 0.9244 - accuracy: 0.7046
Epoch 5/10
25/25 [==============================] - 239s 10s/step - loss: 0.9315 - accuracy: 0.7055
Epoch 6/10
25/25 [==============================] - 240s 10s/step - loss: 0.9199 - accuracy: 0.7084
Epoch 7/10
25/25 [==============================] - 237s 10s/step - loss: 0.9117 - accuracy: 0.7148
Epoch 8/10
```

```
25/25 [==============================] - 238s 9s/step - loss: 0.9092 - accuracy: 0.7147
Epoch 9/10
25/25 [==============================] - 211s 8s/step - loss: 0.9042 - accuracy: 0.7173
Epoch 10/10
25/25 [==============================] - 213s 8s/step - loss: 0.8966 - accuracy: 0.7192
331/331 [==============================] - 37s 112ms/step - loss: 0.9433 - accuracy: 0.6999
```

Out[43]: [0.9432663321495056, 0.6998674273490906]