```
from google.colab import files

import pandas as pd
df = pd.read_csv('/content/drive/MyDrive/Colab Notebooks/Diwali Sales
Data.csv',encoding= 'unicode_escape')

df.head()
```

```
   User_ID  Cust_name Product_ID Gender Age Group  Age  Marital_Status
\
0  1002903  Sanskriti  P00125942      F     26-35   28               0

1  1000732     Kartik  P00110942      F     26-35   35               1

2  1001990      Bindu  P00118542      F     26-35   35               1

3  1001425     Sudevi  P00237842      M      0-17   16               0

4  1000588       Joni  P00057942      M     26-35   28               1


            State      Zone       Occupation Product_Category  Orders
\
0     Maharashtra   Western       Healthcare             Auto       1

1  Andhra Pradesh  Southern             Govt             Auto       3

2   Uttar Pradesh   Central       Automobile             Auto       3

3       Karnataka  Southern     Construction             Auto       2

4         Gujarat   Western  Food Processing             Auto       2


    Amount  Status  unnamed1
0  23952.0     NaN       NaN
1  23934.0     NaN       NaN
2  23924.0     NaN       NaN
3  23912.0     NaN       NaN
4  23877.0     NaN       NaN
```

```
# Two Columns named as 'Status', 'unnamed1' are entirely NULL.
# Most Columns are categorical column and Some columns are numerical.
# Like Amount Column has numerical values.

df.columns
```

```
Index(['User_ID', 'Cust_name', 'Product_ID', 'Gender', 'Age Group',
'Age',
       'Marital_Status', 'State', 'Zone', 'Occupation',
```

```
'Product_Category',
       'Orders', 'Amount', 'Status', 'unnamed1'],
      dtype='object')
```

```
df.shape
```

```
(11251, 15)
```

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 11251 entries, 0 to 11250
Data columns (total 15 columns):
 #   Column            Non-Null Count  Dtype  
---  ------            --------------  -----  
 0   User_ID           11251 non-null  int64  
 1   Cust_name         11251 non-null  object 
 2   Product_ID        11251 non-null  object 
 3   Gender            11251 non-null  object 
 4   Age Group         11251 non-null  object 
 5   Age               11251 non-null  int64  
 6   Marital_Status    11251 non-null  int64  
 7   State             11251 non-null  object 
 8   Zone              11251 non-null  object 
 9   Occupation        11251 non-null  object 
 10  Product_Category  11251 non-null  object 
 11  Orders            11251 non-null  int64  
 12  Amount            11239 non-null  float64
 13  Status            0 non-null      float64
 14  unnamed1          0 non-null      float64
dtypes: float64(3), int64(4), object(8)
memory usage: 1.3+ MB
```

```
df.isna().sum()
```

```
User_ID                0
Cust_name              0
Product_ID             0
Gender                 0
Age Group              0
Age                    0
Marital_Status         0
State                  0
Zone                   0
Occupation             0
Product_Category       0
Orders                 0
Amount                12
Status             11251
unnamed1           11251
dtype: int64
```

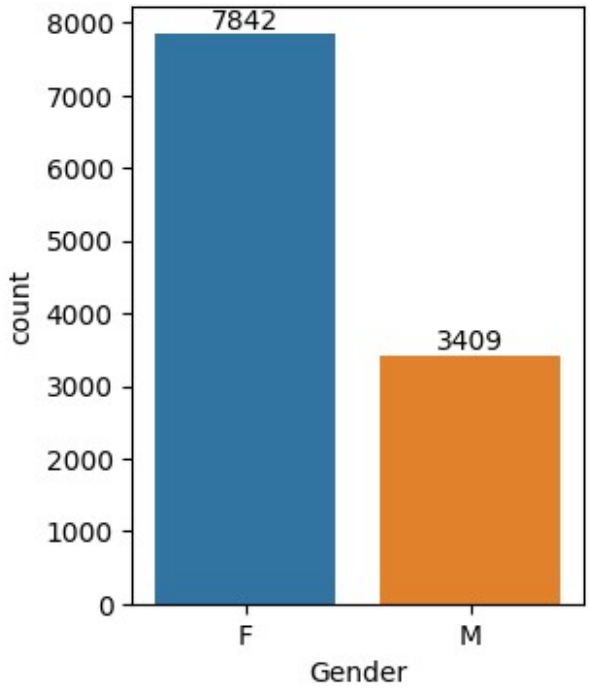
```
# Amount Column Have 12 null values but both status and unnamed1
columns have entirely null values.

df.drop(['Status','unnamed1'],axis=1,inplace=True)

df.shape

(11251, 13)

import numpy as np
mean = df['Amount'].mean()

mean

9453.610857727557

# Replacing Null Values of Amount Column with thier Mean Values.
df['Amount'] = df['Amount'].fillna(mean)

df.isna().sum()

User_ID             0
Cust_name           0
Product_ID          0
Gender              0
Age Group           0
Age                 0
Marital_Status      0
State               0
Zone                0
Occupation          0
Product_Category    0
Orders              0
Amount              0
dtype: int64

df[['Zone','State']].describe()

           Zone          State
count     11251          11251
unique        5             16
top     Central  Uttar Pradesh
freq       4296           1946
```

EDA

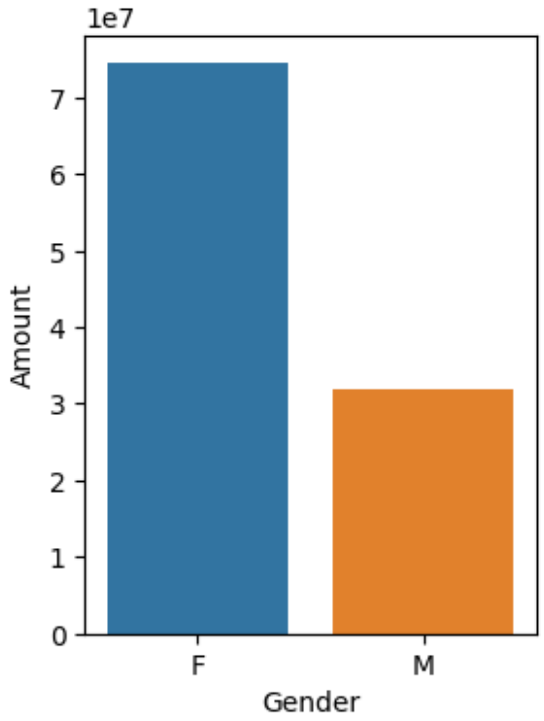
Gender

```
import seaborn as sns
import matplotlib.pyplot as plt
plt.figure(figsize=(3,4))
ax = sns.countplot(x='Gender',data=df);
```

```
for bars in ax.containers:
  ax.bar_label(bars)
```

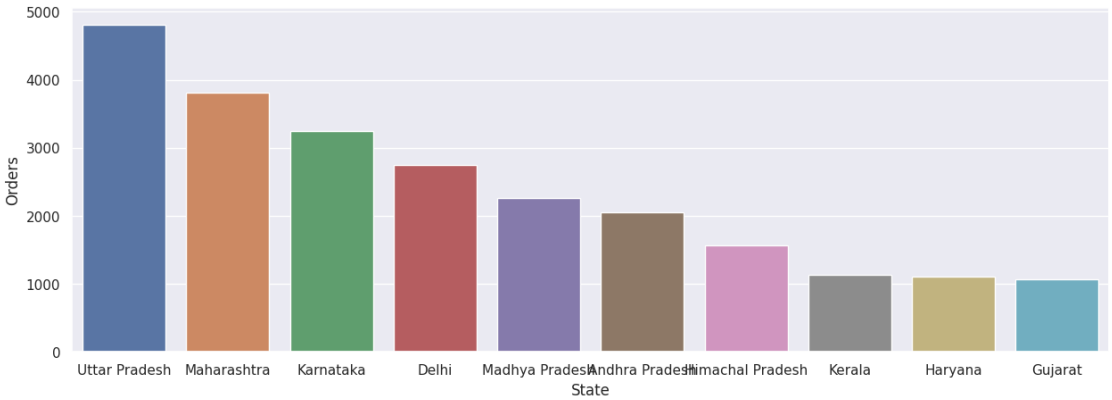



```
df['Amount'] = df['Amount'].astype('int')

df['Amount'].dtype

dtype('int64')

sales_gen = df.groupby(['Gender'],as_index=False)
['Amount'].sum().sort_values(by='Amount',ascending=False)

plt.figure(figsize=(3,4))
sns.barplot(x='Gender',y='Amount',data = sales_gen);
```



State and Order

```
state = df.groupby(['State'],as_index=False)
['Orders'].sum().sort_values(by='Orders',ascending=False).head(10)
#plt.rcParams['figure.figsize'] = (9, 5)
sns.set(rc={'figure.figsize':(15,5)})
sns.barplot(x='State',y='Orders',data= state);
```



Observation: Uttar Pradesh, Maharashtra and Karnatka are top 3 states in terms of spending money on products.

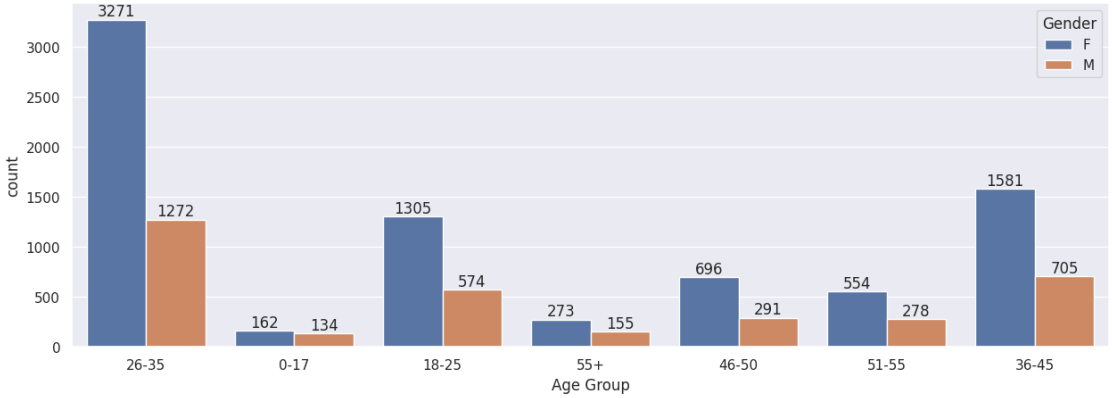
```
df.columns
```

```
Index(['User_ID', 'Cust_name', 'Product_ID', 'Gender', 'Age Group',
'Age',
       'Marital_Status', 'State', 'Zone', 'Occupation',
'Product_Category',
```

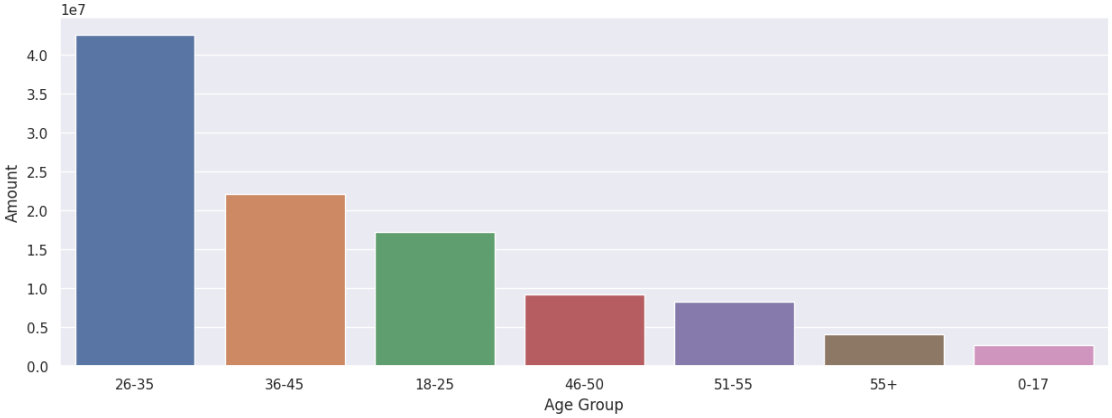
```
       'Orders', 'Amount'],
      dtype='object')
```

Age Group And Gender

```
#age_group = df.groupby(['Gender'],as_index=False)['']
ax = sns.countplot(x='Age Group',hue='Gender',data=df)

for bars in ax.containers:
  ax.bar_label(bars)
```




```
Age_G = df.groupby(['Age Group'],as_index=False)
['Amount'].sum().sort_values(by='Amount',ascending=False)

sns.barplot(x='Age Group',y='Amount',data=Age_G);
```

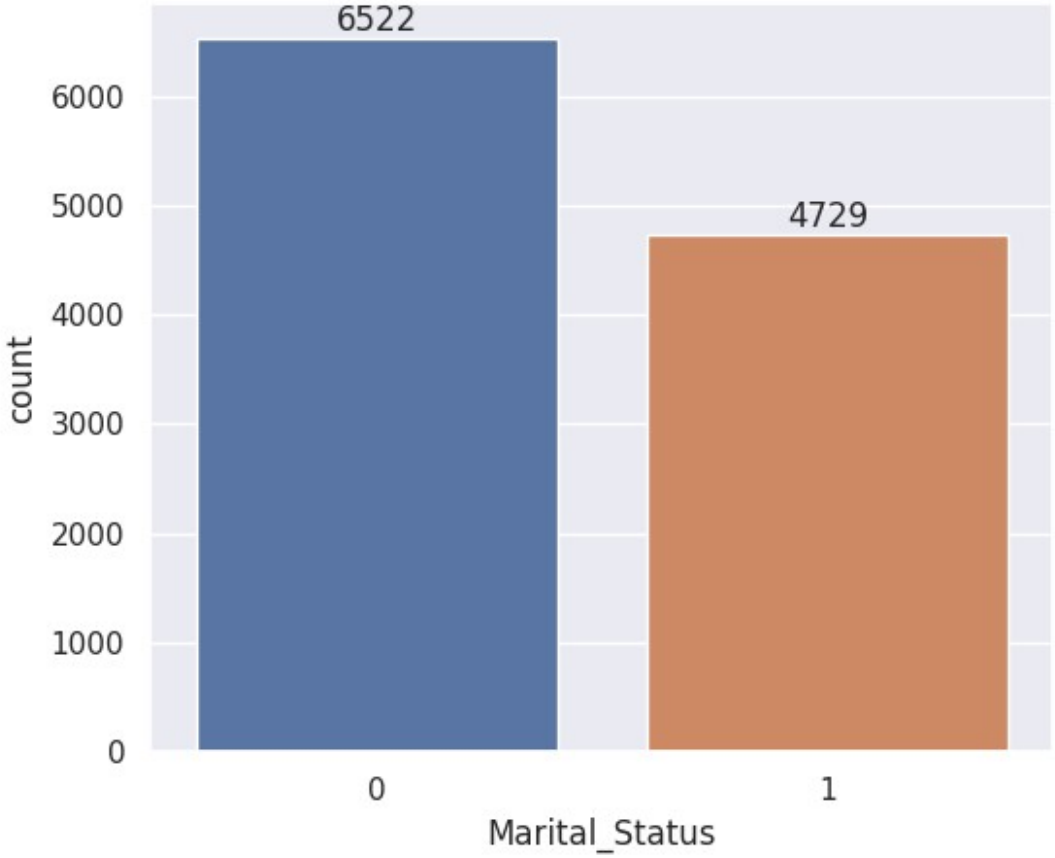


Observation: From above graph we can say

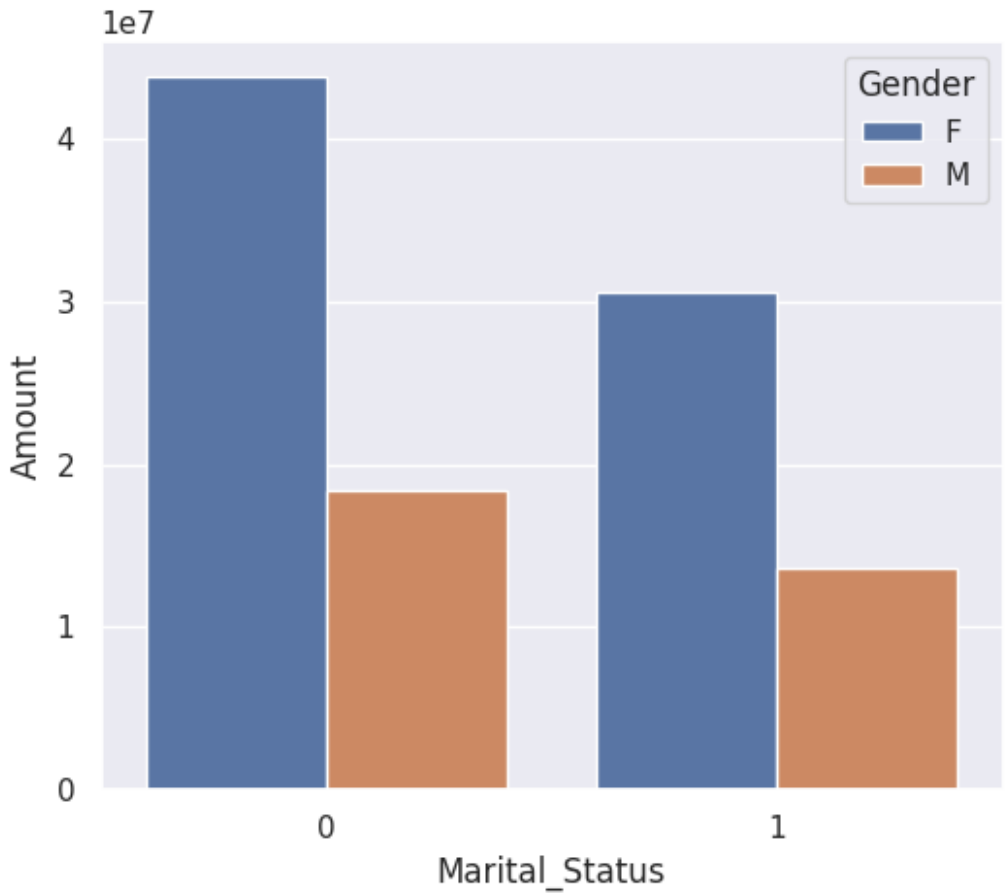
1. People from age_group 26-35 bought more products than others specially Female of this age group.
2. Female of age group 36-45, 18-25 bought more products than male of age group of 26-35.

Marital Status

```
ax = sns.countplot(x='Marital_Status',data = df)
for bars in ax.containers:
  ax.bar_label(bars)
```



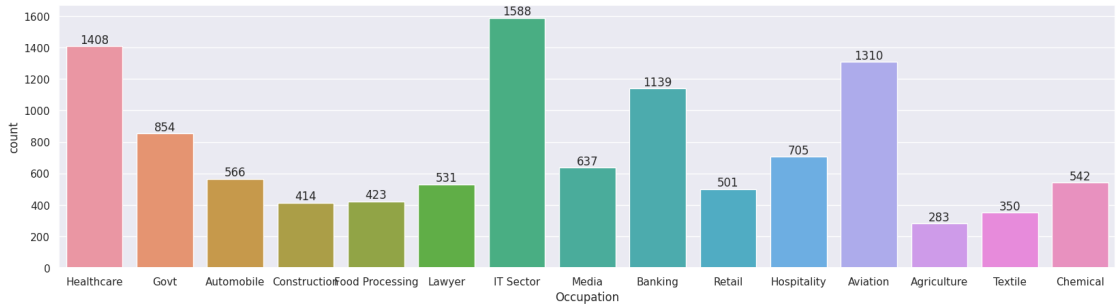

```
MS = df.groupby(['Marital_Status','Gender'],as_index=False)
['Amount'].sum().sort_values(by='Amount',ascending=False)
sns.set(rc={'figure.figsize':(6,5)})
sns.barplot(x='Marital_Status',y='Amount',hue='Gender',data=MS);
```



###Observation: From the above graph shows Married Women buy things more than unmarried women.

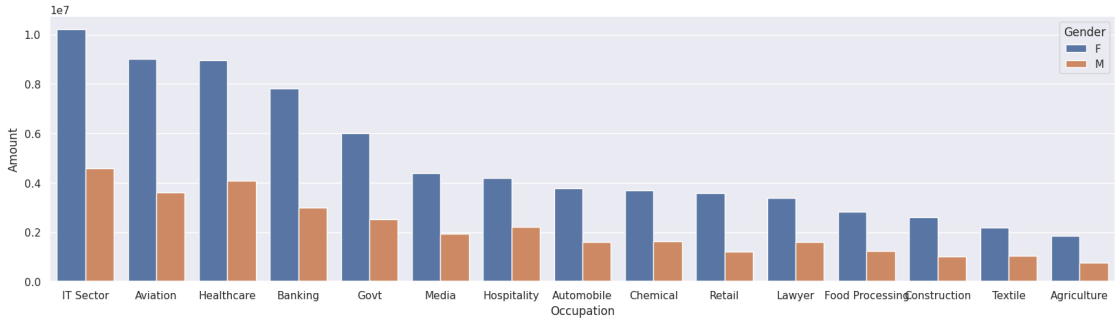
Occupation

```
ax = sns.countplot(x='Occupation', data=df)
sns.set(rc={'figure.figsize':(20,5)})
for bars in ax.containers:
  ax.bar_label(bars)
```



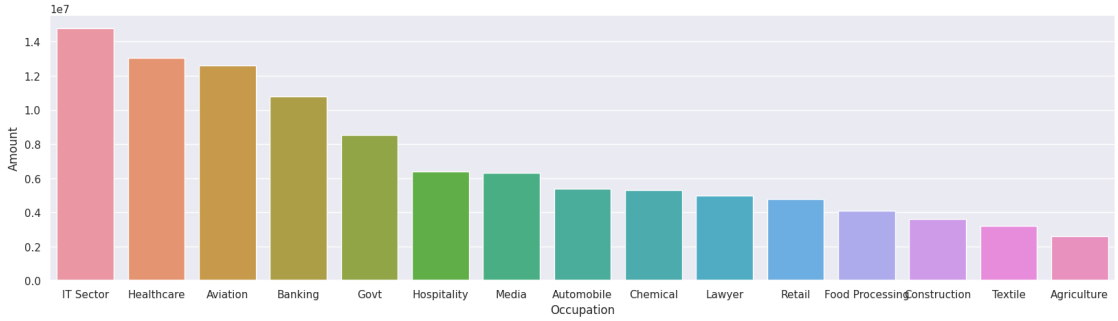

```
Occ = df.groupby(['Occupation','Gender'],as_index=False)
['Amount'].sum().sort_values(by='Amount',ascending=False)
sns.barplot(x='Occupation',y='Amount',hue='Gender',data=Occ)
```

```
<Axes: xlabel='Occupation', ylabel='Amount'>
```




```
Occ = df.groupby('Occupation',as_index=False)
['Amount'].sum().sort_values(by='Amount',ascending=False)
sns.barplot(x='Occupation',y='Amount',data=Occ)
```

```
<Axes: xlabel='Occupation', ylabel='Amount'>
```

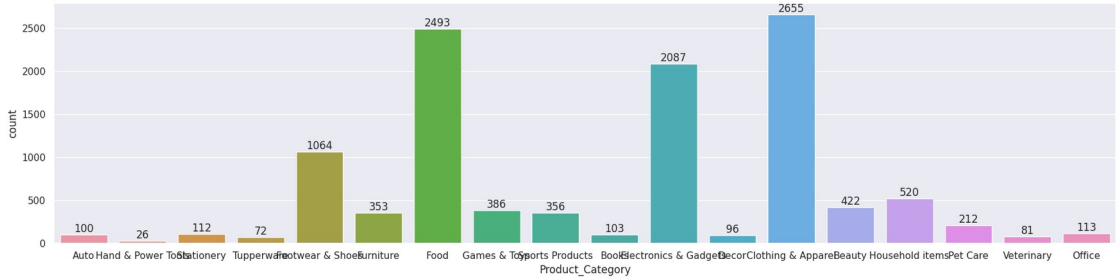


Observation:

1. People who are spending most belongs from IT Sector, Healthcare and Aviation.
2. Female from Avitaion sector spend more than from Healthcare Sector.

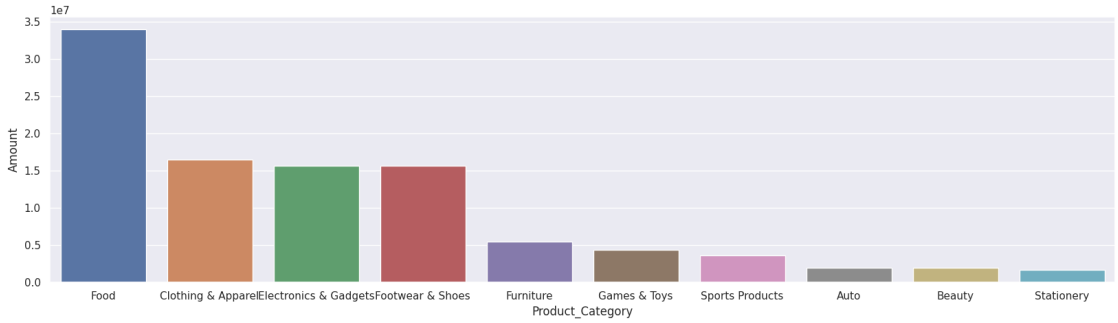
Product Category

```
ax = sns.countplot(x='Product_Category',data=df);
sns.set(rc={'figure.figsize':(22,5)})

for bars in ax.containers:
  ax.bar_label(bars)
```




```
PC = df.groupby('Product_Category',as_index=False)
['Amount'].sum().sort_values(by='Amount',ascending=False).head(10)
```

```
sns.set(rc={'figure.figsize':(20,5)})
sns.barplot(x='Product_Category',y='Amount',data=PC);
```



Observation: Most Product are bought from Food, Clothing & Apparel, Electronics & Gadgets Category.

Final Conclusion: Married Women of Age Group 26-35 from UP,Maharashtra, Karnataka bought more Items On Diwali From Food, Clothing & Apparel, Electronics & Gadgets Category and they are mostly working in IT, Healthcare and Aviation Sector.