Diwali Sales Analysis

Importing Libraies

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

df = pd.read_csv("C:\\Users\\adars\\OneDrive\\ドキュメント\\Diwali Sales
Data.csv", encoding ='unicode_escape' )
df.shape
```

```
(11251, 15)
```

```
df.head(5)
```

```
   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
```

```
#Dropping empty columns
df.drop(['Status','unnamed1'],axis=1,inplace=True) #axis=1 full row
and inplace = true  to save changes
```

```
#checking null values
df.isnull().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
dtype: int64
```

```
#dropping null values
df.dropna(inplace=True)
```

```
df.isnull().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
```

```
#change data-type
df['Amount']= df['Amount'].astype('int')
```

```
#Display all columns names
df.columns
```

```
Index(['User_ID', 'Cust_name', 'Product_ID', 'Gender', 'Age Group',
'Age',
       'Marital_Status', 'State', 'Zone', 'Occupation',
'Product_Category',
       'Orders', 'Amount'],
      dtype='object')
```

```
#To know stats of dataset
df.describe()
```

```
             User_ID           Age  Marital_Status        Orders
Amount
count  1.123900e+04  11239.000000    11239.000000  11239.000000
11239.000000
mean   1.003004e+06     35.410357        0.420055      2.489634
9453.610553
std    1.716039e+03     12.753866        0.493589      1.114967
5222.355168
min    1.000001e+06     12.000000        0.000000      1.000000
188.000000
25%    1.001492e+06     27.000000        0.000000      2.000000
5443.000000
50%    1.003064e+06     33.000000        0.000000      2.000000
8109.000000
75%    1.004426e+06     43.000000        1.000000      3.000000
12675.000000
max    1.006040e+06     92.000000        1.000000      4.000000
23952.000000
```

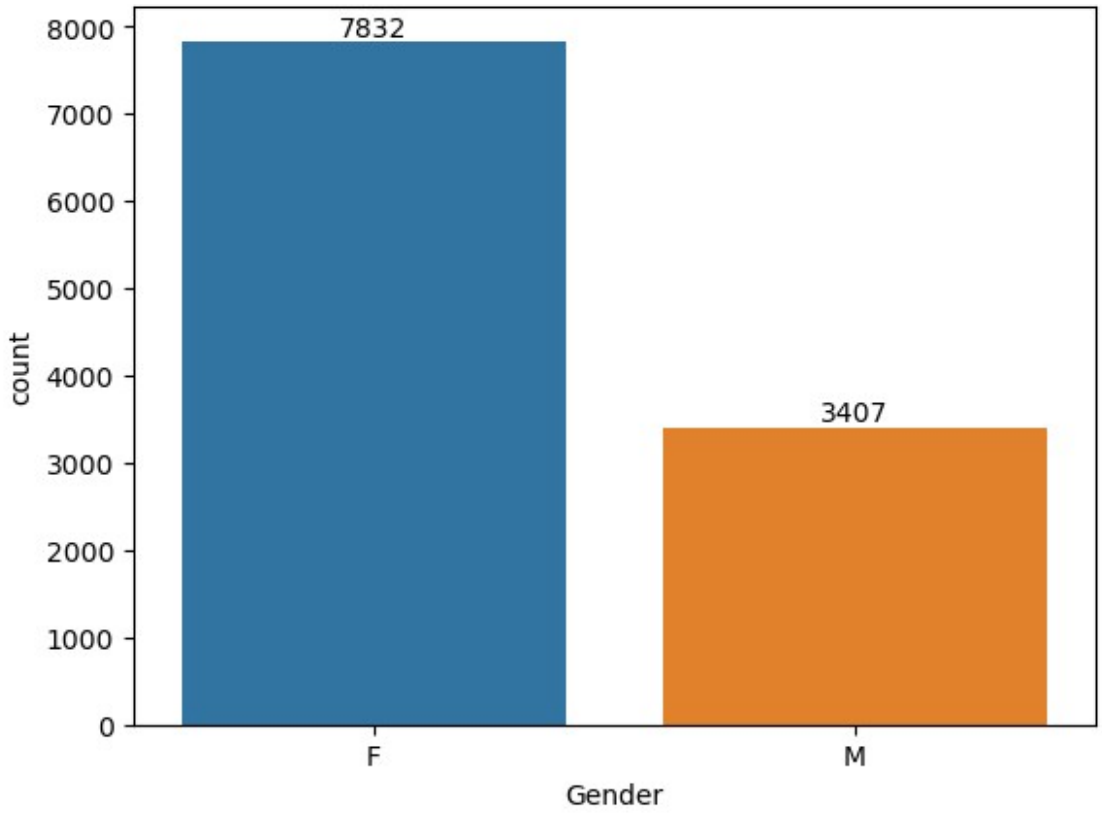
```
#Using describe for specific columns
df[['Amount','Age','Orders']].describe()
```

```
              Amount           Age        Orders
count  11239.000000  11239.000000  11239.000000
mean    9453.610553     35.410357      2.489634
std     5222.355168     12.753866      1.114967
min      188.000000     12.000000      1.000000
25%     5443.000000     27.000000      2.000000
50%     8109.000000     33.000000      2.000000
75%    12675.000000     43.000000      3.000000
max    23952.000000     92.000000      4.000000
```

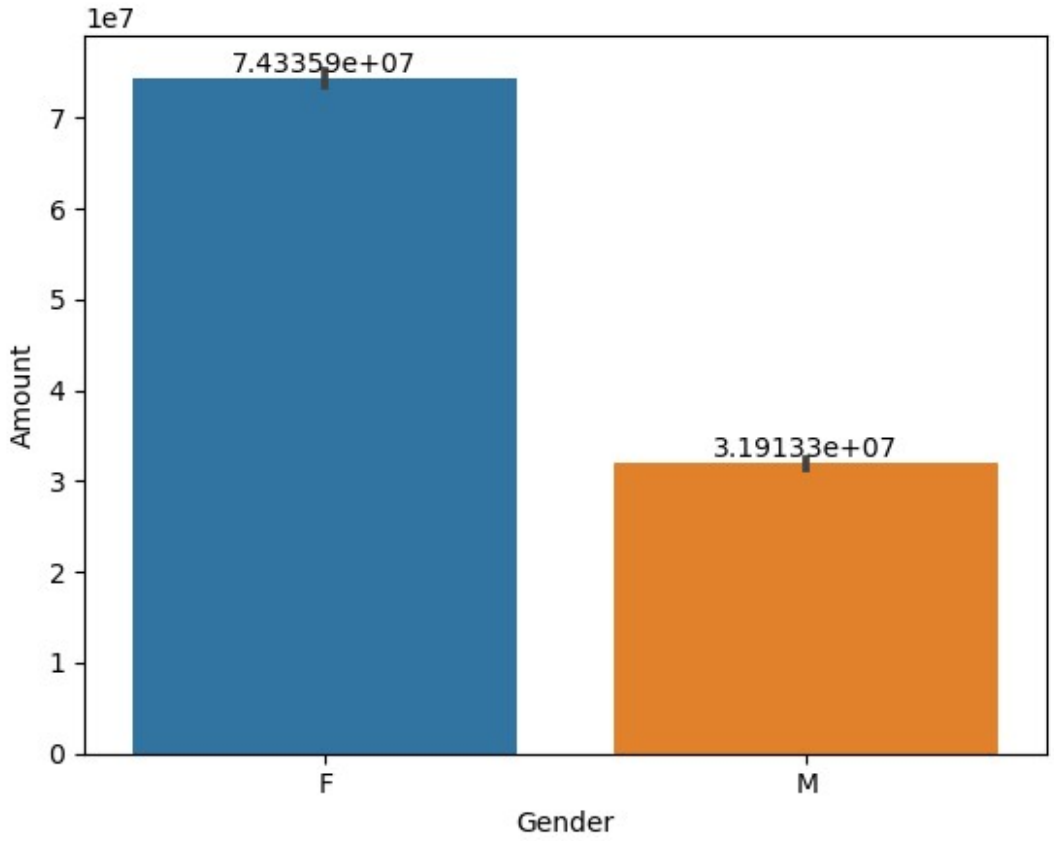
Exploratory Data Analysis (EDA)

Gender

```
ax = sns.countplot(x='Gender', data = df)

for bars in ax.containers:
    ax.bar_label(bars) #To put count lables on bars
```



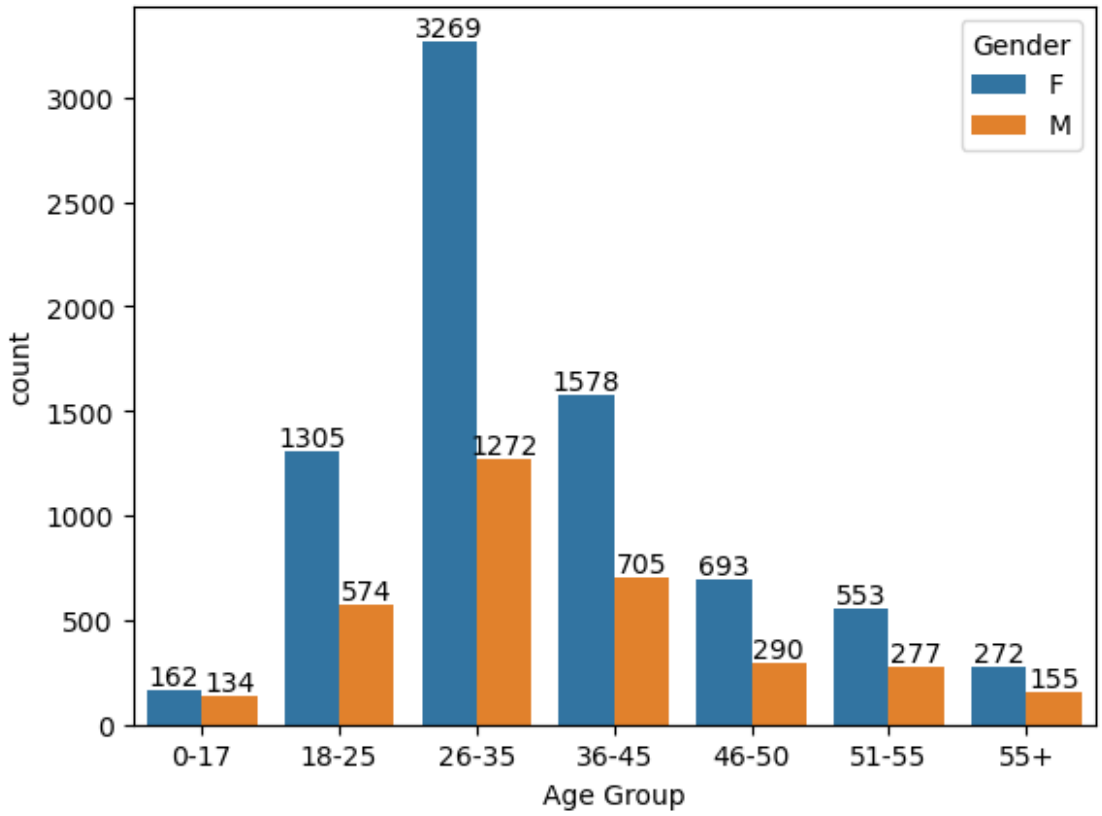

```
ax1 = sns.barplot(x='Gender', y='Amount', data=df, estimator=sum)
for bars in ax1.containers:
    ax1.bar_label(bars)
```



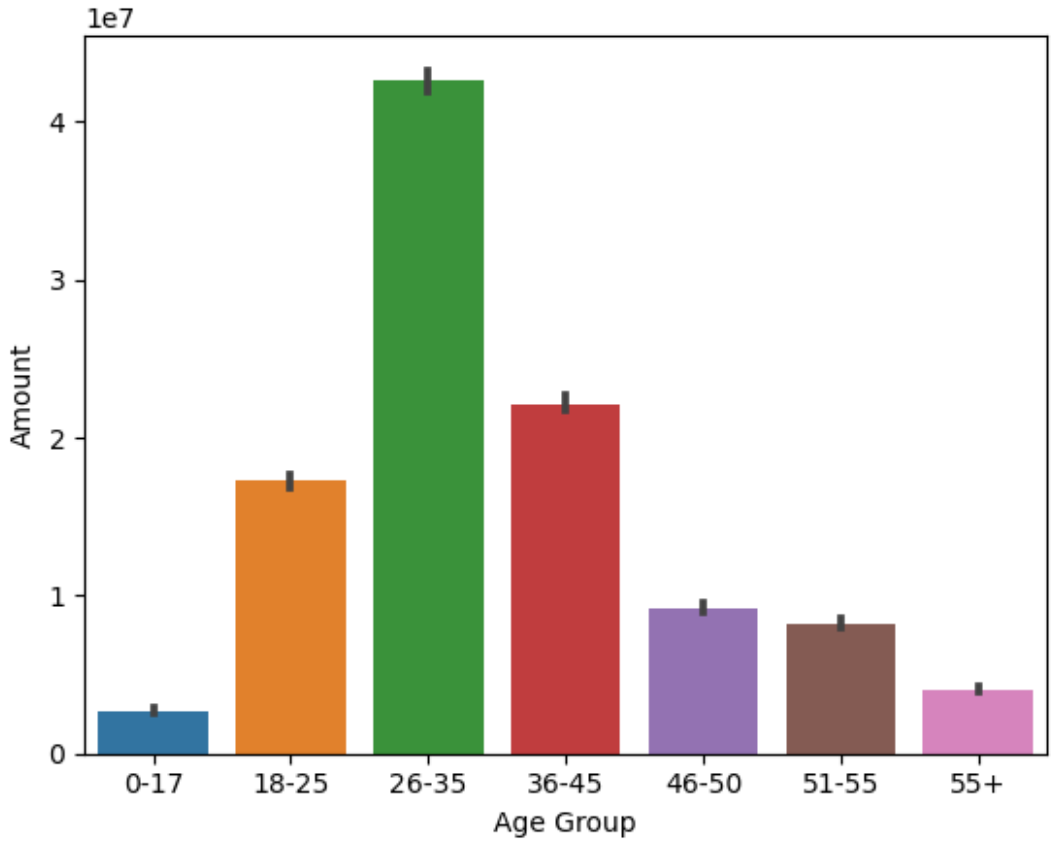
From above graphs we can say that most of the buyers are Females and also purchasing power of Females is greater than males

Age

```
ax = sns.countplot(x='Age Group',data=df, hue =
'Gender',order=sorted(df['Age Group'].unique())) #Hue for seperating
male and female bars
for bars in ax.containers:
    ax.bar_label(bars)
```




```
#Total Amount vs Age group
sales_age = sns.barplot(x='Age Group', y='Amount',
data=df,estimator=sum,order=sorted(df['Age Group'].unique()))
```

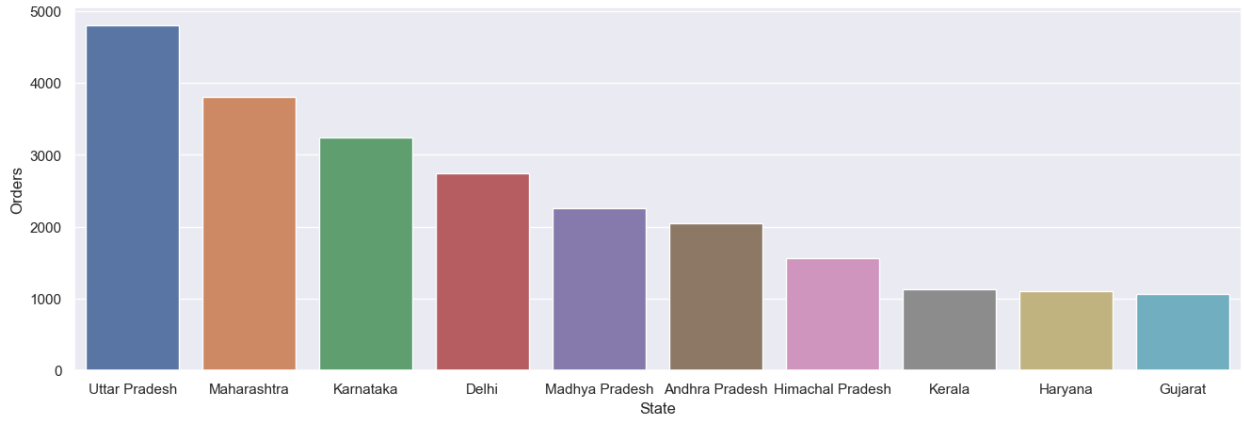


From above graphs we can see that Females from Age group 26-35 are maximum buyers and also spent high amount of money.

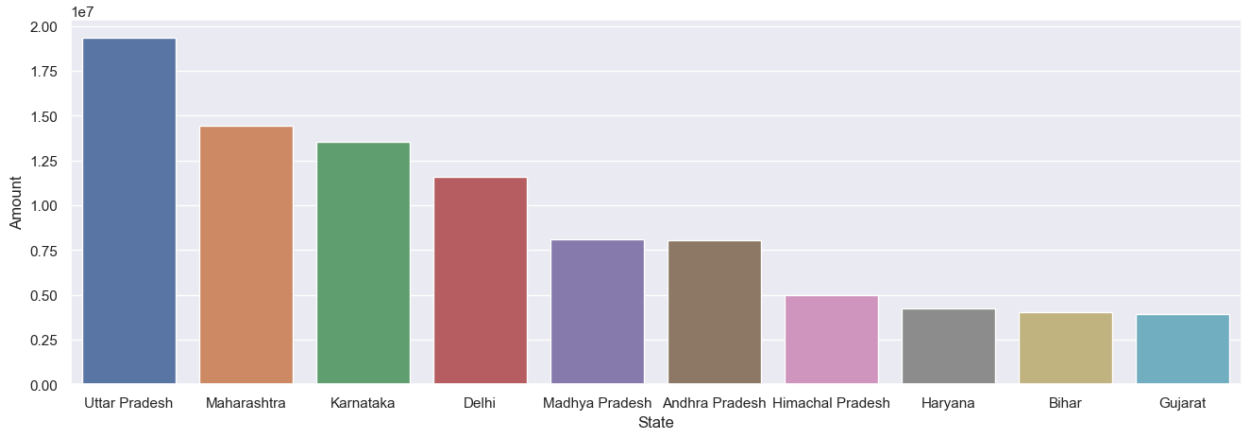
State

```
#States Vs Orders
sales_states= df.groupby(['State'], as_index=False)
['Orders'].sum().sort_values(by='Orders',ascending = False).head(10)
sns.set(rc={'figure.figsize':(16,5)})
sns.barplot(data=sales_states,x='State', y = 'Orders')
```

```
<Axes: xlabel='State', ylabel='Orders'>
```



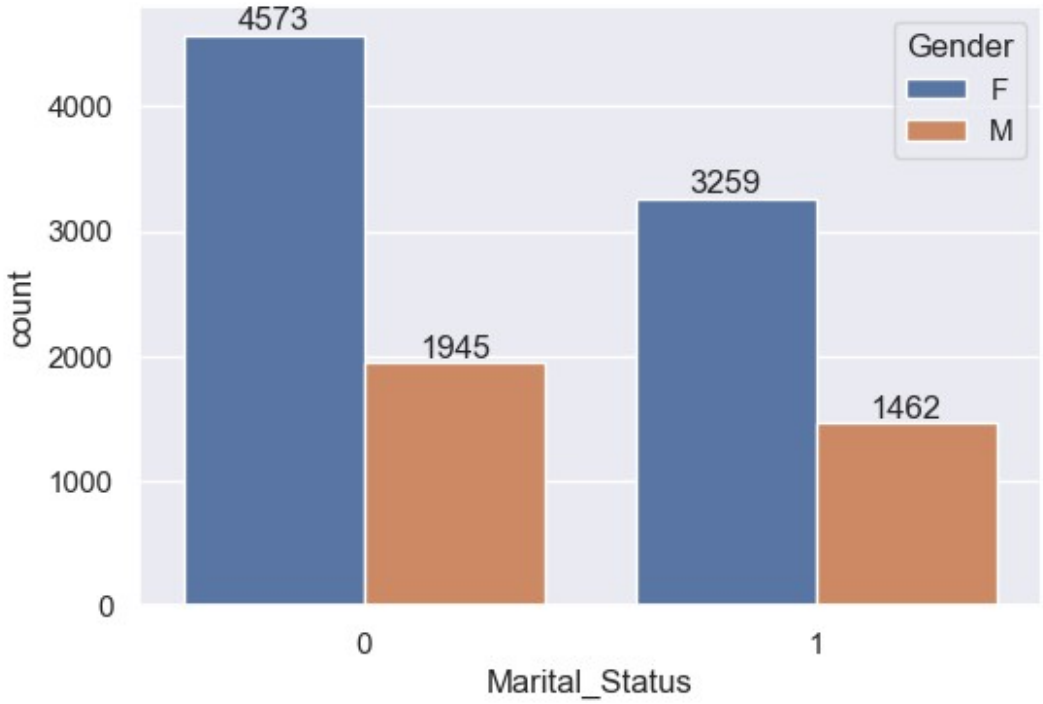

```
#States vs Amount
sales_states= df.groupby(['State'], as_index=False)
['Amount'].sum().sort_values(by='Amount',ascending = False).head(10)
sns.set(rc={'figure.figsize':(16,5)})
sns.barplot(data=sales_states,x='State', y = 'Amount')

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



From above graphs we can see that in terms of Orders and Amount Uttar Pradesh , Maharashtra and Karnataka are Top 3 States among all States.

Martial Status

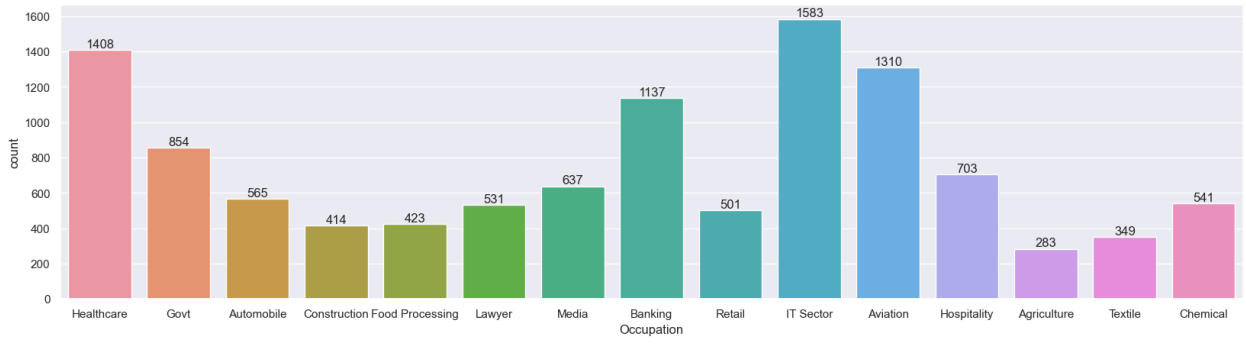
```
martial_sales=sns.countplot(x= 'Marital_Status',data = df , hue =
'Gender')
sns.set(rc={'figure.figsize':(6,7)})

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



From above graph we can see that most of the buyers are married women and they have high purchasing power.

Occupation

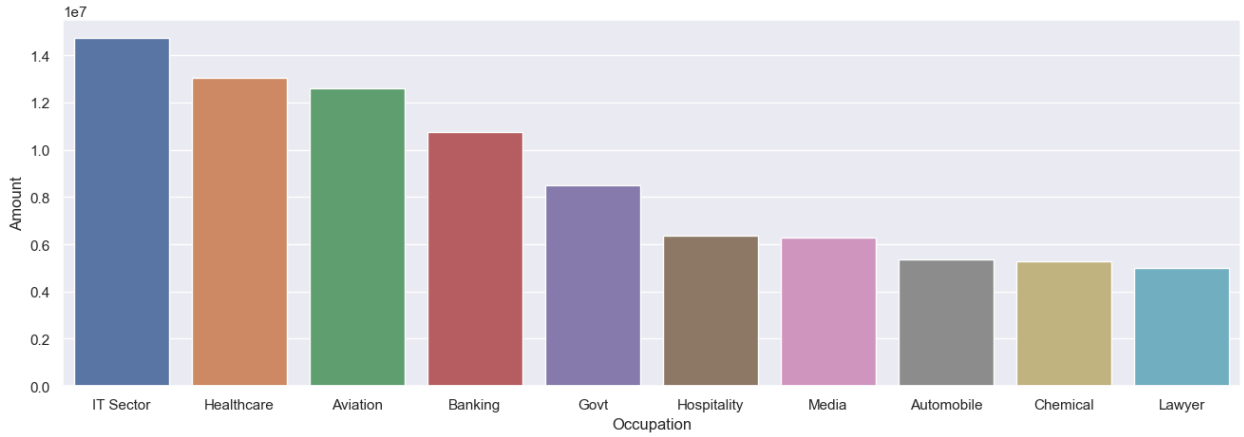
```
sns.set(rc={'figure.figsize':(20,5)})
ax = sns.countplot(x = 'Occupation',data = df)
for bars in ax.containers:
    ax.bar_label(bars)
```




```
#Occupation vs Amount
occ= df.groupby(['Occupation'], as_index=False)
['Amount'].sum().sort_values(by='Amount',ascending = False).head(10)
```

```
sns.set(rc={'figure.figsize':(16,5)})
sns.barplot(data=occ,x='Occupation', y = 'Amount')
```

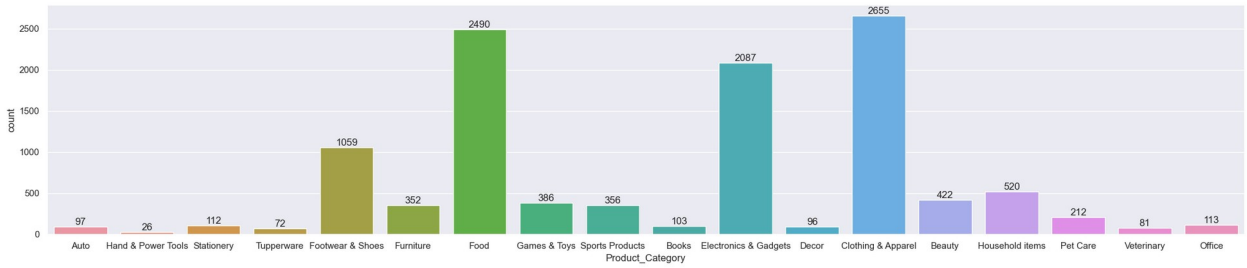
```
<Axes: xlabel='Occupation', ylabel='Amount'>
```



From above visuals we can say that most of the buyers are from IT sector, Healthcare and Aviation.

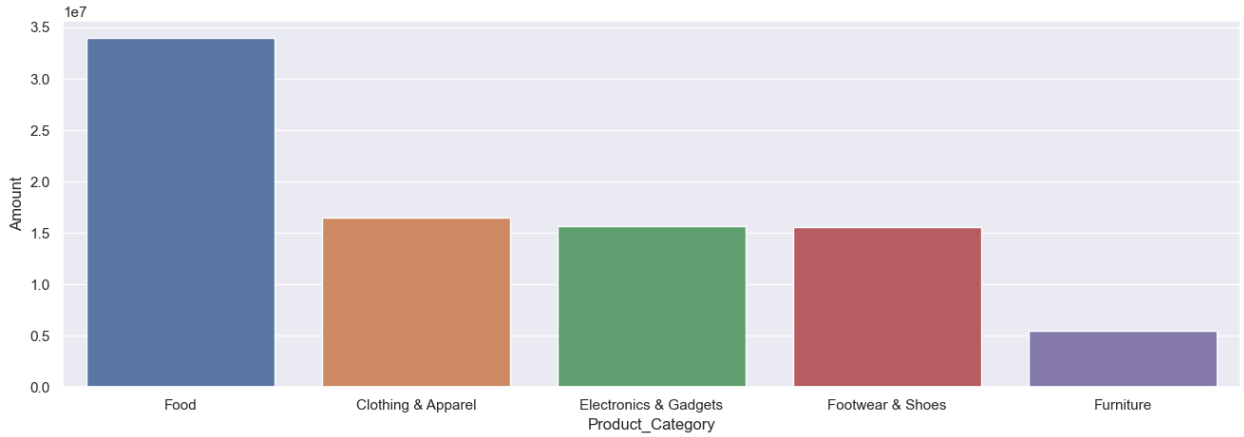
Product Category

```
ax = sns.countplot(x='Product_Category',data=df)
sns.set(rc={'figure.figsize':(27,5)})
for bars in ax.containers:
    ax.bar_label(bars)
```




```
product=df.groupby(['Product_Category'], as_index=False)
['Amount'].sum().sort_values(by='Amount',ascending = False).head(5)
sns.set(rc={'figure.figsize':(16,5)})
sns.barplot(data=product,x='Product_Category', y = 'Amount')
```

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



From above visuals we can see that most sold products are from Food , Clothing and Electronics category.

Conclusion

Married Womens from age group 25-35 yrs from UP,Maharashtra and Karnataka working in IT , Healthcare ,Aviation professions are more likely to buy products from Food,Clothing and Electronics Category.