Sales Insights

In [1]:

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

In [36]:

```
df = pd.read_csv('Sales Insights.csv', encoding= 'unicode_escape')
```

In [37]:

```
df.shape
```

Out[37]:

```
(11251, 15)
```

In [4]:

```
df.head()
```

Out[4]:

	User_ID	Cust_name	Product_ID	Gender	Age Group	Age	Marital_Status	Stat
0	1002903	Sanskriti	P00125942	F	26-35	28	0	Maharashtr
1	1000732	Kartik	P00110942	F	26-35	35	1	Andhra Prades
2	1001990	Bindu	P00118542	F	26-35	35	1	Uttar Prades
3	1001425	Sudevi	P00237842	M	0-17	16	0	Karnatak
4	1000588	Joni	P00057942	M	26-35	28	1	Gujar

In [5]:

```
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
```

In [38]:

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

In [7]:

```
#check for null values
pd.isnull(df).sum()
```

Out[7]:

```
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
```

In [8]:

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

In [9]:

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

In [10]:

```
df['Amount'].dtypes
```

Out[10]:

```
dtype('int32')
```

In [11]:

```
df.columns
```

Out[11]:

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

Describe()

In [11]:

```
df.describe()
```

Out[11]:

	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

In [12]:

```
df[['Age', 'Orders', 'Amount']].describe()
```

Out[12]:

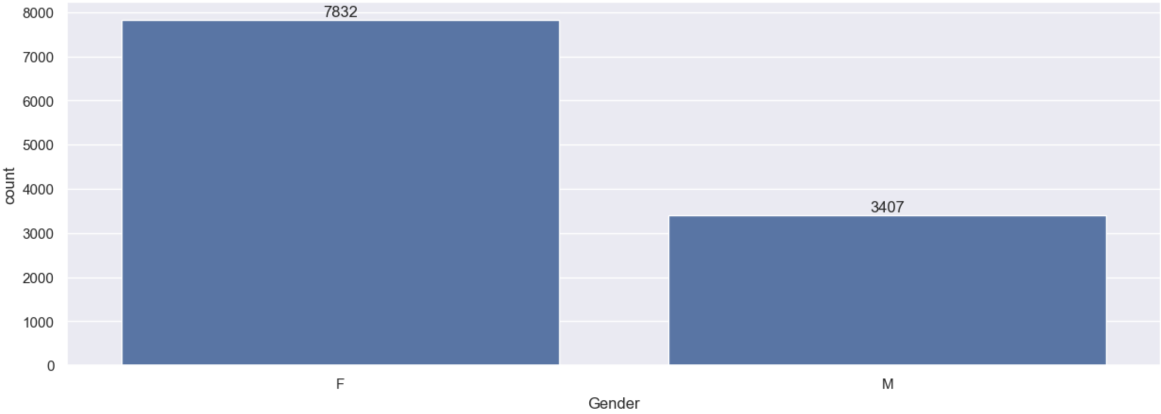
	Age	Orders	Amount
count	11239.000000	11239.000000	11239.000000
mean	35.410357	2.489634	9453.610553
std	12.753866	1.114967	5222.355168
min	12.000000	1.000000	188.000000
25%	27.000000	2.000000	5443.000000
50%	33.000000	2.000000	8109.000000
75%	43.000000	3.000000	12675.000000
max	92.000000	4.000000	23952.000000

Exploratory Data Analysis (EDA)

Gender

In [18]:

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

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

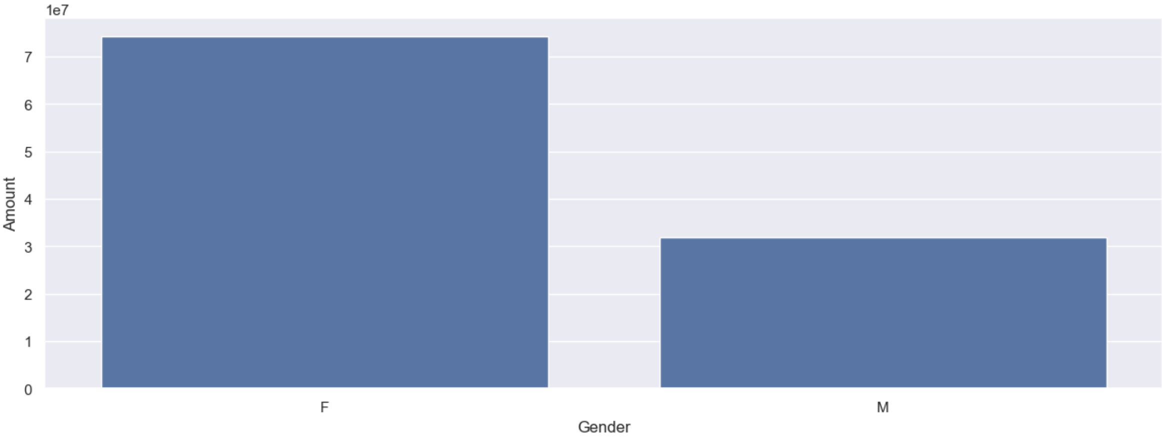


In [19]:

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

sns.barplot(x = 'Gender',y= 'Amount' ,data = sales_gen)
```

Out[19]:

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

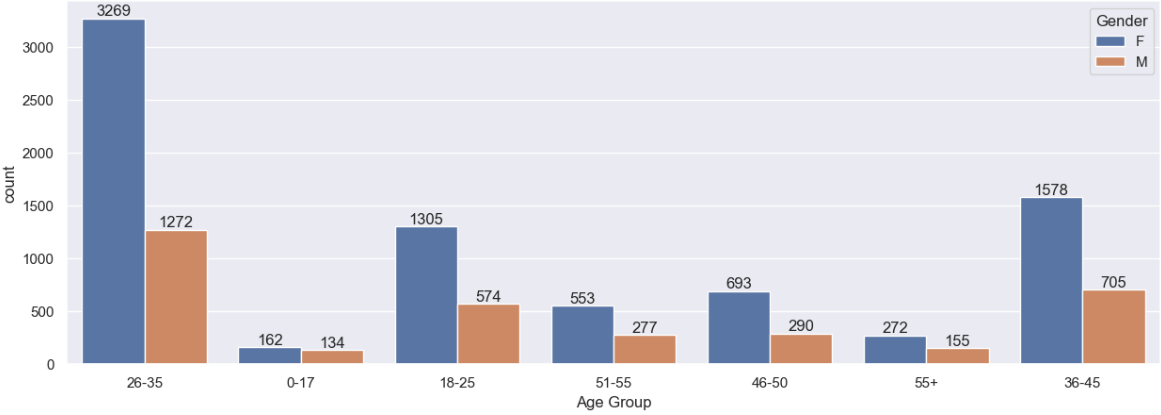


From above graphs we can see that most of the buyers are females and even the purchasing power of females are greater than men

Age

In [20]:

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

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



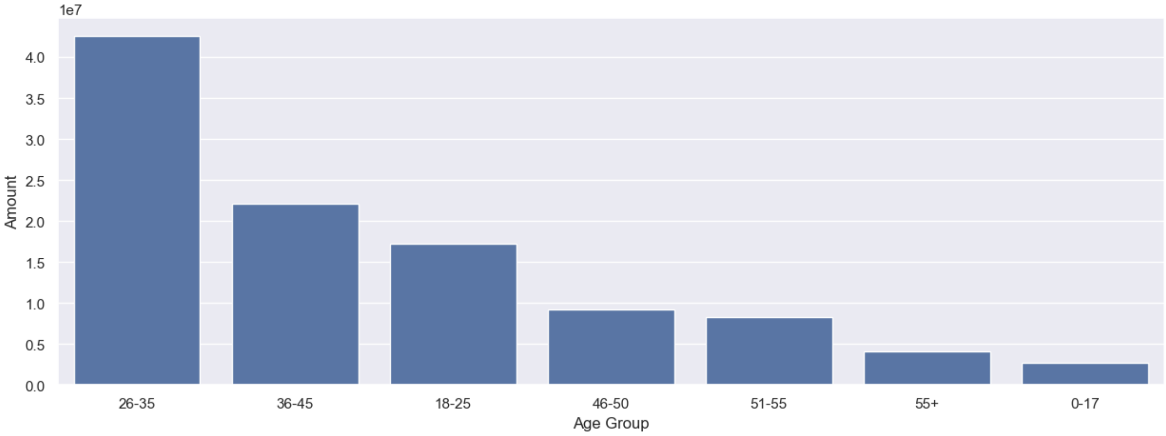
In [21]:

```
sales_age = df.groupby(['Age Group'], as_index=False)['Amount'].sum().sort_value
```

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

Out[21]:

```
<Axes: xlabel='Age Group', ylabel='Amount'>
```



From above graphs we can see that most of the buyers are of age group between 26-35 yrs female

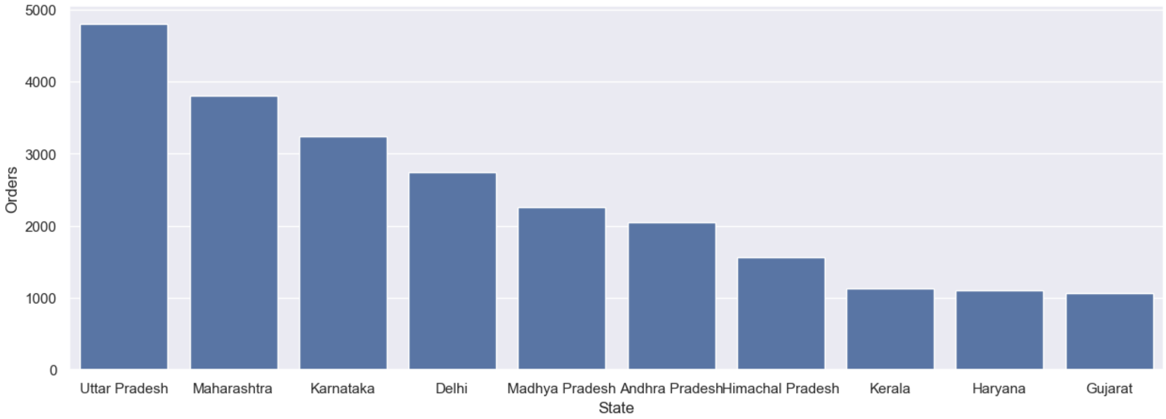
State

In [22]:

```
sales_state = df.groupby(['State'], as_index=False)['Orders'].sum().sort_values(

sns.set(rc={'figure.figsize':(15,5)})
sns.barplot(data = sales_state, x = 'State',y= 'Orders')
```

Out[22]:

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

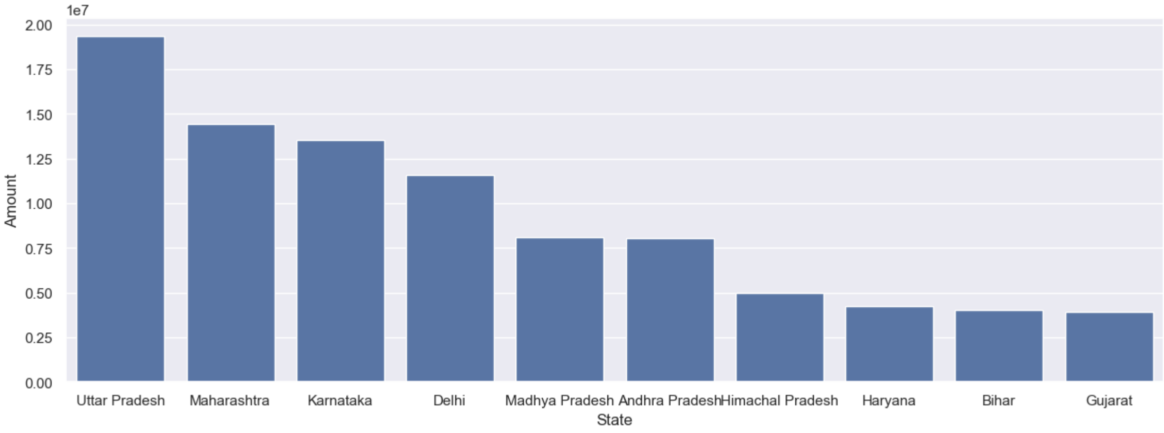


In [23]:

```
sales_state = df.groupby(['State'], as_index=False)['Amount'].sum().sort_values(

sns.set(rc={'figure.figsize':(15,5)})
sns.barplot(data = sales_state, x = 'State',y= 'Amount')
```

Out[23]:

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

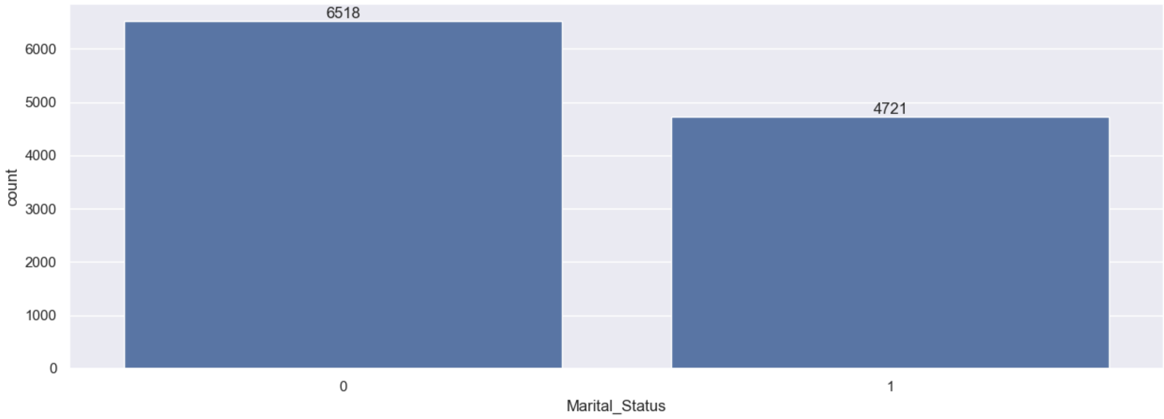


From above graphs we can see that most of the orders & total sales/amount are from Uttar Pradesh, Maharashtra and Karnataka respectively

Marital Status

In [24]:

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

sns.set(rc={'figure.figsize':(7,5)})
for bars in ax.containers:
    ax.bar_label(bars)
```

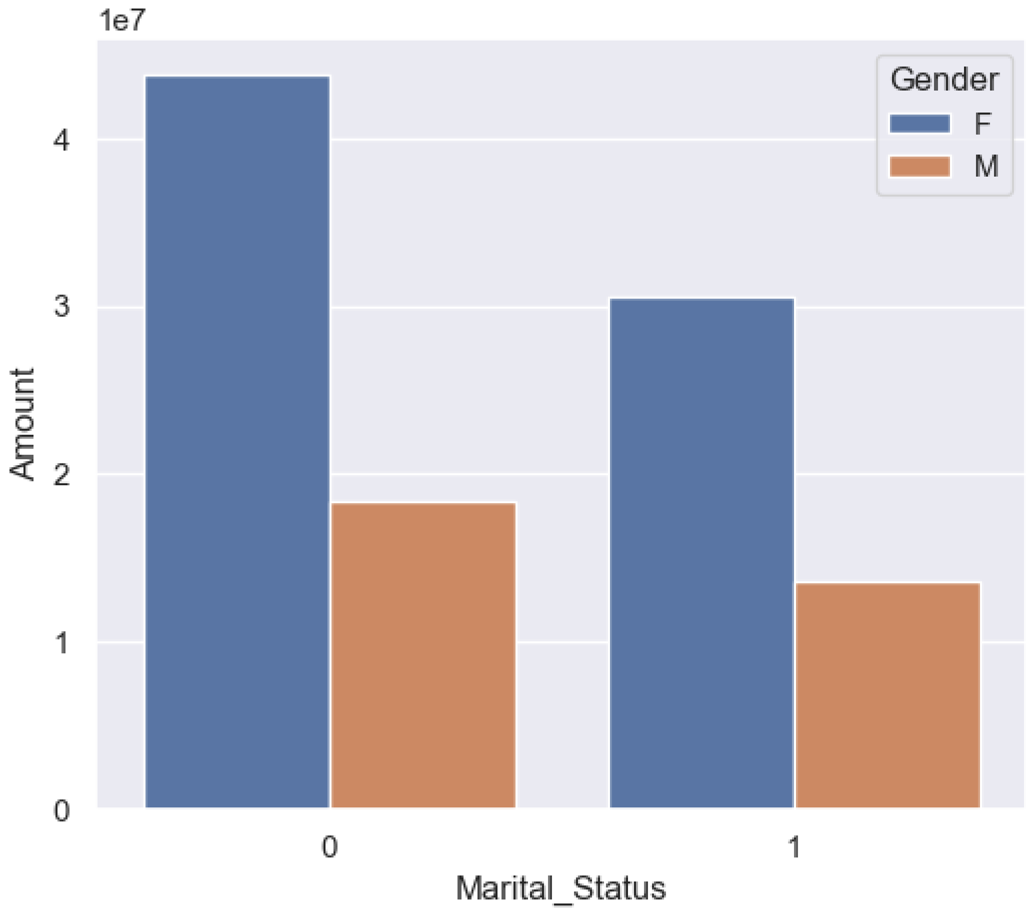


In [25]:

```
sales_state = df.groupby(['Marital_Status', 'Gender'], as_index=False)['Amount']

sns.set(rc={'figure.figsize':(6,5)})
sns.barplot(data = sales_state, x = 'Marital_Status',y= 'Amount', hue='Gender')
```

Out[25]:

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

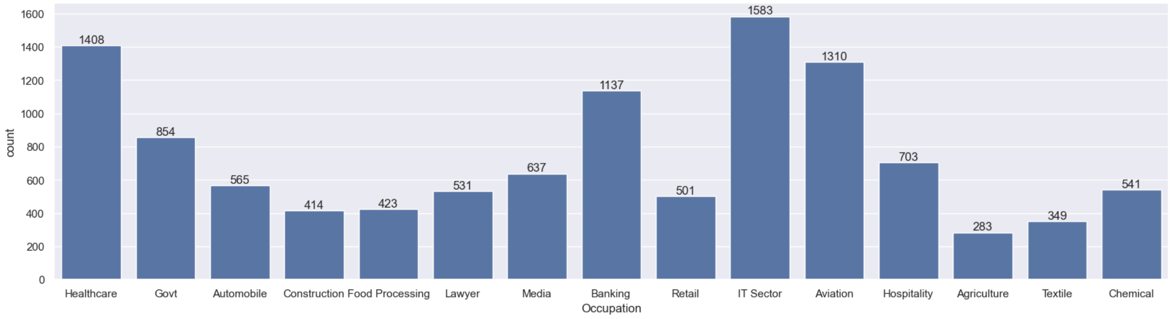


From above graphs we can see that most of the buyers are married (women) and they have high purchasing power

Occupation

In [26]:

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

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

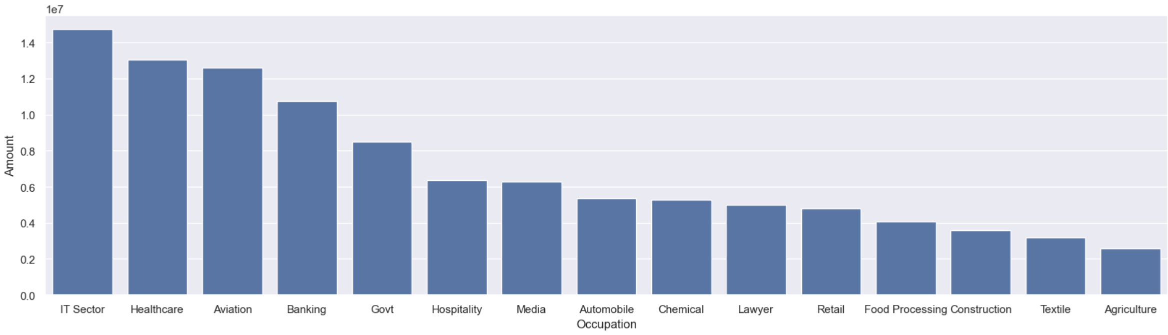


In [27]:

```
sales_state = df.groupby(['Occupation'], as_index=False)['Amount'].sum().sort_va

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

Out[27]:

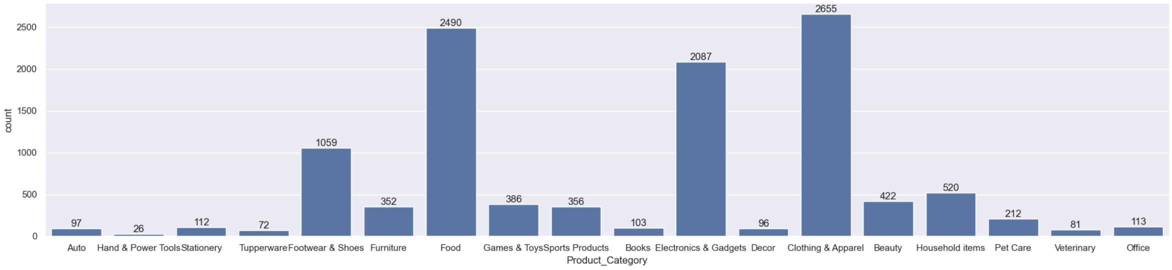
```
<Axes: xlabel='Occupation', ylabel='Amount'>
```



From above graphs we can see that most of the buyers are working in IT, Healthcare and Aviation sector

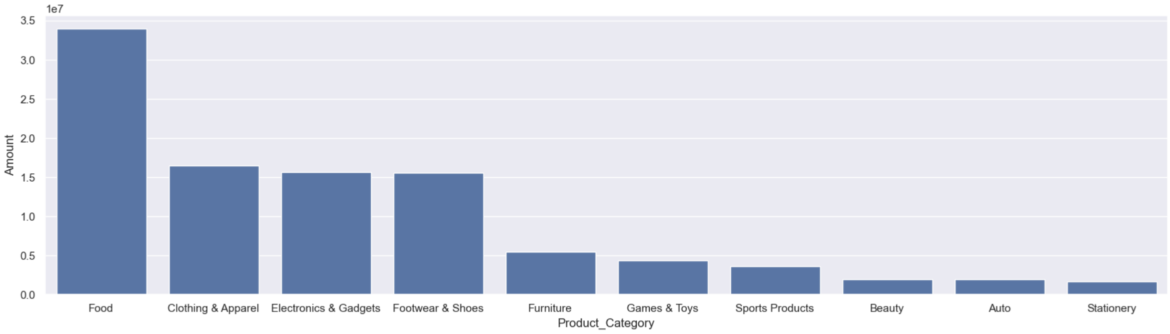
Product Category

In [29]:
```
sns.set(rc={'figure.figsize':(24,5)})
ax = sns.countplot(data = df, x = 'Product_Category')

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



In [31]:
```
sales_state = df.groupby(['Product_Category'], as_index=False)['Amount'].sum().s

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

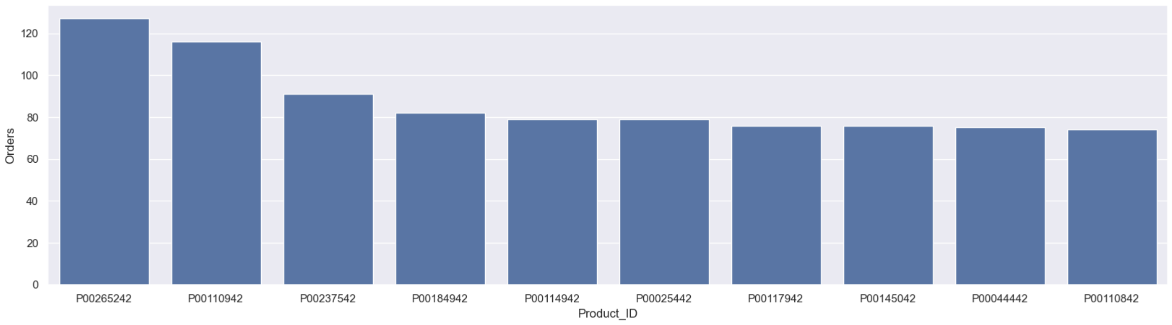
Out[31]:
```
<Axes: xlabel='Product_Category', ylabel='Amount'>
```



From above graphs we can see that most of the sold products are from Food, Clothing and Electronics category

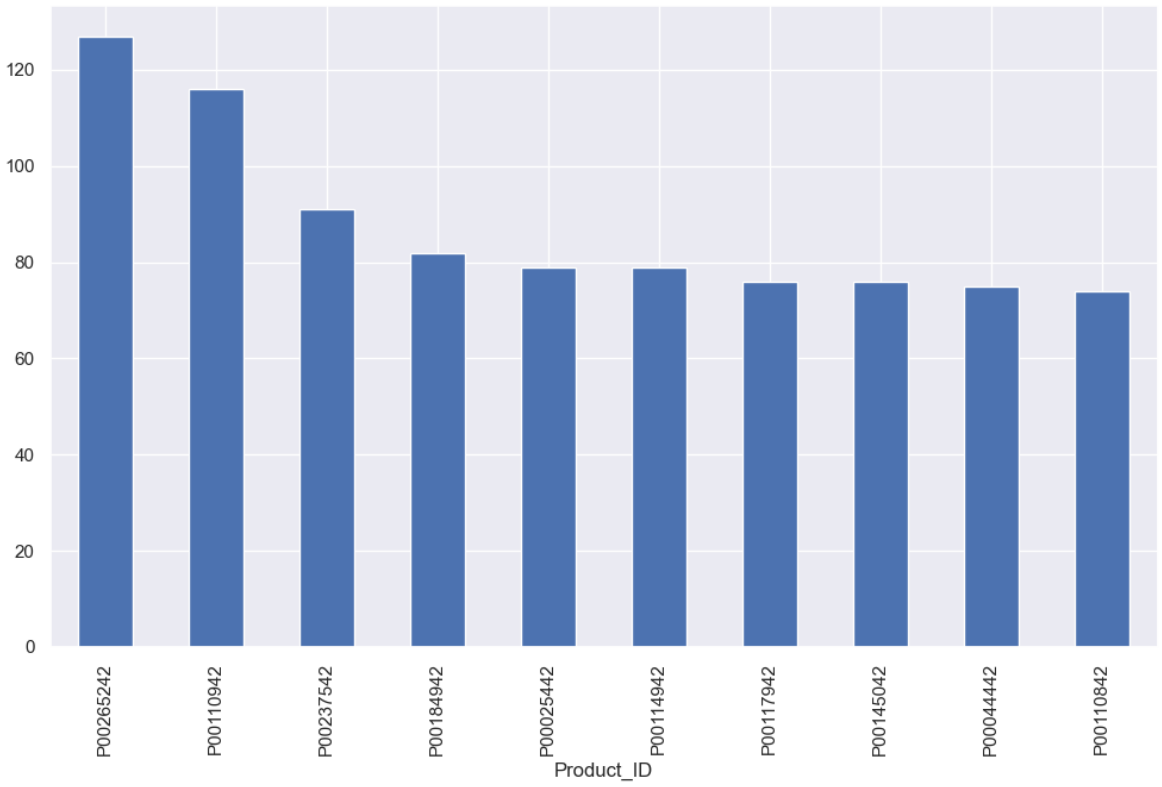
In [32]:
```
sales_state = df.groupby(['Product_ID'], as_index=False)['Orders'].sum().sort_va

sns.set(rc={'figure.figsize':(20,5)})
sns.barplot(data = sales_state, x = 'Product_ID',y= 'Orders')
```

Out[32]:
```
<Axes: xlabel='Product_ID', ylabel='Orders'>
```



```
In [33]: # top 10 most sold products

         fig1, ax1 = plt.subplots(figsize=(12,7))
         df.groupby('Product_ID')['Orders'].sum().nlargest(10).sort_values(ascending=Fals
```

```
Out[33]: <Axes: xlabel='Product_ID'>
```



Conclusion:

Married women from Uttar Pradesh, Maharashtra, and Karnataka in the age range of 26 to 35 who work in IT, healthcare, and aviation are more likely to purchase goods in the food, clothing, and electronics categories.