In [1]:
```
# import the necessary libaries
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
%matplotlib inline
import seaborn as sns
```

In [2]:
```
df = pd.read_csv('Diwali Sales Data.csv', encoding='unicode_escape')
```

In [3]:
```
df.shape
```

Out[3]: (11251, 15)

In [4]:
```
df.head()
```

Out[4]:

	User_ID	Cust_name	Product_ID	Gender	Age Group	Age	Marital_Status	State	Zo
0	1002903	Sanskriti	P00125942	F	26-35	28	0	Maharashtra	Weste
1	1000732	Kartik	P00110942	F	26-35	35	1	Andhra Pradesh	Southe
2	1001990	Bindu	P00118542	F	26-35	35	1	Uttar Pradesh	Cent
3	1001425	Sudevi	P00237842	M	0-17	16	0	Karnataka	Southe
4	1000588	Joni	P00057942	M	26-35	28	1	Gujarat	Weste

In [5]:
```
df.describe()
```

Out[5]:

	User_ID	Age	Marital_Status	Orders	Amount	Status	unnamed
count	1.125100e+04	11251.000000	11251.000000	11251.000000	11239.000000	0.0	0.
mean	1.003004e+06	35.421207	0.420318	2.489290	9453.610858	NaN	Nal
std	1.716125e+03	12.754122	0.493632	1.115047	5222.355869	NaN	Nal
min	1.000001e+06	12.000000	0.000000	1.000000	188.000000	NaN	Nal
25%	1.001492e+06	27.000000	0.000000	1.500000	5443.000000	NaN	Nal
50%	1.003065e+06	33.000000	0.000000	2.000000	8109.000000	NaN	Nal
75%	1.004430e+06	43.000000	1.000000	3.000000	12675.000000	NaN	Nal
max	1.006040e+06	92.000000	1.000000	4.000000	23952.000000	NaN	Nal

In [6]:
```
# drop black columns

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

In [7]:
```
df.head()
```

Out[7]:

	User_ID	Cust_name	Product_ID	Gender	Age Group	Age	Marital_Status	State	Zo
0	1002903	Sanskriti	P00125942	F	26-35	28	0	Maharashtra	Weste
1	1000732	Kartik	P00110942	F	26-35	35	1	Andhra Pradesh	Southe
2	1001990	Bindu	P00118542	F	26-35	35	1	Uttar Pradesh	Cent
3	1001425	Sudevi	P00237842	M	0-17	16	0	Karnataka	Southe
4	1000588	Joni	P00057942	M	26-35	28	1	Gujarat	Weste

In [8]:
```
#check the null values

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

Out[8]:
```
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 [9]:
```
#drop null values

df.dropna(inplace=True)
```

In [10]:
```
1 df.isnull().sum()
```

Out[10]:
```
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
```

In [11]:
```
1 df.shape
```

Out[11]:
```
(11239, 13)
```

In [12]:
```
1 # change the data type
2
3 df['Amount'] = df['Amount'].astype('int')
```

In [13]:
```
1 df['Amount'].dtypes
```

Out[13]:
```
dtype('int32')
```

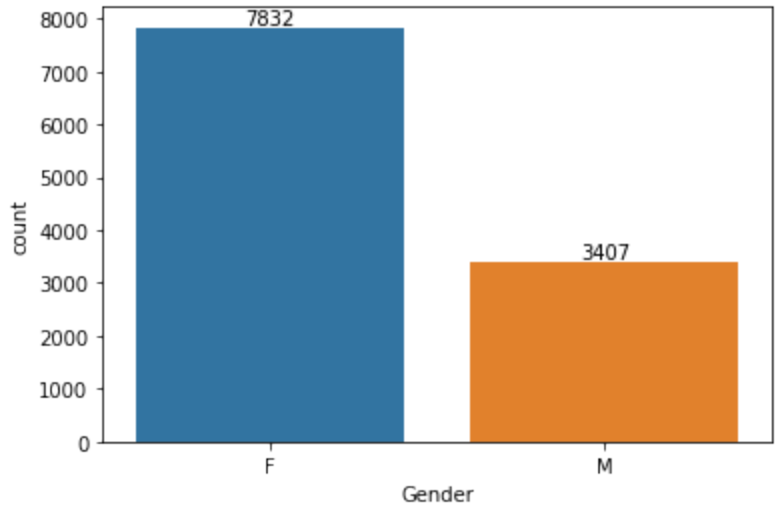
In [14]:
```
1 df.columns
```

Out[14]:
```
Index(['User_ID', 'Cust_name', 'Product_ID', 'Gender', 'Age Group', 'Age',
       'Marital_Status', 'State', 'Zone', 'Occupation', 'Product_Category',
       'Orders', 'Amount'],
      dtype='object')
```

Exploratory Data Analysis

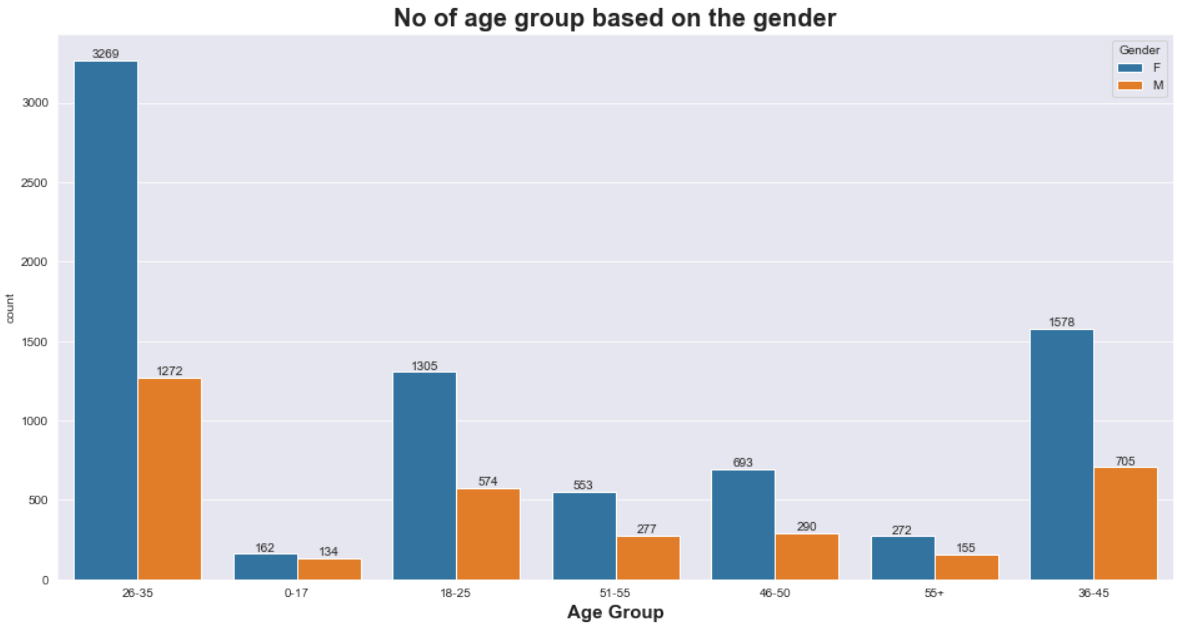
Gender

In [15]:
```
ax = sns.countplot(x ='Gender', data = df)

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

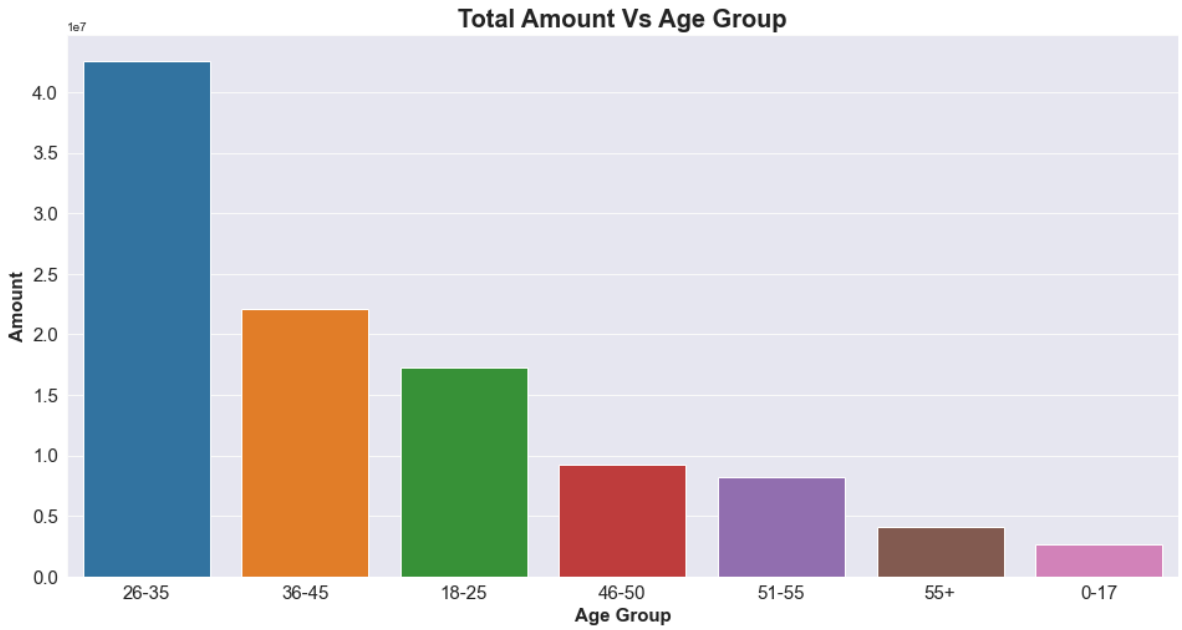


From above graphs we can see that most of the buyers are Females and even the purchasing power of females are greater than Mens.

In [16]:
```
# no of age group based on the gender

plt.figure(figsize=(16,8))
sns.set_style(style='darkgrid')
ax = sns.countplot(x='Age Group', data=df, hue='Gender')
plt.title('No of age group based on the gender', fontsize=20, fontweight=
plt.xlabel('Age Group', size=15, fontweight='bold')


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



In [17]:
```
# total amount vs age group

plt.figure(figsize=(16,8))
sns.set_style(style='darkgrid')
sales_age = df.groupby(['Age Group'], as_index=False)['Amount'].sum().sort
sns.barplot(x='Age Group', y='Amount', data=sales_age)
plt.title('Total Amount Vs Age Group', fontsize=20, fontweight='bold')
plt.xlabel('Age Group', size=15, fontweight='bold')
plt.ylabel('Amount', size=15, fontweight='bold')
plt.xticks(size=15)
plt.yticks(size=15)
plt.show()
```

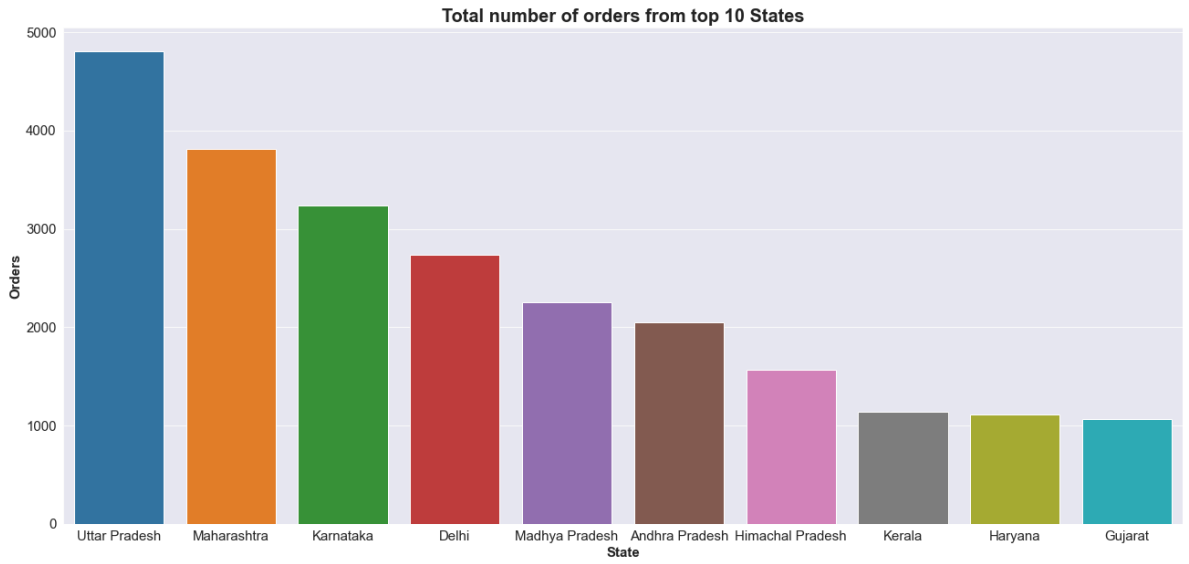


From the above graphs we can see that most of the buyers are of age group between 26-35 yrs Females.

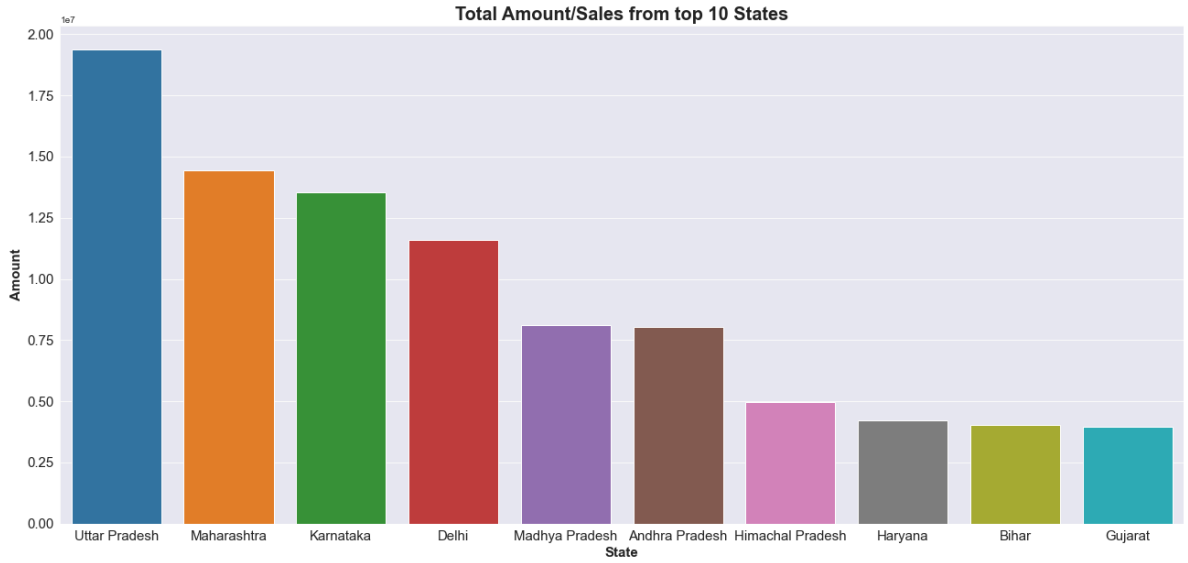
State

In [18]:

```
# total number of orders from top 10 states

plt.figure(figsize=(22,10))
sns.set_style(style='darkgrid')
sales_state = df.groupby(['State'], as_index=False)['Orders'].sum().sort_
sns.barplot(x='State', y='Orders', data=sales_state)
plt.title('Total number of orders from top 10 States', fontsize=20, fontwe
plt.xlabel('State', size=15, fontweight='bold')
plt.ylabel('Orders', size=15, fontweight='bold')
plt.xticks(size=15)
plt.yticks(size=15)
plt.show()
```



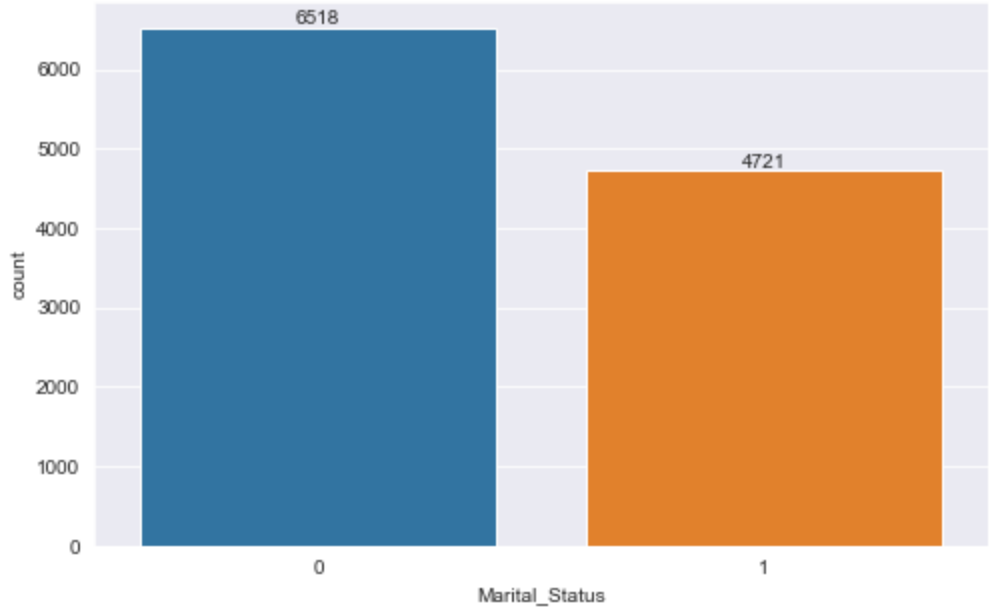
In [19]:
```
# total amount/sales from top 10 states

plt.figure(figsize=(22,10))
sales_state = df.groupby(['State'], as_index=False)['Amount'].sum().sort_v
sns.barplot(x='State', y='Amount', data=sales_state)
plt.title('Total Amount/Sales from top 10 States', fontsize=20, fontweight
plt.xlabel('State', size=15, fontweight='bold')
plt.ylabel('Amount', size=15, fontweight='bold')
plt.xticks(size=15)
plt.yticks(size=15)
plt.show()
```



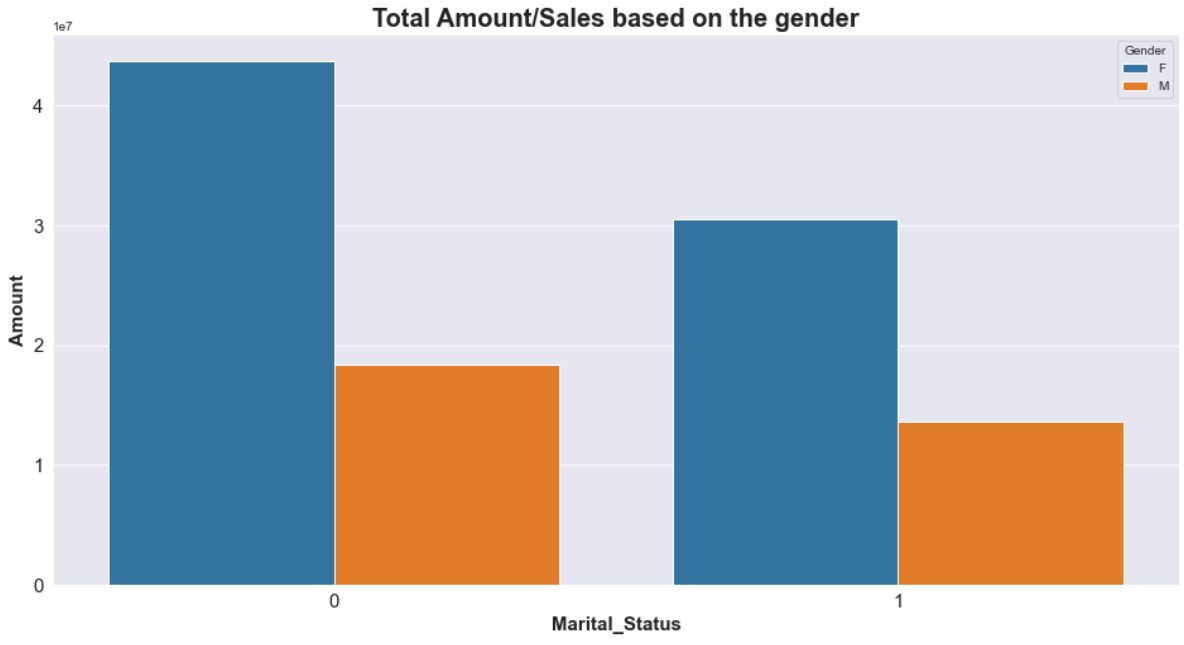
From above graphs we can see that most of the orders and total sales/amount are from Uttar Pradesh, Maharashtra and Karnataka respectively.

Marital Status

In [20]:
```
plt.figure(figsize=(8,5))
ax = sns.countplot(x='Marital_Status', data=df)

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



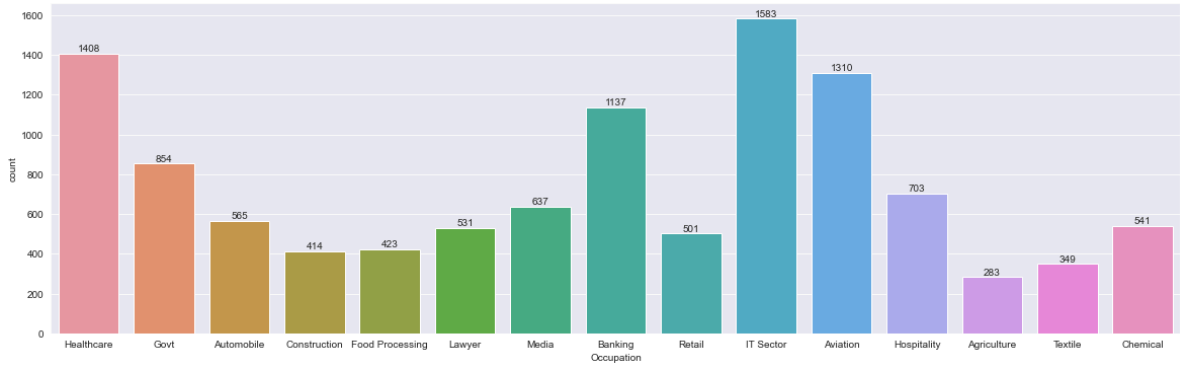
In [21]:
```
plt.figure(figsize=(16,8))
sales_marital_status = df.groupby(['Marital_Status', 'Gender'], as_index=F
sns.barplot(x='Marital_Status', y='Amount', hue='Gender', data=sales_marit
plt.title('Total Amount/Sales based on the gender', fontsize=20, fontweigh
plt.xlabel('Marital_Status', size=15, fontweight='bold')
plt.ylabel('Amount', size=15, fontweight='bold')
plt.xticks(size=15)
plt.yticks(size=15)
plt.show()
```



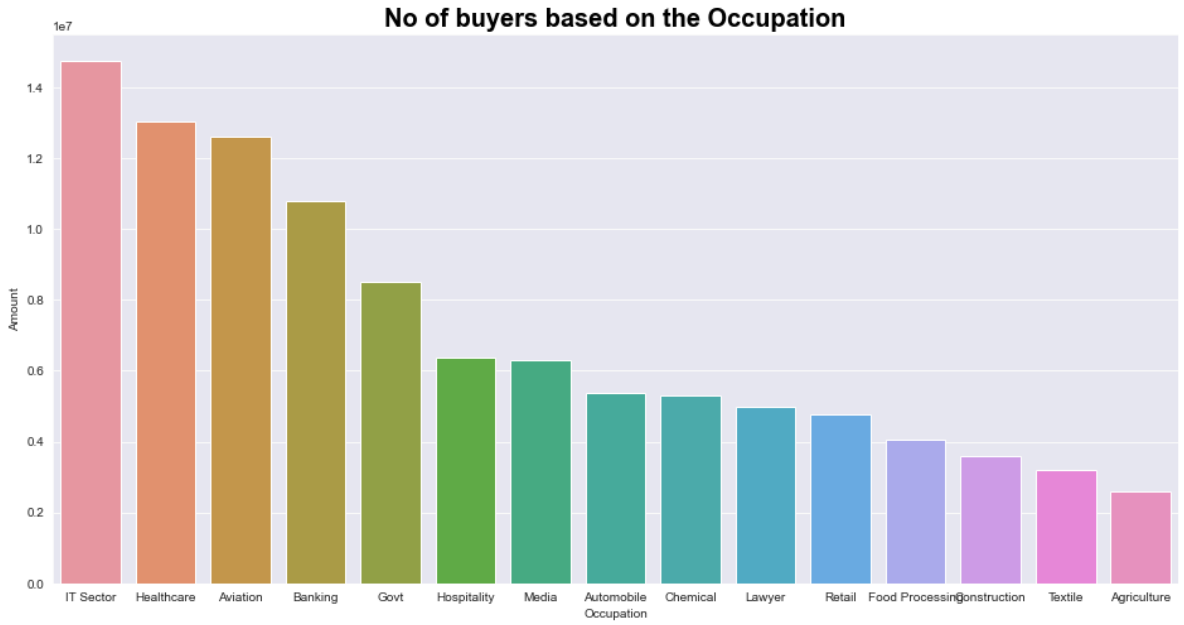
From above graphs we can see that most of the buyers are married (women) and they have high purchasing power.

Occupation

In [22]:
```
plt.figure(figsize=(20,6))
ax = sns.countplot(x='Occupation', data=df)

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



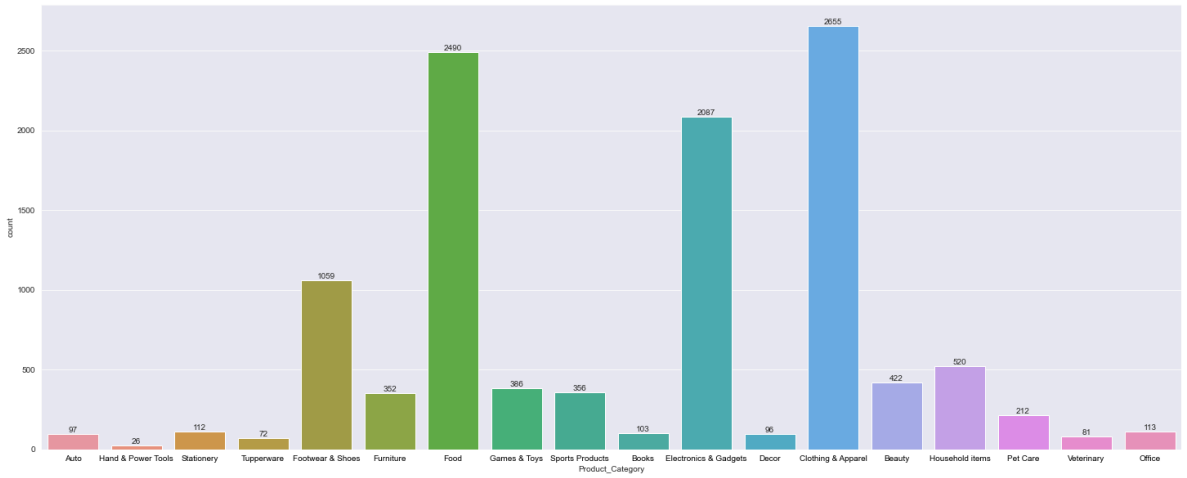
In [23]:
```
plt.figure(figsize=(16,8))
sales_occupation = df.groupby(['Occupation'], as_index=False)['Amount'].su
sns.barplot(x='Occupation', y='Amount', data=sales_occupation)
plt.title('No of buyers based on the Occupation', fontsize=20, fontweight=
plt.show()
```



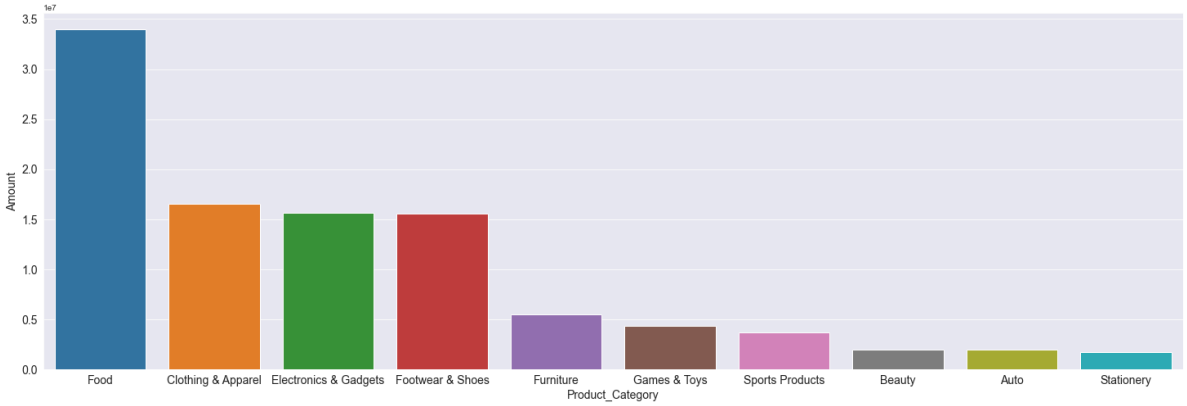
From the above graph we can see most of the buyers are working in IT, Healthcare and Avaiation.

Product Category

In [24]:
```
plt.figure(figsize=(25,10))
ax = sns.countplot(x='Product_Category', data=df)

plt.xticks(color='black')

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



In [25]:
```
plt.figure(figsize=(25,8))
sales_product_category = df.groupby(['Product_Category'], as_index=False)
sns.barplot(x='Product_Category', y='Amount', data=sales_product_category
plt.xlabel('Product_Category', size=14)
plt.ylabel('Amount', size=14)
plt.xticks(size=14)
plt.yticks(size=14)
plt.show()
```



From the above graph we can see most of the sold products are from Food, Clothing & Apprael and Electronics & Gadgets Catgeory.

Conclusions:

Married women age group 26-35 yrs from UP, Maharastra and Karnataka working in IT, Healthcare and Aviation are more likely to buy products from Food, Clothing and Electronics category.