assessment_analysis1

December 15, 2025

1 Time Spent Analysis

[110]:
```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

[57]:
```
data=pd.read_excel("Sample Month End Report for Assesment.xlsx",sheet_name=None)
```

[58]:
```
xls=pd.ExcelFile("Sample Month End Report for Assesment.xlsx")
```

[59]:
```
xls.sheet_names
```

[59]:
```
['Time spent Analysis', 'Key Accounts', 'Meeting Log', 'Inquiry Tracker']
```

[60]:
```
data=pd.read_excel("Sample Month End Report for Assesment.
↪xlsx",sheet_name="Time spent Analysis")
data.head()
```

[60]:

	Company	Category	Total Hours	\
0	Chennai	Unknown	32.00	
1	Pidilite	Distributor	23.75	
2	Kalpataru Projects	Contractor	23.50	
3	Asg win	Applicator	15.50	
4	Internal/Review (MRM, Hubspot, etc.)	Admin	12.50	

	Estimated Cost	3500	inr per hour is cost assumed
0	112000	NaN	NaN
1	83125	NaN	NaN
2	82250	NaN	NaN
3	54250	NaN	NaN
4	43750	NaN	NaN

[61]:
```
data.columns.tolist
```

[61]:
```
<bound method IndexOpsMixin.tolist of Index([                    'Company',
'Category ',
                        'Total Hours',              'Estimated Cost ',
                                3500, 'inr per hour is cost assumed'],
```

```
       dtype='object')>
```

[75]:
```
data=data.rename(columns={"Estimated Cost": "estimated_cost(3500 inr_per_hour)",
                          "Company": "company",
                          "Category ": "category",
                          "Total Hours": "total_hours"
                         })
data
```

[75]:

	company	category	total_hours	\
0	Chennai	unknown	32.00	
1	Pidilite	distributor	23.75	
2	Kalpataru Projects	contractor	23.50	
3	Asg win	applicator	15.50	
4	Internal/Review (MRM, Hubspot, etc.)	admin	12.50	
..	…	…	…	
137	CNT	consultant/architect	0.50	
138	Etecetra architects	consultant/architect	0.50	
139	Morceau architects	consultant/architect	0.50	
140	Studio tan	consultant/architect	0.50	
141	Total Environment	consultant/architect	0.50	

	estimated_cost(3500 inr_per_hour)
0	112000
1	83125
2	82250
3	54250
4	43750
..	…
137	1750
138	1750
139	1750
140	1750
141	1750

[142 rows x 4 columns]

[76]:
```
data.columns.tolist
```

[76]:
```
<bound method IndexOpsMixin.tolist of Index(['company', 'category',
'total_hours',
       'estimated_cost(3500 inr_per_hour)'],
      dtype='object')>
```

[78]:
```
data
```

[78]:

	company	category	total_hours	\
0	Chennai	unknown	32.00	
1	Pidilite	distributor	23.75	
2	Kalpataru Projects	contractor	23.50	
3	Asg win	applicator	15.50	
4	Internal/Review (MRM, Hubspot, etc.)	admin	12.50	
..	…	…	…	
137	CNT	consultant/architect	0.50	
138	Etecetra architects	consultant/architect	0.50	
139	Morceau architects	consultant/architect	0.50	
140	Studio tan	consultant/architect	0.50	
141	Total Environment	consultant/architect	0.50	

	estimated_cost(3500 inr_per_hour)
0	112000
1	83125
2	82250
3	54250
4	43750
..	…
137	1750
138	1750
139	1750
140	1750
141	1750

[142 rows x 4 columns]

[79]:
```
data.columns = data.columns.str.strip()
```

[80]:
```
data
```

[80]:

	company	category	total_hours	\
0	Chennai	unknown	32.00	
1	Pidilite	distributor	23.75	
2	Kalpataru Projects	contractor	23.50	
3	Asg win	applicator	15.50	
4	Internal/Review (MRM, Hubspot, etc.)	admin	12.50	
..	…	…	…	
137	CNT	consultant/architect	0.50	
138	Etecetra architects	consultant/architect	0.50	
139	Morceau architects	consultant/architect	0.50	
140	Studio tan	consultant/architect	0.50	
141	Total Environment	consultant/architect	0.50	

	estimated_cost(3500 inr_per_hour)
0	112000

```
1                                  83125
2                                  82250
3                                  54250
4                                  43750
..                                   …
137                                 1750
138                                 1750
139                                 1750
140                                 1750
141                                 1750

[142 rows x 4 columns]
```

[81]:
```
data.columns.tolist
```

[81]:
```
<bound method IndexOpsMixin.tolist of Index(['company', 'category',
'total_hours',
       'estimated_cost(3500 inr_per_hour)'],
      dtype='object')>
```

[82]:
```
data.isnull().sum()
```

[82]:
```
company                            0
category                           0
total_hours                        0
estimated_cost(3500 inr_per_hour)  0
dtype: int64
```

2 Descriptive Analysis

[83]:
```
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 142 entries, 0 to 141
Data columns (total 4 columns):
 #   Column                             Non-Null Count  Dtype
---  ------                             --------------  -----
 0   company                            142 non-null    object
 1   category                           142 non-null    object
 2   total_hours                        142 non-null    float64
 3   estimated_cost(3500 inr_per_hour)  142 non-null    int64
dtypes: float64(1), int64(1), object(2)
memory usage: 4.6+ KB
```

[84]:
```
data.describe()
```

[84]:
```
       total_hours  estimated_cost(3500 inr_per_hour)
count   142.000000                          142.000000
mean      3.464085                        12124.295775
std       4.478179                        15673.628002
min       0.500000                         1750.000000
25%       1.000000                         3500.000000
50%       2.000000                         7000.000000
75%       3.937500                        13781.250000
max      32.000000                       112000.000000
```

[85]:
```
data['category'].unique()
```

[85]:
```
array(['unknown', 'distributor', 'contractor', 'applicator', 'admin',
       'developer', 'consultant/architect'], dtype=object)
```

[86]:
```
# In category column for the same category there are two words like 'Admin' and
 ↪'admin' So make it one word.
data['category']=data['category'].str.lower().str.strip()
```

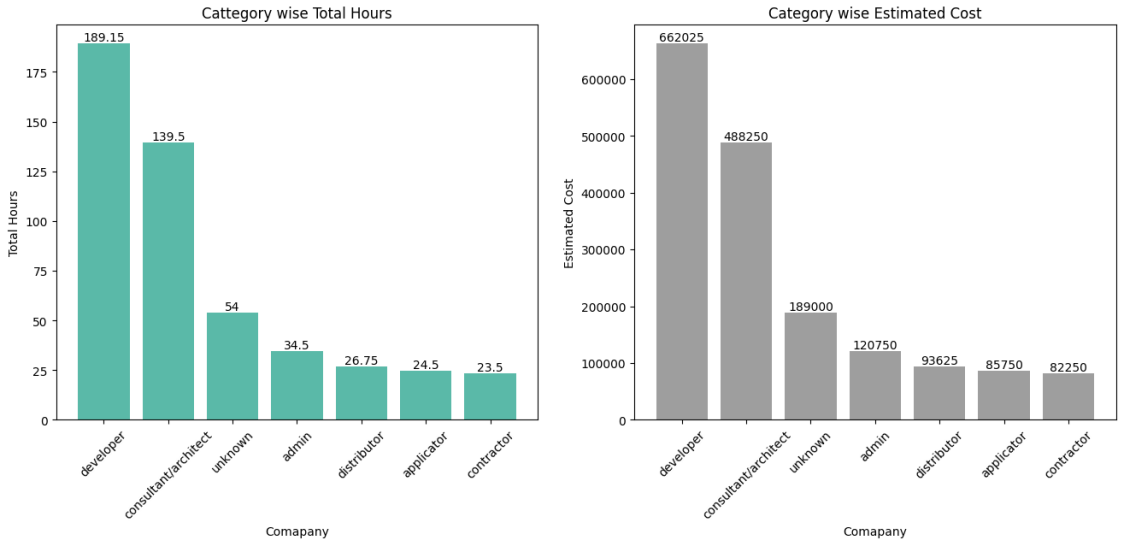
[125]:
```
categorywise_totalCost_and_hours=data.
 ↪groupby('category')[['total_hours','estimated_cost(3500 inr_per_hour)']].
 ↪sum()
sorted=categorywise_totalCost_and_hours.sort_values(by='estimated_cost(3500
 ↪inr_per_hour)',ascending=False)
sorted
```

[125]:

category	total_hours	estimated_cost(3500 inr_per_hour)
developer	189.15	662025
consultant/architect	139.50	488250
unknown	54.00	189000
admin	34.50	120750
distributor	26.75	93625
applicator	24.50	85750
contractor	23.50	82250

[129]:
```
cat_visua=sorted.reset_index()
plt.figure(figsize=(16,6))
#Subplot 1: Total Hours by categories
plt.subplot(1,2,1)
bars=plt.bar(cat_visua['category'],cat_visua['total_hours'],color='#5AB9A8')
plt.xticks(rotation=45)
plt.title("Cattegory wise Total Hours")
plt.bar_label(bars)
plt.xlabel("Comapany")
plt.ylabel("Total Hours")
```

```
#Subplot 2: Estimated Cost by categories
plt.subplot(1,2,2)
bars=plt.bar(cat_visua['category'],cat_visua['estimated_cost(3500␣
 ↪inr_per_hour)'],color='#9E9E9E')
plt.xticks(rotation=45)
plt.title("Category wise Estimated Cost")
plt.bar_label(bars)
plt.xlabel("Comapany")
plt.ylabel("Estimated Cost")
plt.show()
```



[88]:
```
company_summary=data.
 ↪groupby(['company','category'])[['total_hours','estimated_cost(3500␣
 ↪inr_per_hour)']].sum()
```

[89]:
```
company_summary
```

[89]:

company	category	total_hours
ABB India pvt ltd	developer	5.25
ADM Architects	consultant/architect	2.00
AN Prakash Consultants	consultant/architect	9.50
Abhay Developers	developer	1.00
Ace Group Delhi	unknown	1.25
…		…
Vikasa Soudha	unknown	1.25
Vishwanath Associates	consultant/architect	0.75
Weekly review meet	admin	2.50

```
casagrand                          developer                    1.25
meet / Meet (Internal/General)     admin                        7.75

                                                        estimated_cost(3500
inr_per_hour)
company                            category
ABB India pvt ltd                  developer
18375
ADM Architects                     consultant/architect
7000
AN Prakash Consultants             consultant/architect
33250
Abhay Developers                   developer
3500
Ace Group Delhi                    unknown
4375
…
…
Vikasa Soudha                      unknown
4375
Vishwanath Associates              consultant/architect
2625
Weekly review meet                 admin
8750
casagrand                          developer
4375
meet / Meet (Internal/General)     admin
27125

[140 rows x 2 columns]
```

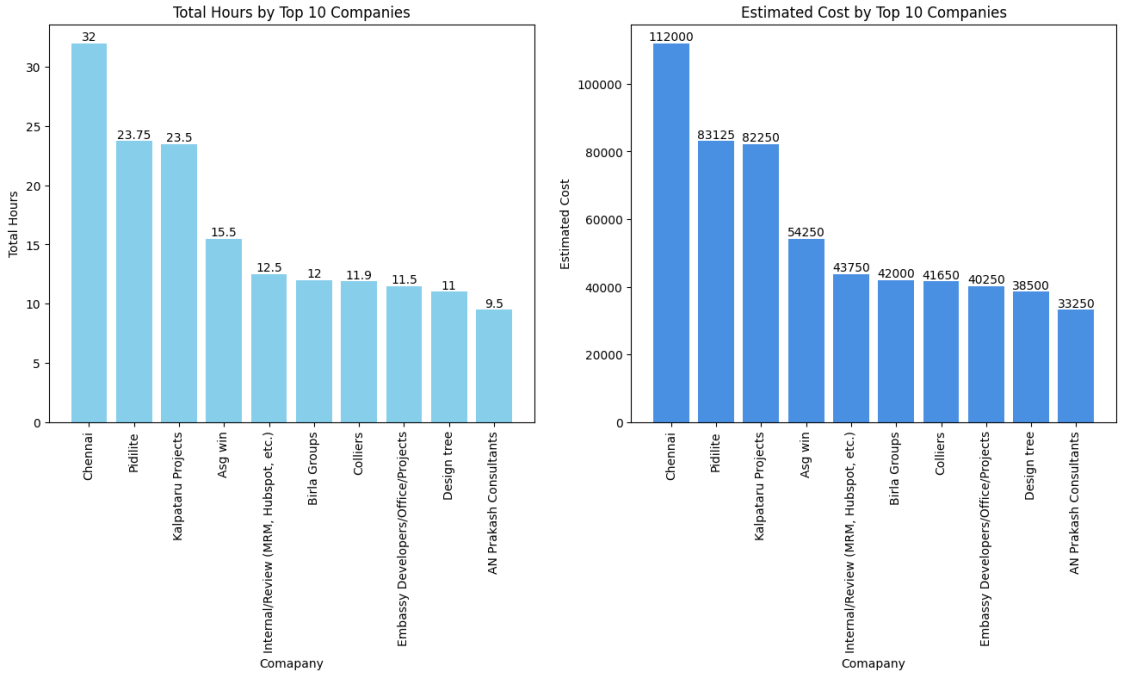
[90]:
```
top_10_companies=company_summary.sort_values(by=['estimated_cost(3500␣
 ↪inr_per_hour)','total_hours'], ascending=False
).head(10)
top_10_companies
```

[90]:
```
                                                        total_hours  \
company                                 category
Chennai                                 unknown               32.00
Pidilite                                distributor           23.75
Kalpataru Projects                      contractor            23.50
Asg win                                 applicator            15.50
Internal/Review (MRM, Hubspot, etc.)    admin                 12.50
Birla Groups                            developer             12.00
Colliers                                developer             11.90
Embassy Developers/Office/Projects      developer             11.50
Design tree                             consultant/architect  11.00
```

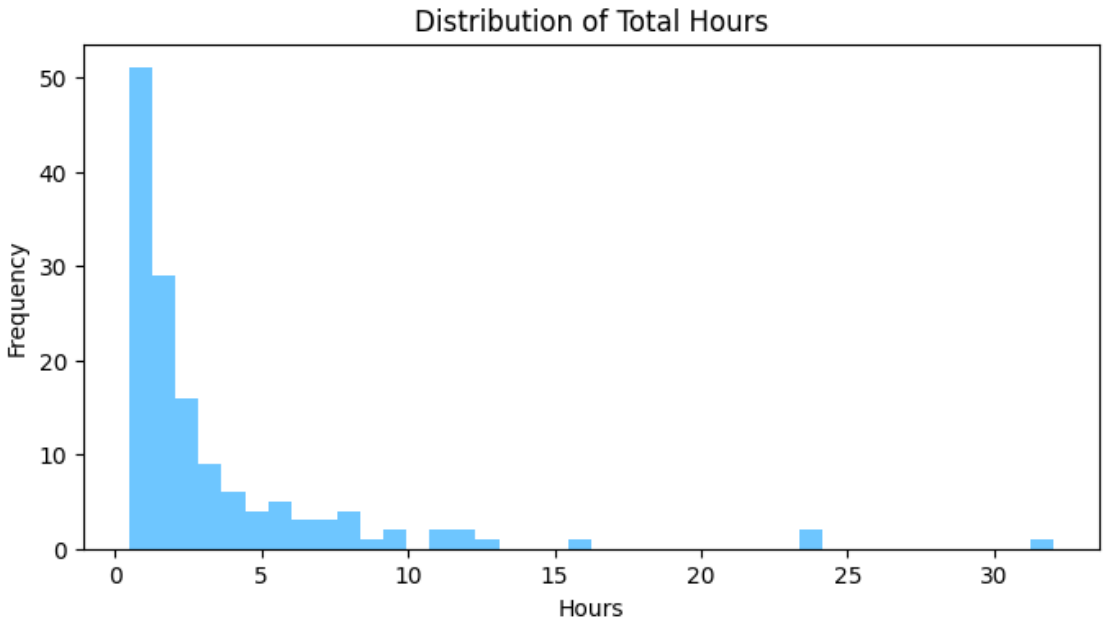
```
AN Prakash Consultants                consultant/architect         9.50

                                                                   estimated_cost(3500
inr_per_hour)
company                               category
Chennai                               unknown
112000
Pidilite                              distributor
83125
Kalpataru Projects                    contractor
82250
Asg win                               applicator
54250
Internal/Review (MRM, Hubspot, etc.)  admin
43750
Birla Groups                          developer
42000
Colliers                              developer
41650
Embassy Developers/Office/Projects    developer
40250
Design tree                           consultant/architect
38500
AN Prakash Consultants                consultant/architect
33250
```

[139]:
```
df = top_10_companies.reset_index()

plt.figure(figsize=(16,6))
#Subplot 1: Total Hours by companies
plt.subplot(1,2,1)
bars=plt.bar(df['company'],df['total_hours'],color='skyblue')
plt.xticks(rotation=90)
plt.title("Total Hours by Top 10 Companies")
plt.bar_label(bars)
plt.xlabel("Comapany")
plt.ylabel("Total Hours")



#Subplot 2: Estimated cost by copanies
plt.subplot(1,2,2)
bars=plt.bar(df['company'],df['estimated_cost(3500␣
 ↪inr_per_hour)'],color='#4A90E2')
plt.xticks(rotation=90)
plt.title("Estimated Cost by Top 10 Companies")
plt.bar_label(bars)
```

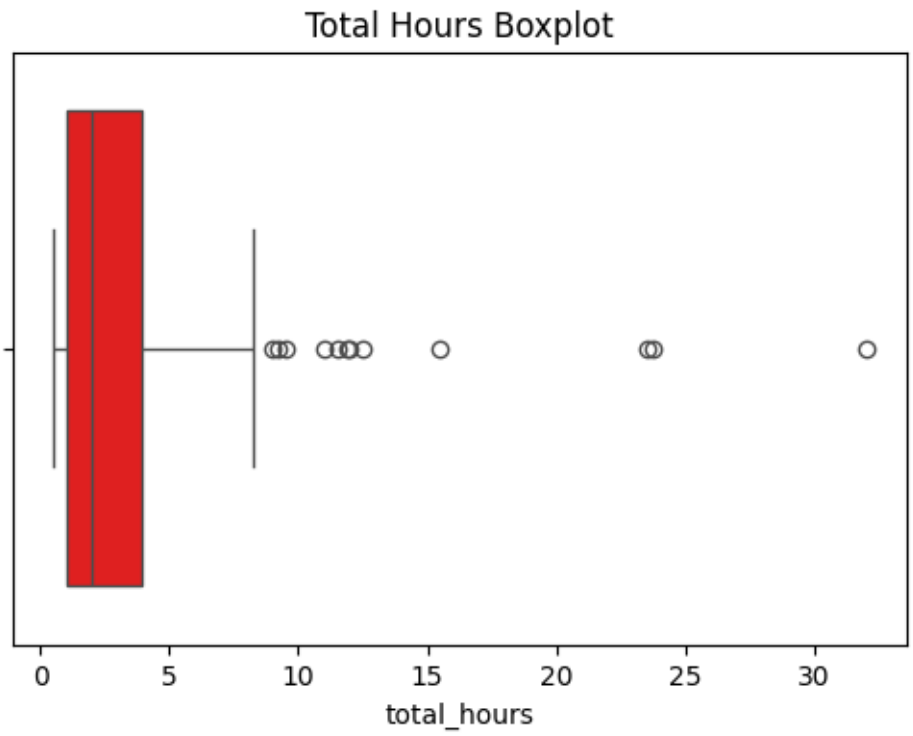
```
plt.xlabel("Comapany")
plt.ylabel("Estimated Cost")
plt.show()
```



[142]:
```
# Histogram of Total Hours
plt.figure(figsize=(8,4))
plt.hist(data['total_hours'], bins=40, color="#6EC6FF")
plt.title("Distribution of Total Hours")
plt.xlabel("Hours")
plt.ylabel("Frequency")
plt.show()
```



[146]:
```
#Boxplot of Total Hours (Outlier Detection)
plt.figure(figsize=(6,4))
sns.boxplot(x=data['total_hours'],color="red")
plt.title("Total Hours Boxplot")
plt.show()
```


Total Hours Boxplot
0
5
10
15
20
25
30
total_hours

3 Conclusions

4 Dataset contains 142 entries with companies categorized into 7 types: developer, consultant/architect,unknown, admin, distributor, applicator, and contractor.

5 Total Hours: Highly varied, ranging from 0.5 hours to 32 hours

6 Averages Hours per comapany: 3.46 hours

7 Total Estimated Cost Impact: Based on Rs3500/hr rate,the cost varies from 1750 to 112000

8 Category-wise Insights on the basis of highest time and cost contribution

9 Developer>Consultant/Architect>Unknown>Admin

10 >Distributor>Applicator>Contractor

11 Developer and consultant/architect segments contribute over 1 million INR combined cost

12 These two categories create the highest value and should be prioritized for resource allocation, support, and relationship building.

13 Focus on developer and architect accounts

14 Reduce admin hours (currently 34.5 hours)

15 Clean 'unknown' category

16 Prioritize top-performing clients

17 Improve time distribution

[ ]: