Small Mechanic Package

November 8, 2021

1 Objective:

To increase parts sale by devising package for Mechanic which should be in 5000 range and it should be feasible in that way it consumes quickly in market, further target those parts too that are less consumable in network.

[ ]:
```
%%capture
!pip install wordcloud
```

[3]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from wordcloud import WordCloud
from functools import reduce
```

[ ]:
```
df_1 = pd.read_excel('Sheet1.xlsx')
df_2 = pd.read_excel('Sheet2.xlsx')
df2 = pd.read_excel('sims.xlsx')
df_s2 = pd.concat([[df_1,df_2]])
grouped_df = df_s2.groupby('ID')
df_2nd = grouped_df.apply(lambda x: x['desc'].unique())
word = pd.merge(df_s2,df_2nd,on='ID')
```

[7]:
```
df = pd.read_excel('word.xlsx')
```

[8]:
```
df.head()
```

[8]:

	Unnamed: 0	ID	VISIT_TYPE	desc
0	0	9122621	Periodic Inspection (PI)	['Engineoil']
1	1	9037561	Periodic Inspection (PI)	['Engineoil']
2	2	10410313	Periodic Inspection (PI)	['Engineoil']
3	3	9278399	General Repair (GR)	['Clutchlever']
4	4	9291737	General Repair (GR)	['Battery']

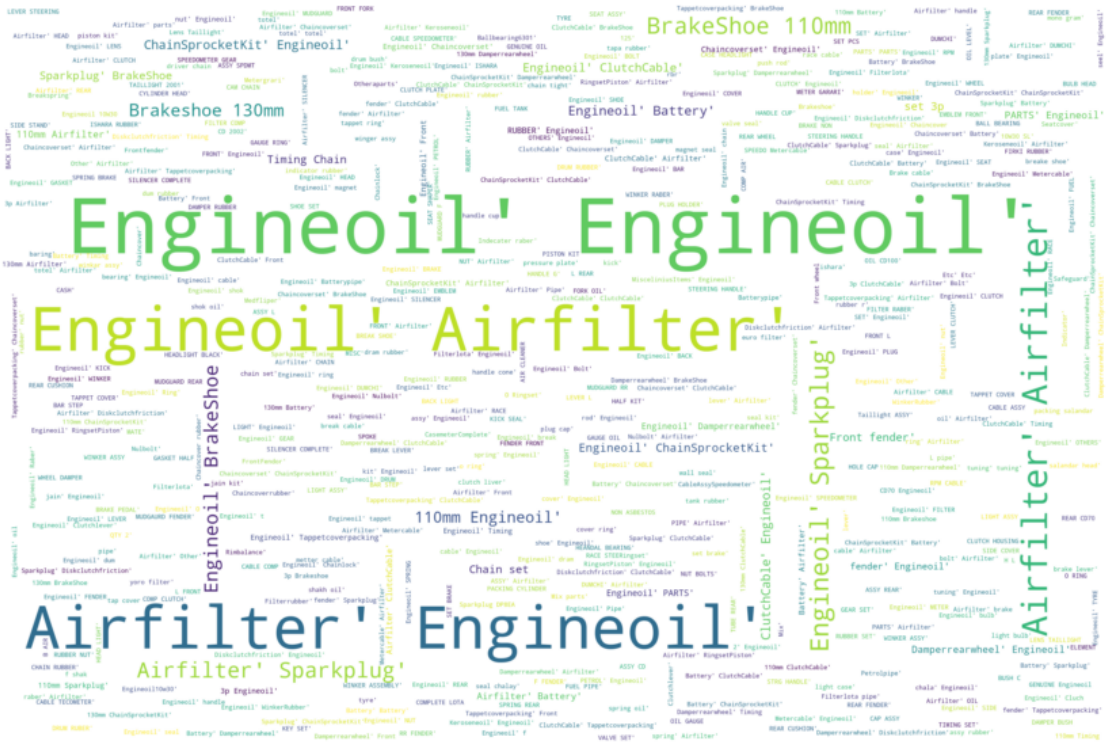
Q1- Identify those parts that are highly consumable in market?

[23]:
```
len(df)
```

[23]: 657905

[9]:
```
word = df['desc'].apply(str)
positive_df = reduce(lambda a, b: a+b, word)
wc = WordCloud(background_color="white",            # select background color
               width=3000,                          # set wight
               height=2000,                         # set height
               max_words=500).generate(positive_df)
plt.figure(figsize=[15,10])                         # set the figsize
plt.imshow(wc, interpolation="bilinear")            # plot the wordcloud
plt.axis("off")
```

[9]: (-0.5, 2999.5, 1999.5, -0.5)



[10]:
```
df["desc"] = df['desc'].str.lower().str.replace('[^\w\s]','')
new_df = df.desc.str.split(expand=True).stack().value_counts().reset_index()
new_df.columns = ['Word', 'Frequency']
new_df.head()
```

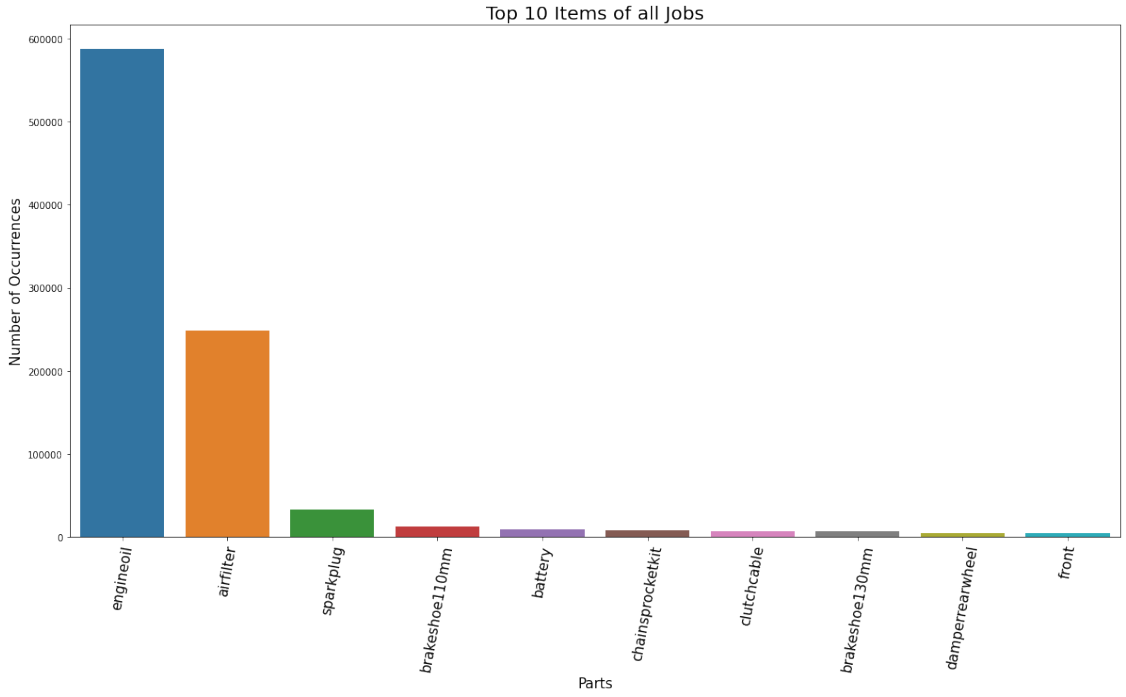
[10]:

	Word	Frequency
0	engineoil	587445
1	airfilter	248123
2	sparkplug	32466

```
3  brakeshoe110mm      12275
4         battery       8484
```

[11]:
```
graph = new_df.head(10)
import seaborn as sns
plt.figure(figsize=(20,10))
d = sns.barplot(data = graph, x = 'Word', y = 'Frequency')
plt.title('Top 10 Items of all Jobs',fontsize=20)
plt.ylabel('Number of Occurrences', fontsize=15)
plt.xlabel('Parts', fontsize=15)
d.set_xticklabels(d.get_xticklabels(),fontsize = 15,rotation=80)
```

[11]:
```
[Text(0, 0, 'engineoil'),
 Text(1, 0, 'airfilter'),
 Text(2, 0, 'sparkplug'),
 Text(3, 0, 'brakeshoe110mm'),
 Text(4, 0, 'battery'),
 Text(5, 0, 'chainsprocketkit'),
 Text(6, 0, 'clutchcable'),
 Text(7, 0, 'brakeshoe130mm'),
 Text(8, 0, 'damperrearwheel'),
 Text(9, 0, 'front')]
```



[12]:
```
pi = df[df['VISIT_TYPE'] == 'Periodic Inspection (PI)']
gr = df[df['VISIT_TYPE'] == 'General Repair (GR)']
```

[13]:
```
pi_df = pi.desc.str.split(expand=True).stack().value_counts().reset_index()
pi_df.columns = ['Word', 'Frequency']
gr_df = gr.desc.str.split(expand=True).stack().value_counts().reset_index()
gr_df.columns = ['Word', 'Frequency']
```

[19]:
```
pi_df.head(7)
```

[19]:

	Word	Frequency
0	engineoil	232309
1	airfilter	95732
2	sparkplug	15364
3	brakeshoe110mm	6457
4	battery	5470
5	chainsprocketkit	5287
6	clutchcable	3956

[16]:
```
gr_df.head(7)
```

[16]:

	Word	Frequency
0	engineoil	74784
1	airfilter	35764
2	sparkplug	10034
3	brakeshoe110mm	3681
4	brakeshoe130mm	2555
5	chainsprocketkit	2201
6	clutchcable	1939

[27]:
```
print("GR Jobs Percentage:",len(gr)/len(df))
print("PI Jobs Percentage:",len(pi)/len(df))
print("Total Jobs Percentage:",len(df))
```

```
GR Jobs Percentage: 0.13694682362955138
PI Jobs Percentage: 0.40011399822162774
Total Jobs Percentage: 657905
```

2 Conclusion

As it can be seen that the most highest selling part are Engine oil, Air Filter, Spark plug so these parts are essential for package further the brake shoe would be the most suitable part to be in package because the brake shoe is recently launched with non-asbestos technology so in order to penetrate the product it is wise to sell with high consumable parts. In conclusion 4 parts to be in Small Mechanic parts package

1) Engine Oil (CD-70): 375Rs Qty:3 Engine Oil (CG-70): 520Rs Qty:3
2) Air Filter: 90Rs Qty:2
3) Spark Plug: 300Rs Qty:1
4) Brake Shoe: 610Rs Qty:3

Total Price is 4995Rs this price is most suitable because according to local survey normal road side mechanic can buy package within Rs:5000