MalaysiaSuperLeague_TeamSquadAnalysis

February 23, 2024

[221]:
```
import requests
from bs4 import BeautifulSoup
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

[222]:
```
headers = {'User-Agent': 'Mozilla/5.0 (X11; Linux x86_64) AppleWebKit/537.36␣
 ↪(KHTML, like Gecko) Chrome/47.0.2526.106 Safari/537.36'}

page = "https://www.transfermarkt.com/malaysia-super-league/startseite/
 ↪wettbewerb/MYS1"
pageTree = requests.get(page, headers=headers)
pageSoup = BeautifulSoup(pageTree.content, 'html.parser')
```

[223]:
```
TeamsList = []
TeamLinksList = []
```

[224]:
```
Teams = pageSoup.find_all("td", {"class": "hauptlink no-border-links"})
TeamLinks = pageSoup.find_all("td", {"class": "hauptlink no-border-links"})
```

[225]:
```
for i in range(0, len(Teams)):
    str_Teams = str(Teams[i]).split('title="',1)[1].split('">',1)[0]
    TeamsList.append(str_Teams)
```

[226]:
```
for i in range(0, len(TeamLinks)):
    str_TeamLinks = str(TeamLinks[i]).split('a href="',1)[1].split('"',1)[0]
    TeamLinksList.append("https://www.transfermarkt.com" + str_TeamLinks)
```

[227]:
```
df = pd.DataFrame({
                    "Team":TeamsList,
                    "Link":TeamLinksList
})
```

[296]:
```
PlayerTeamsList = []
PlayersList = []
NumberList = []
AgeList = []
PositionList = []
```

```
NationList = []
ValueList = []
```

[297]:
```
for x in range(0, len(TeamLinksList)):
    page = TeamLinksList[x]
    pageTree = requests.get(page, headers=headers)
    pageSoup = BeautifulSoup(pageTree.content, 'html.parser')

    TeamNames = pageSoup.find_all("h1", {"class":␣
↪"data-header__headline-wrapper data-header__headline-wrapper--oswald"})
    Players = pageSoup.find_all("img", {"class": "bilderrahmen-fixed lazy␣
↪lazy"})
    Numbers = pageSoup.find_all("div", {"class": "rn_nummer"})
    Age = pageSoup.find_all("td", {"class": "zentriert"})
    Positions = pageSoup.find_all("table", {"class": "inline-table"})
    Nationality = pageSoup.find_all("td", {"class": "zentriert"})
    Values = pageSoup.find_all("td", {"class": "rechts hauptlink"})

    for i in range(0, len(Players)):
        str_Team = str(TeamNames).split('">\n            ',1)[1].split('       ␣
↪</h1>',1)[0]
        PlayerTeamsList.append(str_Team)

    for i in range(0, len(Players)):
        str_Players = str(Players[i]).split('" class',1)[0].split('<img␣
↪alt="',1)[1]
        PlayersList.append(str_Players)

    for i in range(0, len(Numbers)):
        str_Numbers = str(Numbers[i]).split('class="rn_nummer">',1)[1].split('</
↪div>',1)[0]
        NumberList.append(str_Numbers)

    for i in range(1, (len(Players)*3), 3):
        str_Age = str(Age[i]).split("(",1)[1].split(")",1)[0]
        AgeList.append(str_Age)

    for i in range(0, len(Positions)):
        str_Position = str(Positions[i]).split('<td>', 1)[1].split('</td>',␣
↪1)[0].split('\n ', 1)[1].split('            ', 1)[1].split('        ',1)[0]
        PositionList.append(str_Position)

    grouped_positionList = []

    for j in range(0, len(PositionList)):
        if 'Striker' in PositionList[j]:
            grouped_positionList.append('Forwards')
```

```
        elif 'Forward' in PositionList[j]:
            grouped_positionList.append('Forwards')
        elif 'Midfield' in PositionList[j]:
            grouped_positionList.append('Midfielders')
        elif 'Midfielder' in PositionList[j]:
            grouped_positionList.append('Midfielders')
        elif 'Winger' in PositionList[j]:
            grouped_positionList.append('Midfielders')
        elif 'Back' in PositionList[j]:
            grouped_positionList.append('Defenders')
        elif 'Defender' in PositionList[j]:
            grouped_positionList.append('Defenders')
        else:
            grouped_positionList.append(PositionList[j])

    for i in range(2, (len(Players)*3),3):
        str_Nationality = str(Nationality[i]).split('" class',1)[0].split('<img␣
↪alt="',1)[1]
        NationList.append(str_Nationality)

    for i in range(0, len(Values)):
        ValueList.append(Values[i].text)

    cleaned_values=[]

    for a in range(0, len(ValueList)):
        if 'k' in ValueList[a]:
            str_a = str(ValueList[a]).split('€')[1].split('k')[0]
            flt_a = float(str_a)*1000
            cleaned_values.append(flt_a)
        elif 'm' in ValueList[a]:
            str_a = str(ValueList[a]).split('€')[1].split('m')[0]
            flt_a = float(str_a)*1000000
            cleaned_values.append(flt_a)
        else:
            cleaned_values.append(float(a))
```

[298]:
```
PositionList
len(PositionList)
```

[298]: 360

[299]:
```
grouped_positionList = []

for j in range(0, len(PositionList)):
    if 'Striker' in PositionList[j]:
        grouped_positionList.append('Forwards')
    elif 'Forward' in PositionList[j]:
        grouped_positionList.append('Forwards')
    elif 'Midfield' in PositionList[j]:
        grouped_positionList.append('Midfielders')
    elif 'Midfielder' in PositionList[j]:
        grouped_positionList.append('Midfielders')
    elif 'Winger' in PositionList[j]:
        grouped_positionList.append('Midfielders')
    elif 'Back' in PositionList[j]:
        grouped_positionList.append('Defenders')
    elif 'Defender' in PositionList[j]:
        grouped_positionList.append('Defenders')
    else:
        grouped_positionList.append(PositionList[j])


print(grouped_positionList)
print(len(grouped_positionList))
```

```
['Goalkeeper', 'Goalkeeper', 'Goalkeeper', 'Goalkeeper', 'Defenders',
'Defenders', 'Defenders', 'Defenders', 'Defenders', 'Defenders', 'Defenders',
'Defenders', 'Defenders', 'Defenders', 'Defenders', 'Midfielders',
'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders',
'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders',
'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders',
'Midfielders', 'Forwards', 'Forwards', 'Goalkeeper', 'Goalkeeper', 'Goalkeeper',
'Goalkeeper', 'Goalkeeper', 'Defenders', 'Defenders', 'Defenders', 'Defenders',
'Defenders', 'Defenders', 'Defenders', 'Defenders', 'Defenders', 'Defenders',
'Defenders', 'Defenders', 'Midfielders', 'Midfielders', 'Midfielders',
'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders',
'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders',
'Midfielders', 'Midfielders', 'Forwards', 'Goalkeeper', 'Goalkeeper',
'Goalkeeper', 'Defenders', 'Defenders', 'Defenders', 'Defenders', 'Defenders',
'Defenders', 'Defenders', 'Defenders', 'Defenders', 'Midfielders',
'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders',
'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders',
'Midfielders', 'Midfielders', 'Midfielders', 'Forwards', 'Forwards', 'Forwards',
'Goalkeeper', 'Goalkeeper', 'Goalkeeper', 'Defenders', 'Defenders', 'Defenders',
'Defenders', 'Defenders', 'Defenders', 'Defenders', 'Defenders', 'Defenders',
'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders',
'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders',
'Midfielders', 'Midfielders', 'Forwards', 'Forwards', 'Forwards', 'Forwards',
```

```
'Goalkeeper', 'Defenders', 'Defenders', 'Defenders', 'Defenders', 'Defenders',
'Defenders', 'Defenders', 'Defenders', 'Defenders', 'Midfielders',
'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders',
'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders', 'Forwards',
'Forwards', 'Goalkeeper', 'Goalkeeper', 'Goalkeeper', 'Defenders', 'Defenders',
'Defenders', 'Defenders', 'Defenders', 'Defenders', 'Midfielders',
'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders',
'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders', 'Forwards',
'Forwards', 'Goalkeeper', 'Goalkeeper', 'Goalkeeper', 'Defenders', 'Defenders',
'Defenders', 'Defenders', 'Defenders', 'Defenders', 'Defenders', 'Defenders',
'Defenders', 'Defenders', 'Defenders', 'Midfielders', 'Midfielders',
'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders',
'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders',
'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders',
'Forwards', 'Forwards', 'Forwards', 'Goalkeeper', 'Goalkeeper', 'Defenders',
'Defenders', 'Defenders', 'Defenders', 'Defenders', 'Defenders', 'Defenders',
'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders',
'Midfielders', 'Midfielders', 'Midfielders', 'Forwards', 'Forwards', 'Forwards',
'Forwards', 'Goalkeeper', 'Goalkeeper', 'Goalkeeper', 'Goalkeeper', 'Defenders',
'Defenders', 'Defenders', 'Defenders', 'Defenders', 'Defenders', 'Defenders',
'Defenders', 'Defenders', 'Defenders', 'Midfielders', 'Midfielders',
'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders',
'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders',
'Forwards', 'Goalkeeper', 'Goalkeeper', 'Goalkeeper', 'Defenders', 'Defenders',
'Defenders', 'Defenders', 'Defenders', 'Defenders', 'Defenders', 'Defenders',
'Defenders', 'Defenders', 'Midfielders', 'Midfielders', 'Midfielders',
'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders',
'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders',
'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders',
'Forwards', 'Forwards', 'Forwards', 'Forwards', 'Goalkeeper', 'Goalkeeper',
'Goalkeeper', 'Defenders', 'Defenders', 'Defenders', 'Defenders', 'Defenders',
'Defenders', 'Defenders', 'Defenders', 'Midfielders', 'Midfielders',
'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders',
'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders',
'Midfielders', 'Forwards', 'Forwards', 'Forwards', 'Forwards', 'Goalkeeper',
'Goalkeeper', 'Goalkeeper', 'Goalkeeper', 'Defenders', 'Defenders', 'Defenders',
'Defenders', 'Defenders', 'Defenders', 'Defenders', 'Midfielders',
'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders',
'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders', 'Forwards',
'Forwards', 'Forwards', 'Forwards', 'Goalkeeper', 'Goalkeeper', 'Goalkeeper',
'Defenders', 'Defenders', 'Defenders', 'Defenders', 'Defenders', 'Defenders',
'Defenders', 'Defenders', 'Midfielders', 'Midfielders', 'Midfielders',
'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders', 'Midfielders',
'Forwards', 'Forwards', 'Forwards', 'Forwards']
360
```

[300]:
```
final_df = pd.DataFrame({
                          "Team":PlayerTeamsList,
                          "Player":PlayersList,
                          "Number":NumberList,
                          "Age":AgeList,
                          "Position":PositionList,
                          "Group Position":grouped_positionList,
                          "Nationality":NationList,
                          "Value EUR":cleaned_values
                         })
```

[301]:
```
final_df
```

[301]:
```
                    Team              Player Number Age        Position  \
0    Johor Darul Ta'zim        Syihan Hazmi     33  28      Goalkeeper
1    Johor Darul Ta'zim       Izham Tarmizi      -  32      Goalkeeper
2    Johor Darul Ta'zim     Farizal Marlias      1  37      Goalkeeper
3    Johor Darul Ta'zim        Haziq Nadzli     26  26      Goalkeeper
4    Johor Darul Ta'zim          Jordi Amat      5  31     Centre-Back
..                   …                 …    …  ..             …
355     Kelantan United          S. Sharvin     21  23    Right Winger
356     Kelantan United       Royizzat Daud     16  24         Striker
357     Kelantan United         Haziq Subri     11  24         Striker
358     Kelantan United  Nik Azli Nik Alias     26  27  Centre-Forward
359     Kelantan United         Aqil Hilman     27  24         Striker

    Group Position Nationality  Value EUR
0       Goalkeeper    Malaysia   300000.0
1       Goalkeeper    Malaysia   100000.0
2       Goalkeeper    Malaysia   100000.0
3       Goalkeeper    Malaysia    50000.0
4        Defenders   Indonesia   800000.0
..             …         …        …
355    Midfielders    Malaysia    50000.0
356       Forwards    Malaysia    50000.0
357       Forwards    Malaysia    25000.0
358       Forwards    Malaysia    25000.0
359       Forwards    Malaysia    25000.0

[360 rows x 8 columns]
```

[310]:
```
# Export the DataFrame to an Excel file
final_df.to_excel(r"C:
 ↪\Users\izzat\OneDrive\Desktop\MalaysiaSuperLeague_TeamsSquadAnalysis\MSL_TeamsSquadData.
 ↪xlsx", index=False)
```

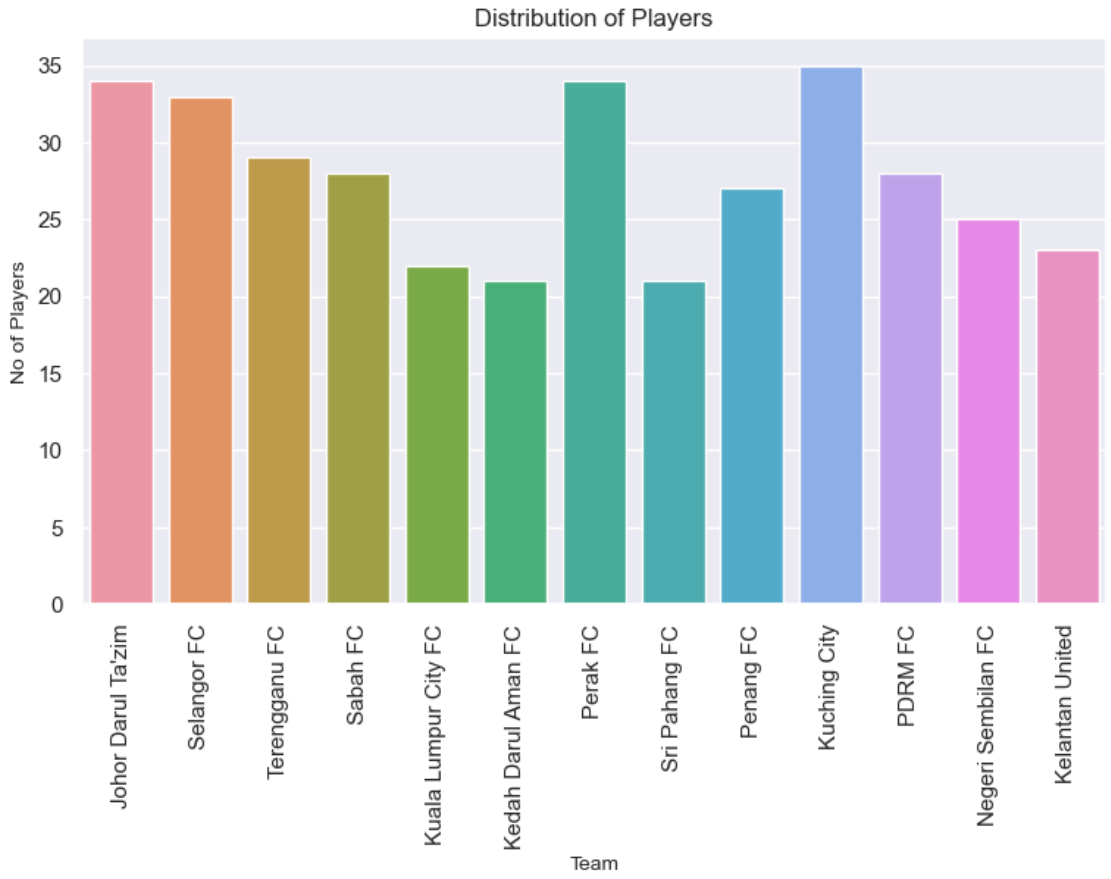
[311]:
```
# Export the DataFrame to an csv file
final_df.to_csv(r"C:
 ↪\Users\izzat\OneDrive\Desktop\MalaysiaSuperLeague_TeamsSquadAnalysis\MSL_TeamsSquadData.
 ↪csv", index=False)
```

[312]:
```
# Load the dataset
msldata = pd.read_csv(r"C:
 ↪\Users\izzat\OneDrive\Desktop\MalaysiaSuperLeague_TeamsSquadAnalysis\MSL_TeamsSquadData.
 ↪csv")

# Display the first few rows of the dataset
#print(msldata.head())
```

[313]:
```
# Display column information
#print(msldata.info())
```

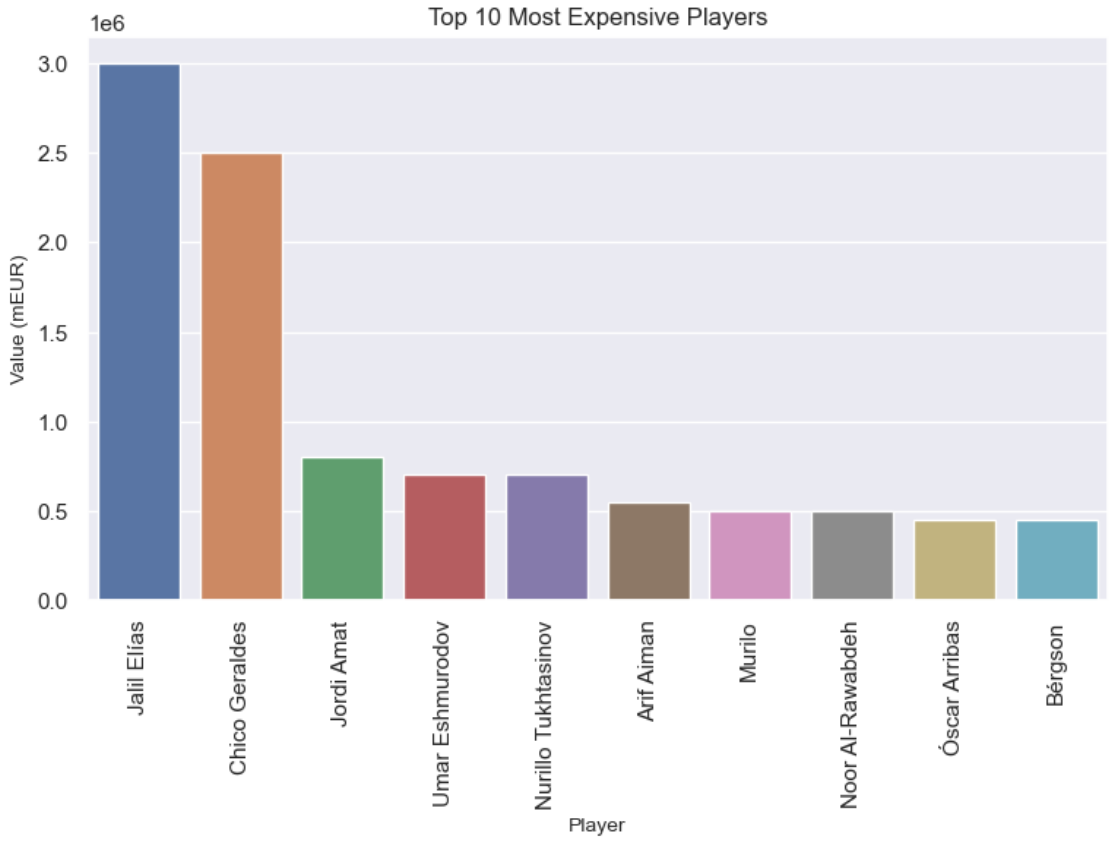
[315]:
```
# Plotting the distribution of players
sns.set(style="whitegrid")
sns.set(font_scale=1.0)
plt.figure(figsize=(9, 5))
sns.countplot(data=msldata, x='Team')
plt.title('Distribution of Players')
plt.xlabel('Team', fontsize=10)
plt.ylabel('No of Players', fontsize=10)
# Rotate the tick labels in the second subplot
plt.xticks(rotation=90)
plt.show()
```



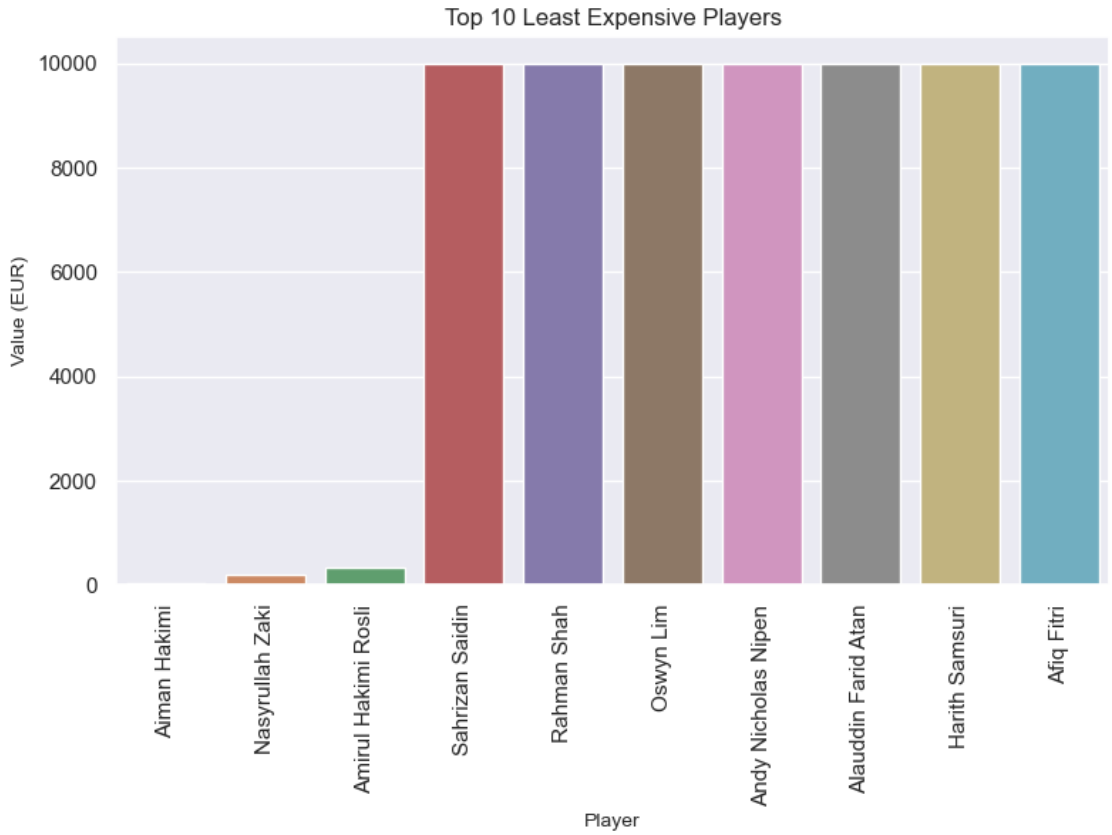
[316]:
```
# Display Top 10 Most Expensive Players in MSL 24/25 Season
Top10Value = msldata.nlargest(n=10, columns=['Value EUR'])

# Display Top 10 Least Expensive Players in MSL 24/25 Season
Bottom10Value = msldata.nsmallest(n=10, columns=['Value EUR'])
```

[317]:
```
# Plotting Value
sns.set(style="whitegrid")
sns.set(font_scale=1.0)
plt.figure(figsize=(9, 5))
sns.barplot(Top10Value, x="Player", y="Value EUR")
plt.title('Top 10 Most Expensive Players')
plt.xlabel('Player', fontsize=10)
plt.ylabel('Value (mEUR)', fontsize=10)
# Rotate the tick labels in the second subplot
plt.xticks(rotation=90)
plt.show()
```



[318]:
```
# Plotting Top 10 Least Expensive Players in MSL 24/25 Season
sns.set(style="whitegrid")
sns.set(font_scale=1.0)
plt.figure(figsize=(9, 5))
sns.barplot(Bottom10Value, x="Player", y="Value EUR")
plt.title('Top 10 Least Expensive Players')
plt.xlabel('Player', fontsize=10)
plt.ylabel('Value (EUR)', fontsize=10)
# Rotate the tick labels in the second subplot
plt.xticks(rotation=90)
plt.show()
```



[366]:
```
pv_count = msldata.pivot_table('Value EUR', index='Team', columns='Group␣
 ↪Position', aggfunc='count')
pv_sum = msldata.pivot_table('Value EUR', index='Team', columns='Group␣
 ↪Position', aggfunc='sum')
pv_count
pv_sum
```

[366]:

Group Position	Defenders	Forwards	Goalkeeper	Midfielders
Team				
Johor Darul Ta'zim	3475000.0	575000.0	550000.0	8950000.0
Kedah Darul Aman FC	1000000.0	400000.0	400000.0	1550000.0
Kelantan United	475000.0	125000.0	175000.0	625000.0
Kuala Lumpur City FC	1450000.0	400000.0	150000.0	1675000.0
Kuching City	900000.0	450000.0	110000.0	1010000.0
Negeri Sembilan FC	735000.0	275336.0	225000.0	735000.0
PDRM FC	675000.0	275000.0	125000.0	1250000.0
Penang FC	975000.0	125000.0	300000.0	1125000.0
Perak FC	910000.0	175000.0	250000.0	1700000.0
Sabah FC	1400000.0	610000.0	325000.0	1660000.0
Selangor FC	2200045.0	450000.0	525000.0	3350000.0

```
Sri Pahang FC          1025000.0  875000.0    150000.0    1150211.0
Terengganu FC          1300000.0  500000.0    350000.0    2275000.0
```

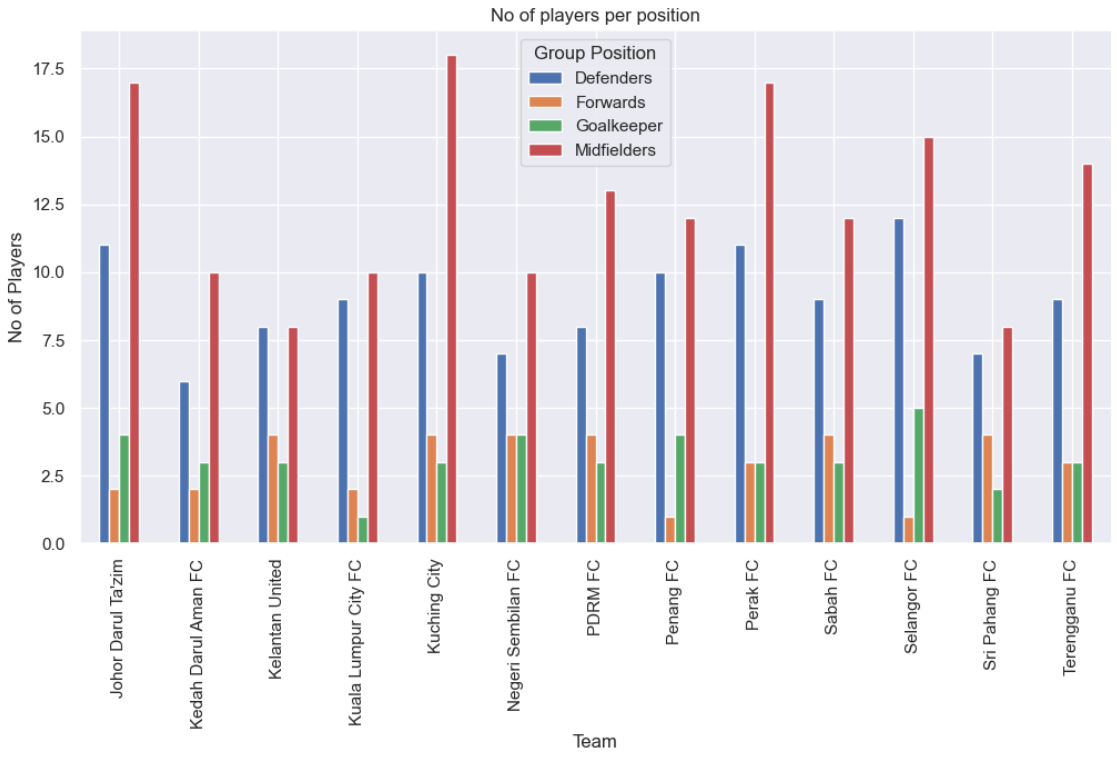
[369]:
```
# Plotting bar chart from  pv_count
pv_count.plot(kind='bar', figsize=(12, 6))

# graph title
plt.title('No of players per position')

# naming the x and y axis
plt.xlabel('Team')
plt.ylabel('No of Players')

# Rotate the tick labels in the second subplot
plt.xticks(rotation=90)

plt.show()
```



[390]:
```
from matplotlib.ticker import NullFormatter

def formatter(x, pos):
    return str(round(x / 1e6))
```

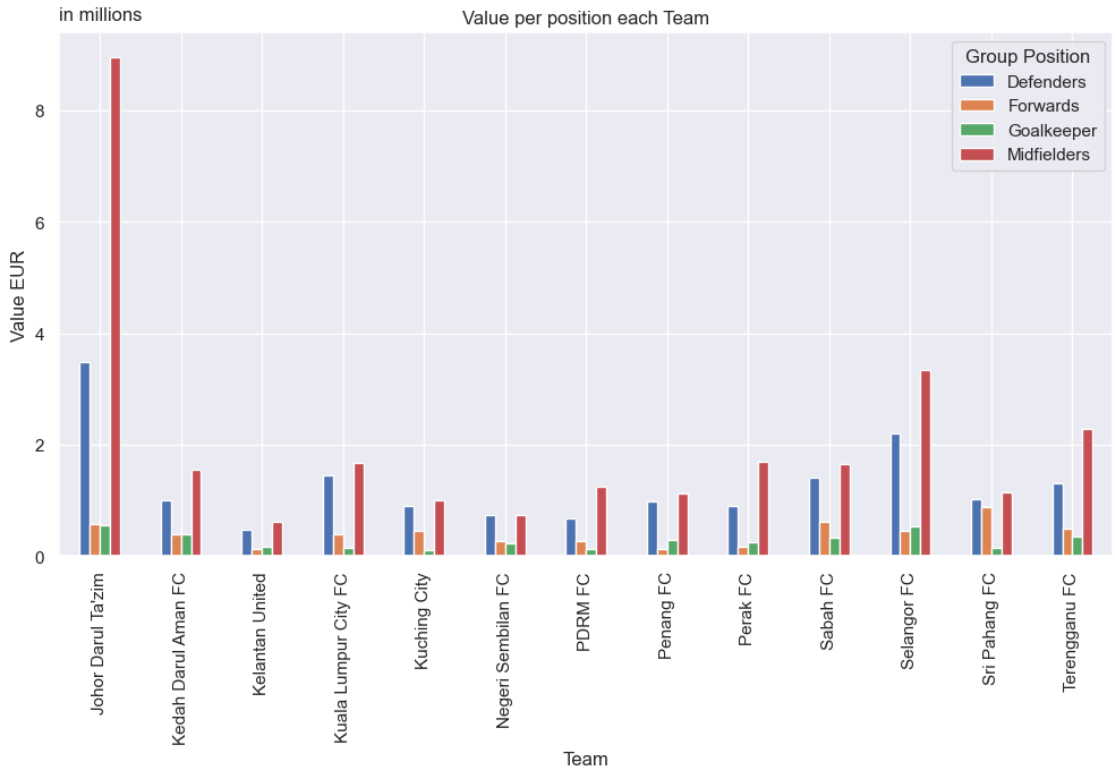
```
ax = pv_sum.plot(kind='bar', figsize=(12, 6))

# graph title
plt.title('Value per position each Team')

# naming the x and y axis
plt.xlabel('Team')
plt.ylabel('Value EUR')

#fig, ax = plt.subplots()
ax.yaxis.set_major_formatter(formatter)
#ax.yaxis.set_minor_formatter(NullFormatter())
#ax.plot([0, 1e6])
ax.text(0, 1.05, "in millions", transform = ax.transAxes, ha = "left", va =␣
 ↪"top")
```

[390]: Text(0, 1.05, 'in millions')



[ ]: