INFORMATION ABOUT DATA:

-> THE DATASET IS TAKEN FROM KAGGLE, WHICH IS MATCHES.CSV AND DELIVERIES.CSV

-> MATCHES.CSV CONTAINS THE INFORMATION REGRADING THE MATCH LIKE PLAYING TEAMS, TOSS, CITY, TOSS DECISION, DATE, RESULT

-> DELIVERIES.CSV CONTAINS THE BALL TO BALL COVERAGE OF EACH MATCH IN THE MATCHES.CSV

-> ALL THE DATA IS IN THE RANGE FROM 2008 TO 2018 WHICH RESULTS IN 11 SEASONS OF THE TOURNAMENT

OBJECTIVE:

-> GETTING FAMILIAR WITH NUMPY, PANDAS, MATPLOTLIB, SEABORN

-> ANALYZING THE BATSMENS, BOWLERS, TEAMS, RESULTS AND TOSS DECISIONS

-> GENERATING THE INTERESTING STATS FROM THE DATA

-> ANALYZING THE RESULTS OF TOSS RELATED DECISIONS

IMPORTING THE REQUIRED LIBRARIES AND LOADING THE DATA

In [40]:

```python
import numpy as np
import pandas as pd
import matplotlib.pyplot as mp
import seaborn as s

df = pd.read_csv("matches.csv")
```

In [41]:

```python
print(df.shape)
print(df.ndim)
print(df.columns)
```

```
(696, 18)
2
Index(['id', 'season', 'city', 'date', 'team1', 'team2', 'toss_winner',
       'toss_decision', 'result', 'dl_applied', 'winner', 'win_by_runs',
       'win_by_wickets', 'player_of_match', 'venue', 'umpire1', 'umpire2',
       'umpire3'],
      dtype='object')
```

SAMPLE OF MATCHES IN SEASON 2017

In [42]:

```python
df[0:2]
```

Out[42]:

	id	season	city	date	team1	team2	toss_winner	toss_decision	result	dl_applied	winner	win_by_
0	1	2017	Hyderabad	2017-04-05	Sunrisers Hyderabad	Royal Challengers Bangalore	Royal Challengers Bangalore	field	normal	0	Sunrisers Hyderabad	35

	id	season	city	date	team1	Rising	team2	toss_winner	toss_decision	result	dl_applied	Rising	winner	win_by_
1	2	2017	Pune	2017-04-06	Mumbai Indians	Pune Supergiant	Rising Pune Supergiant	Rising Pune Supergiant	field	normal	0		Pune Supergiant	0

SAMPLE OF MATCHES IN SEASON 2008

In [43]:

```
df[70:72]
```

Out[43]:

	id	season	city	date	team1	team2	toss_winner	toss_decision	result	dl_applied	winner	win_by_runs	v
70	71	2008	Chennai	2008-04-26	Kolkata Knight Riders	Chennai Super Kings	Kolkata Knight Riders	bat	normal	0	Chennai Super Kings	0	9
71	72	2008	Mumbai	2008-04-27	Mumbai Indians	Deccan Chargers	Deccan Chargers	field	normal	0	Deccan Chargers	0	1

SAMPLE OF MATCHES IN SEASON 2009

In [44]:

```
df[150:152]
```

Out[44]:

	id	season	city	date	team1	team2	toss_winner	toss_decision	result	dl_applied	winner	win_by_rur
150	151	2009	Kimberley	2009-05-09	Deccan Chargers	Kings XI Punjab	Kings XI Punjab	field	normal	0	Kings XI Punjab	0
151	152	2009	Kimberley	2009-05-09	Rajasthan Royals	Chennai Super Kings	Rajasthan Royals	bat	normal	0	Chennai Super Kings	0

SAMPLE OF MATCHES IN SEASON 2010

In [45]:

```
df[220:222]
```

Out[45]:

	id	season	city	date	team1	team2	toss_winner	toss_decision	result	dl_applied	winner	win_by_runs
220	221	2010	Mumbai	2010-04-13	Mumbai Indians	Delhi Daredevils	Mumbai Indians	bat	normal	0	Mumbai Indians	39
221	222	2010	Chennai	2010-04-13	Kolkata Knight Riders	Chennai Super Kings	Kolkata Knight Riders	bat	normal	0	Chennai Super Kings	0

SAMPLE OF MATCHES IN SEASON 2011

```
df[290:292]
```

Out[46]:

	id	season	city	date	team1	team2	toss_winner	toss_decision	result	dl_applied	winner	win_
290	291	2011	Bangalore	2011-05-14	Kolkata Knight Riders	Royal Challengers Bangalore	Royal Challengers Bangalore	field	normal	1	Royal Challengers Bangalore	0
291	292	2011	Mumbai	2011-05-14	Deccan Chargers	Mumbai Indians	Deccan Chargers	bat	normal	0	Deccan Chargers	10

SAMPLE OF MATCHES IN SEASON 2012

In [47]:

```
df[360:362]
```

Out[47]:

	id	season	city	date	team1	team2	toss_winner	toss_decision	result	dl_applied	winner	win_by_r
360	361	2012	Jaipur	2012-05-10	Rajasthan Royals	Chennai Super Kings	Chennai Super Kings	field	normal	0	Chennai Super Kings	0
361	362	2012	Pune	2012-05-11	Royal Challengers Bangalore	Pune Warriors	Pune Warriors	field	normal	0	Royal Challengers Bangalore	35

SAMPLE OF MATCHES IN SEASON 2013

In [48]:

```
df[440:442]
```

Out[48]:

	id	season	city	date	team1	team2	toss_winner	toss_decision	result	dl_applied	winner	win_by_r
440	441	2013	Ranchi	2013-05-12	Royal Challengers Bangalore	Kolkata Knight Riders	Kolkata Knight Riders	field	normal	0	Kolkata Knight Riders	0
441	442	2013	Jaipur	2013-05-12	Chennai Super Kings	Rajasthan Royals	Rajasthan Royals	field	normal	0	Rajasthan Royals	0

SAMPLE OF MATCHES IN SEASON 2014

In [49]:

```
df[510:512]
```

Out[49]:

	id	season	city	date	team1	team2	toss_winner	toss_decision	result	dl_applied	winner	win_by_ru
510	511	2014	Kolkata	2014-	Sunrisers	Kolkata Knight	Kolkata Knight	field	normal	0	Kolkata Knight	0

	id	season	city	date	team1	team2	toss_winner	toss_decision	result	dl_applied	winner	win_by_ru
510	511	2014	Kolkata	0-24	Hyderabad	Knight Riders	Knight Riders	field	normal	0	Knight Riders	0
511	512	2014	Chandigarh	2014-05-25	Delhi Daredevils	Kings XI Punjab	Kings XI Punjab	field	normal	0	Kings XI Punjab	0

SAMPLE OF MATCHES IN SEASON 2015

In [50]:

```
df[570:572]
```

Out[50]:

	id	season	city	date	team1	team2	toss_winner	toss_decision	result	dl_applied	winner	win_by
570	571	2015	Bangalore	2015-05-17	Delhi Daredevils	Royal Challengers Bangalore	Royal Challengers Bangalore	field	no result	0	NaN	0
571	572	2015	Hyderabad	2015-05-17	Sunrisers Hyderabad	Mumbai Indians	Sunrisers Hyderabad	bat	normal	0	Mumbai Indians	0

SAMPLE OF MATCHES IN SEASON 2016

In [51]:

```
df[620:622]
```

Out[51]:

	id	season	city	date	team1	team2	toss_winner	toss_decision	result	dl_applied	winner	wir
620	621	2016	Kolkata	2016-05-14	Rising Pune Supergiants	Kolkata Knight Riders	Rising Pune Supergiants	bat	normal	1	Kolkata Knight Riders	0
621	622	2016	Chandigarh	2016-05-15	Kings XI Punjab	Sunrisers Hyderabad	Kings XI Punjab	bat	normal	0	Sunrisers Hyderabad	0

SAMPLE OF MATCHES IN SEASON 2018

In [52]:

```
df[670:672]
```

Out[52]:

	id	season	city	date	team1	team2	toss_winner	toss_decision	result	dl_applied	winner
670	7928	2018	Pune	05/05/18	Royal Challengers Bangalore	Chennai Super Kings	Chennai Super Kings	field	normal	0	Chennai Super Kings
671	7929	2018	Hyderabad	05/05/18	Delhi	Sunrisers	Delhi	bat		0	Sunrisers

PERFORMING ANALYSIS ON THE SEASON 2017

In [53]:

```
df = df[df['season'] == 2017]
```

In [54]:

```
print(df.shape)
print(len(df))
df[0:7]
```

```
(59, 18)
59
```

Out[54]:

	id	season	city	date	team1	team2	toss_winner	toss_decision	result	dl_applied	winner	win_b
0	1	2017	Hyderabad	2017-04-05	Sunrisers Hyderabad	Royal Challengers Bangalore	Royal Challengers Bangalore	field	normal	0	Sunrisers Hyderabad	35
1	2	2017	Pune	2017-04-06	Mumbai Indians	Rising Pune Supergiant	Rising Pune Supergiant	field	normal	0	Rising Pune Supergiant	0
2	3	2017	Rajkot	2017-04-07	Gujarat Lions	Kolkata Knight Riders	Kolkata Knight Riders	field	normal	0	Kolkata Knight Riders	0
3	4	2017	Indore	2017-04-08	Rising Pune Supergiant	Kings XI Punjab	Kings XI Punjab	field	normal	0	Kings XI Punjab	0
4	5	2017	Bangalore	2017-04-08	Royal Challengers Bangalore	Delhi Daredevils	Royal Challengers Bangalore	bat	normal	0	Royal Challengers Bangalore	15
5	6	2017	Hyderabad	2017-04-09	Gujarat Lions	Sunrisers Hyderabad	Sunrisers Hyderabad	field	normal	0	Sunrisers Hyderabad	0
6	7	2017	Mumbai	2017-04-09	Kolkata Knight Riders	Mumbai Indians	Mumbai Indians	field	normal	0	Mumbai Indians	0

ANALYSIS ON TOSS RELATED ACTIVITIES AND THEIR CONSEQUENCIES

TOSS WINNERS

In [55]:

```
s.countplot(x = 'toss_winner', data= df)
mp.xlabel("Teams")
mp.ylabel("Number of times toss won")
mp.xticks(rotation = 'vertical')
mp.title("Toss Winners")
mp.show()
```
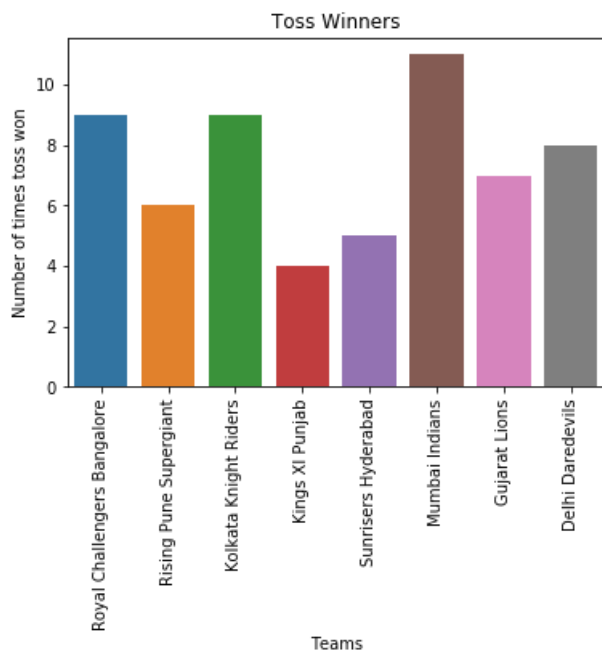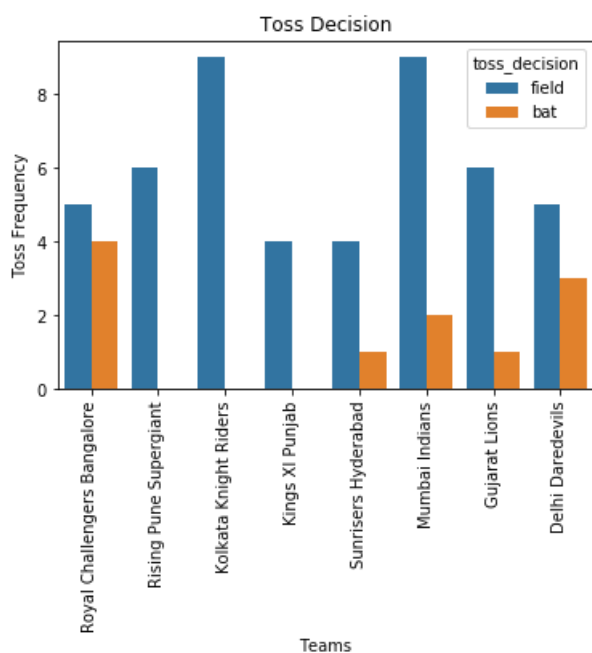
Toss Winners

OBSERVAATION:

-> Mumbai Indians have won the highest number of tosses which is 11

-> Kings XI Punjab have the least count on winning tosses which is 4

TOSS DECISIONS

In [56]:

```python
s.countplot(x = 'toss_winner', hue = 'toss_decision', data = df)
mp.xlabel("Teams")
mp.ylabel("Toss Frequency")
mp.xticks(rotation = 'vertical')
mp.title("Toss Decision")
mp.show()
```


OBSERVATION:

-> Rising Pune Supergiants, Kolkata Knight Riders, Kings XI Punjab have only chosen to

-> Rising Pune Supergiants, Kolkata Knight Riders, Kings XI Punjab have only choosen to field all the times

TOSS RESULTS

    -> In the given dataset we dont have a column on relating the match winner and toss winner

    -> Creating a column with "YES" or "NO":

        -> 'YES' if match winner and team winner is same

   -> 'NO' if match winner and team winner are different

In [59]:

```
df['toss_win_match_win'] = np.where(df['toss_winner'] == df['winner'],'yes','no')
df[2:6]
```

Out[59]:

	id	season	city	date	team1	team2	toss_winner	toss_decision	result	dl_applied	winner	win_by
2	3	2017	Rajkot	2017-04-07	Gujarat Lions	Kolkata Knight Riders	Kolkata Knight Riders	field	normal	0	Kolkata Knight Riders	0
3	4	2017	Indore	2017-04-08	Rising Pune Supergiant	Kings XI Punjab	Kings XI Punjab	field	normal	0	Kings XI Punjab	0
4	5	2017	Bangalore	2017-04-08	Royal Challengers Bangalore	Delhi Daredevils	Royal Challengers Bangalore	bat	normal	0	Royal Challengers Bangalore	15
5	6	2017	Hyderabad	2017-04-09	Gujarat Lions	Sunrisers Hyderabad	Sunrisers Hyderabad	field	normal	0	Sunrisers Hyderabad	0

In [63]:

```
s.countplot(x = 'toss_win_match_win', data = df)
mp.xlabel("Does toss winners are the winners of the match ?")
mp.ylabel("Toss Frequency")
mp.xticks(rotation = 'vertical')
mp.title("Toss Decision")
mp.show()
```
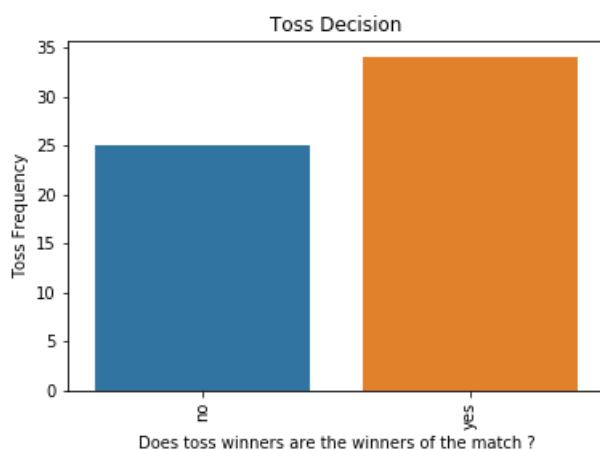
OBSERVATION:

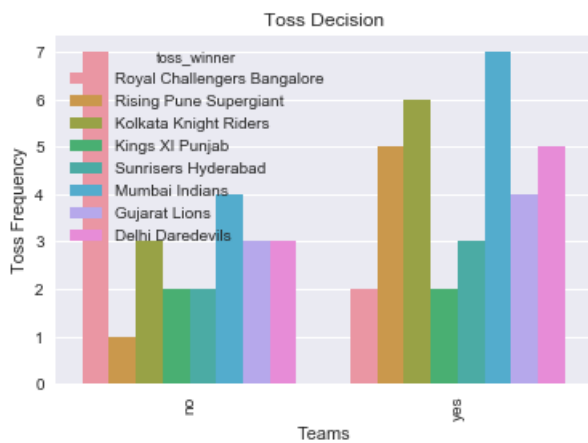   -> The toss winners have won 34 matches on total of 59 matches

    -> The toss winners have lost 25 matches out of 59 matches

TOSS RESULTS

        EFFECT OF TOSS RESULT ON EACH TEAM

In [71]:

```python
s.set(style='darkgrid')
s.countplot(x = 'toss_win_match_win', hue = 'toss_winner', data = df)
mp.xlabel("Teams")
mp.ylabel("Toss Frequency")
mp.xticks(rotation = 'vertical')
mp.title("Toss Decision")
mp.show()
```


OBSERVATION:

    -> Mumbai Indians have the highest match wins when they won the toss

    -> Royal Challengers Banglore have lost the highest number of matches when they lose the toss

ANALYSIS ON TARGETS

        -> If a team chases then it will win by wickets

        -> If a team defends then it will win by runs

Creating a column TARGET:

        -> CHASED if a team win_by_runs = 0 and win_by_wickets != 0

        -> DEFENDED if a team win_by_runs != 0 and win_by_wickets = 0

In [72]:

```python
df['target'] = np.where((df['win_by_runs'] == 0) & (df['win_by_wickets'] != 0), 'chased','defended'
)
```

In [74]:

```
df[0:7]
```

Out[74]:

	id	season	city	date	team1	team2	toss_winner	toss_decision	result	dl_applied	winner	win_b
0	1	2017	Hyderabad	2017-04-05	Sunrisers Hyderabad	Royal Challengers Bangalore	Royal Challengers Bangalore	field	normal	0	Sunrisers Hyderabad	35
1	2	2017	Pune	2017-04-06	Mumbai Indians	Rising Pune Supergiant	Rising Pune Supergiant	field	normal	0	Rising Pune Supergiant	0
2	3	2017	Rajkot	2017-04-07	Gujarat Lions	Kolkata Knight Riders	Kolkata Knight Riders	field	normal	0	Kolkata Knight Riders	0
3	4	2017	Indore	2017-04-08	Rising Pune Supergiant	Kings XI Punjab	Kings XI Punjab	field	normal	0	Kings XI Punjab	0
4	5	2017	Bangalore	2017-04-08	Royal Challengers Bangalore	Delhi Daredevils	Royal Challengers Bangalore	bat	normal	0	Royal Challengers Bangalore	15
5	6	2017	Hyderabad	2017-04-09	Gujarat Lions	Sunrisers Hyderabad	Sunrisers Hyderabad	field	normal	0	Sunrisers Hyderabad	0
6	7	2017	Mumbai	2017-04-09	Kolkata Knight Riders	Mumbai Indians	Mumbai Indians	field	normal	0	Mumbai Indians	0

In [75]:

```
s.set(style = 'darkgrid')
s.countplot(x = 'target', data = df)
mp.xlabel('Target')
mp.ylabel("Number of matches")
mp.title("Target results")
mp.show()
```
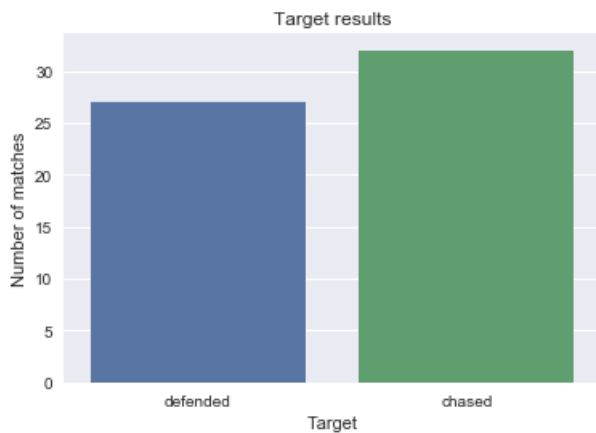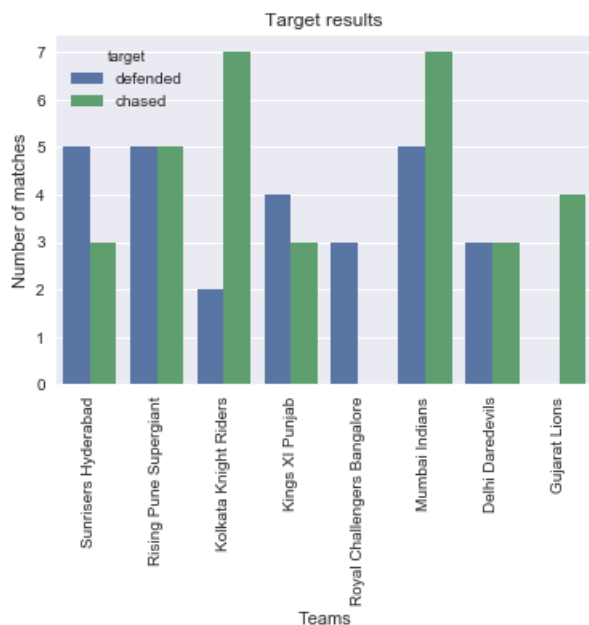

OBSERVATION:

    -> The teams who were chasing the target have the most wins that the defending teams

In [81]:

```
s.set(style = 'darkgrid')
s.countplot(x = 'winner', hue = 'target' ,data = df)
mp.xlabel('Teams')
mp.ylabel("Number of matches")
mp.title("Target results")
mp.xticks(rotation = 'vertical')
mp.show()
```


OBSERVATION:

    -> Kolkata Knight Riders, Mumbai Indians are very good at chasing the target

    -> Sunrisers Hyderabad, Rising Pune Supergiants, Mumbai Indians are good at defending the t
    arget

NUMBER OF MATCHES WON BY EACH TEAM

In [83]:

```
s.set(style = 'darkgrid')
s.countplot(x = 'winner', data = df)
mp.xlabel('Target')
mp.ylabel("Number of wins")
mp.title("Target results")
mp.xticks(rotation = 'vertical')
mp.show()
```
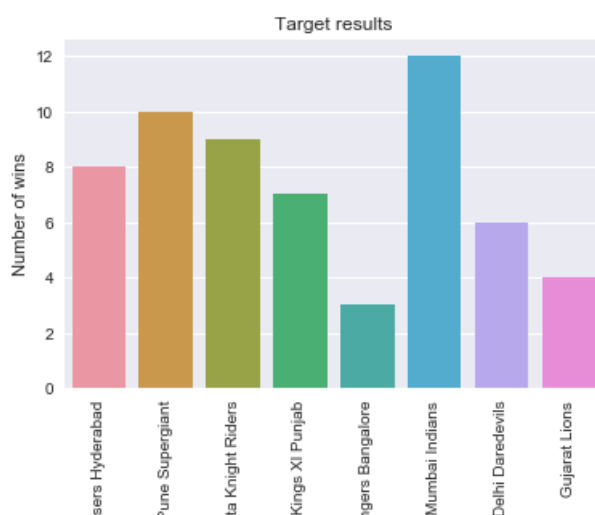
OBSERVATION:

    `-> Mumbai Indians have the highest wins and Royal Challengers Banglore have the highest los`
    `ses`

NOTE: So far we have done analysis on toss related features, lets analyse on the Scores and Wickets

ANALYSIS ON SCORES, WICKETS AND THEIR RESULTS

In [193]:

```
df1 = pd.read_csv('deliveries.csv')
df2 = pd.DataFrame(df['id'])
df2 = df2.rename(columns={'id':'match_id'})
```

In [194]:

```
data = pd.merge(df1,df2,on='match_id')
```

In [195]:

```
data
```

Out[195]:

	match_id	inning	batting_team	bowling_team	over	ball	batsman	non_striker	bowler	is_super_over	...	bye
0	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	1	1	DA Warner	S Dhawan	TS Mills	0	...	0
1	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	1	2	DA Warner	S Dhawan	TS Mills	0	...	0
2	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	1	3	DA Warner	S Dhawan	TS Mills	0	...	0
3	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	1	4	DA Warner	S Dhawan	TS Mills	0	...	0
4	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	1	5	DA Warner	S Dhawan	TS Mills	0	...	0
5	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	1	6	S Dhawan	DA Warner	TS Mills	0	...	0
6	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	1	7	S Dhawan	DA Warner	TS Mills	0	...	0
7	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	2	1	S Dhawan	DA Warner	A Choudhary	0	...	0
8	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	2	2	DA Warner	S Dhawan	A Choudhary	0	...	0

	match_id	inning	batting_team	bowling_team	over	ball	batsman	non_striker	bowler	is_super_over	...	bye
9	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	2	3	DA Warner	S Dhawan	A Choudhary	0	...	0
10	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	2	4	DA Warner	S Dhawan	A Choudhary	0	...	0
11	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	2	5	DA Warner	S Dhawan	A Choudhary	0	...	0
12	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	2	6	MC Henriques	S Dhawan	A Choudhary	0	...	0
13	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	2	7	MC Henriques	S Dhawan	A Choudhary	0	...	0
14	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	3	1	S Dhawan	MC Henriques	TS Mills	0	...	0
15	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	3	2	MC Henriques	S Dhawan	TS Mills	0	...	0
16	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	3	3	MC Henriques	S Dhawan	TS Mills	0	...	0
17	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	3	4	MC Henriques	S Dhawan	TS Mills	0	...	0
18	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	3	5	S Dhawan	MC Henriques	TS Mills	0	...	0
19	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	3	6	MC Henriques	S Dhawan	TS Mills	0	...	0
20	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	4	1	MC Henriques	S Dhawan	YS Chahal	0	...	0
21	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	4	2	MC Henriques	S Dhawan	YS Chahal	0	...	0
22	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	4	3	S Dhawan	MC Henriques	YS Chahal	0	...	0
23	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	4	4	S Dhawan	MC Henriques	YS Chahal	0	...	0
24	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	4	5	MC Henriques	S Dhawan	YS Chahal	0	...	0
25	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	4	6	S Dhawan	MC Henriques	YS Chahal	0	...	0
26	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	5	1	S Dhawan	MC Henriques	S Aravind	0	...	0
27	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	5	2	MC Henriques	S Dhawan	S Aravind	0	...	0

	match_id	inning	batting_team	bowling_team	over	ball	batsman	non_striker	bowler	is_super_over	...	bye
28	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	5	3	S Dhawan	MC Henriques	S Aravind	0	...	0
29	1	1	Sunrisers Hyderabad	Royal Challengers Bangalore	5	4	MC Henriques	S Dhawan	S Aravind	0	...	0
...	...	...	...	...	...	...	...	...	...	...	...	...
13832	59	2	Rising Pune Supergiant	Mumbai Indians	16	1	MS Dhoni	SPD Smith	KH Pandya	0	...	0
13833	59	2	Rising Pune Supergiant	Mumbai Indians	16	2	SPD Smith	MS Dhoni	KH Pandya	0	...	0
13834	59	2	Rising Pune Supergiant	Mumbai Indians	16	3	MS Dhoni	SPD Smith	KH Pandya	0	...	0
13835	59	2	Rising Pune Supergiant	Mumbai Indians	16	4	MS Dhoni	SPD Smith	KH Pandya	0	...	0
13836	59	2	Rising Pune Supergiant	Mumbai Indians	16	5	SPD Smith	MS Dhoni	KH Pandya	0	...	0
13837	59	2	Rising Pune Supergiant	Mumbai Indians	16	6	SPD Smith	MS Dhoni	KH Pandya	0	...	0
13838	59	2	Rising Pune Supergiant	Mumbai Indians	17	1	SPD Smith	MS Dhoni	JJ Bumrah	0	...	0
13839	59	2	Rising Pune Supergiant	Mumbai Indians	17	2	MS Dhoni	SPD Smith	JJ Bumrah	0	...	0
13840	59	2	Rising Pune Supergiant	Mumbai Indians	17	3	MK Tiwary	SPD Smith	JJ Bumrah	0	...	0
13841	59	2	Rising Pune Supergiant	Mumbai Indians	17	4	SPD Smith	MK Tiwary	JJ Bumrah	0	...	0
13842	59	2	Rising Pune Supergiant	Mumbai Indians	17	5	MK Tiwary	SPD Smith	JJ Bumrah	0	...	0
13843	59	2	Rising Pune Supergiant	Mumbai Indians	17	6	MK Tiwary	SPD Smith	JJ Bumrah	0	...	0
13844	59	2	Rising Pune Supergiant	Mumbai Indians	18	1	SPD Smith	MK Tiwary	SL Malinga	0	...	0
13845	59	2	Rising Pune Supergiant	Mumbai Indians	18	2	SPD Smith	MK Tiwary	SL Malinga	0	...	0
13846	59	2	Rising Pune Supergiant	Mumbai Indians	18	3	MK Tiwary	SPD Smith	SL Malinga	0	...	0
13847	59	2	Rising Pune Supergiant	Mumbai Indians	18	4	SPD Smith	MK Tiwary	SL Malinga	0	...	0
13848	59	2	Rising Pune Supergiant	Mumbai Indians	18	5	SPD Smith	MK Tiwary	SL Malinga	0	...	0
13849	59	2	Rising Pune Supergiant	Mumbai Indians	18	6	SPD Smith	MK Tiwary	SL Malinga	0	...	0
13850	59	2	Rising Pune Supergiant	Mumbai Indians	19	1	SPD Smith	MK Tiwary	JJ Bumrah	0	...	0
13851	59	2	Rising Pune Supergiant	Mumbai Indians	19	2	MK Tiwary	SPD Smith	JJ Bumrah	0	...	0
13852	59	2	Rising Pune Supergiant	Mumbai Indians	19	3	SPD Smith	MK Tiwary	JJ Bumrah	0	...	0
13853	59	2	Rising Pune Supergiant	Mumbai Indians	19	4	MK Tiwary	SPD Smith	JJ Bumrah	0	...	0
13854	59	2	Rising Pune Supergiant	Mumbai Indians	19	5	SPD Smith	MK Tiwary	JJ Bumrah	0	...	0

	match_id	inning	batting_team	bowling_team	over	ball	batsman	non_striker	bowler	is_super_over	...	bye
13855	59	2	Rising Pune Supergiant	Mumbai Indians	19	6	SPD Smith	MK Tiwary	JJ Bumrah		...	0
13856	59	2	Rising Pune Supergiant	Mumbai Indians	20	1	MK Tiwary	SPD Smith	MG Johnson	0	...	0
13857	59	2	Rising Pune Supergiant	Mumbai Indians	20	2	MK Tiwary	SPD Smith	MG Johnson	0	...	0
13858	59	2	Rising Pune Supergiant	Mumbai Indians	20	3	SPD Smith	DT Christian	MG Johnson	0	...	0
13859	59	2	Rising Pune Supergiant	Mumbai Indians	20	4	Washington Sundar	DT Christian	MG Johnson	0	...	1
13860	59	2	Rising Pune Supergiant	Mumbai Indians	20	5	DT Christian	Washington Sundar	MG Johnson	0	...	0
13861	59	2	Rising Pune Supergiant	Mumbai Indians	20	6	DT Christian	Washington Sundar	MG Johnson	0	...	0

13862 rows × 21 columns

BATSMENS WITH MOST RUNS

In [196]:

```
runs = data.groupby('batsman')['batsman_runs'].sum().sort_values(ascending=False)
runs[:20]
```

Out[196]:

```
batsman
DA Warner       641
G Gambhir       498
S Dhawan        479
SPD Smith       472
SK Raina        442
HM Amla         420
MK Pandey       396
PA Patel        395
KA Pollard      395
RA Tripathi     391
RV Uthappa      388
SV Samson       386
AM Rahane       382
RR Pant         366
KD Karthik      361
SS Iyer         338
RG Sharma       333
N Rana          333
MK Tiwary       324
BB McCullum     320
Name: batsman_runs, dtype: int64
```
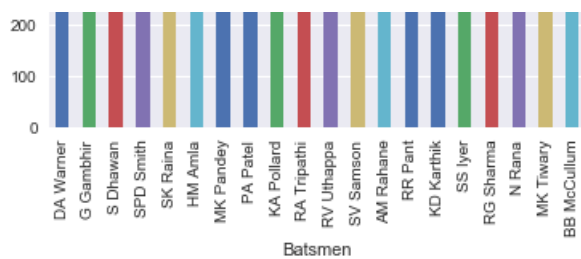
In [197]:

```
runs[:20].plot(kind = 'bar')
mp.xlabel('Batsmen')
mp.ylabel('Runs')
```

Out[197]:

```
Text(0,0.5,'Runs')
```
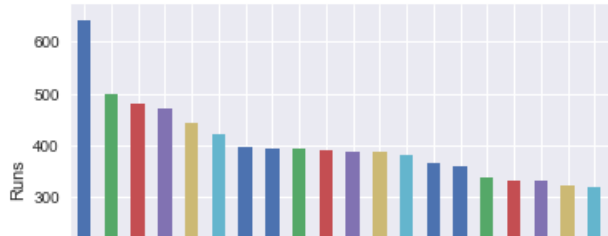
BOWLERS WITH MORE EXPENSIVE RUNS

In [198]:

```python
bowl = data.groupby('bowler')['total_runs'].sum().sort_values(ascending = False)
bowl[:20]
```

Out[198]:

```
bowler
MJ McClenaghan     512
JJ Bumrah          455
UT Yadav           432
Basil Thampi       428
SP Narine          412
MM Sharma          412
Sandeep Sharma     402
PJ Cummins         393
CR Woakes          393
SL Malinga         388
B Kumar            384
Imran Tahir        370
Rashid Khan        368
AR Patel           366
RA Jadeja          352
YS Chahal          351
Kuldeep Yadav      345
A Mishra           345
JD Unadkat         330
BA Stokes          327
Name: total_runs, dtype: int64
```

In [200]:

```python
bowl[:20].plot(kind = 'bar')
mp.xlabel('Batsmen')
mp.ylabel('Runs')
mp.show()
```
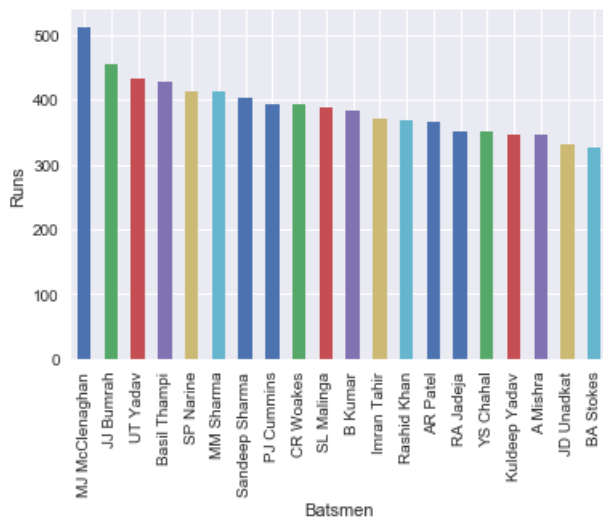

RUNS SCORED BY EACH TEAM

```
team = data.groupby('batting_team')['total_runs'].sum().sort_values(ascending = False)
team[:20]
```

```
batting_team
Mumbai Indians              2800
Kolkata Knight Riders       2484
Rising Pune Supergiant      2470
Gujarat Lions               2412
Sunrisers Hyderabad         2349
Delhi Daredevils            2219
Kings XI Punjab             2207
Royal Challengers Bangalore 1845
Name: total_runs, dtype: int64
```

```
team[:20].plot(kind = 'bar')
mp.xlabel('Batsmen')
mp.ylabel('Runs')
mp.show()
```
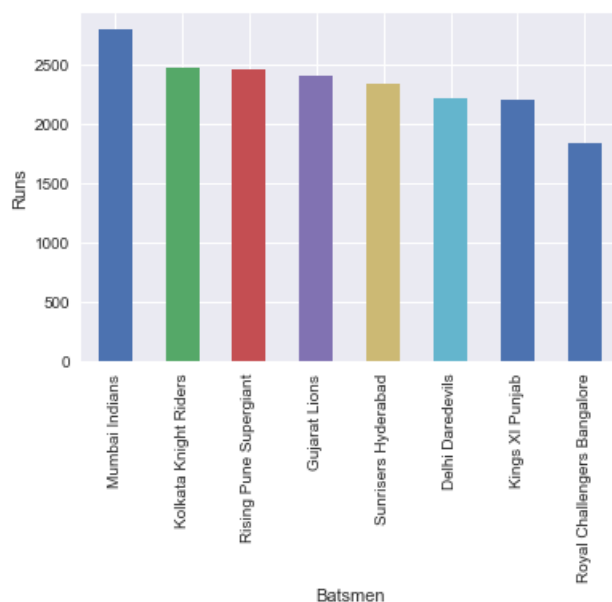

ANALYZING THE BOUNDARIES

```
boundary=data[(data['batsman_runs']==4)|(data['batsman_runs']==6)]
```

```
boundary['batsman_runs'].value_counts()
```

```
4    1612
6     706
Name: batsman_runs, dtype: int64
```

```
s.countplot(x= 'batsman_runs',data= boundary)
mp.xlabel("Boundaries")
mp.ylabel("Count")
```

Out[210]:

```
Text(0,0.5,'Count')
```
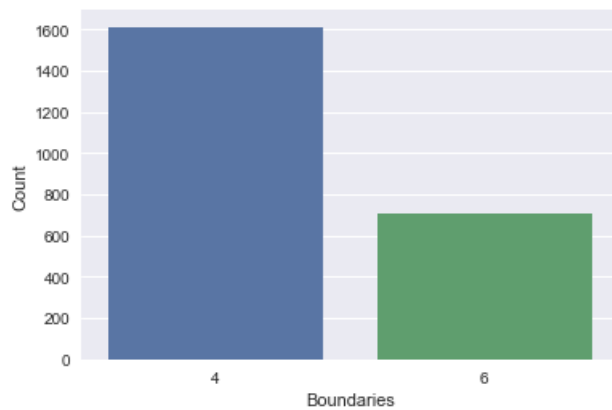

TOP BATSMENS WITH HIGHEST BOUNDARIES

In [214]:

```
bat_bound = boundary.groupby('batsman')['batsman_runs'].count().sort_values(ascending = False)
bat_bound[:20].plot(kind = 'bar')
mp.xlabel('Batsman')
mp.ylabel("Number of Boundaries")
mp.show()
```
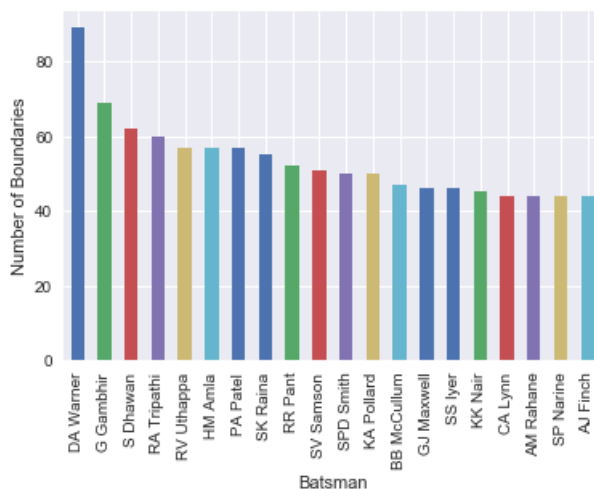

TOP BOWLERS WITH HIGHEST BOUNDARIES HIT AGAINST THEM

In [215]:

```
ball_bound = boundary.groupby('bowler')['batsman_runs'].count().sort_values(ascending = False)
ball_bound[:20].plot(kind = 'bar')
mp.xlabel('Batsman')
mp.ylabel("Number of Boundaries")
mp.show()
```

0

MJ McClenaghan · UT Yadav · Basil Thampi · Sandeep Sharma · MM Sharma · CR Woakes · SP Narine · PJ Cummins · JJ Bumrah · SN Thakur · RA Jadeja · B Kumar · A Mishra · SL Malinga · BA Stokes · Imran Tahir · JD Unadkat · Z Khan · JP Faulkner · Rashid Khan

Batsman

IPL 2017 FINAL MATCH ANALYSIS

In [227]:

```
ddf = pd.DataFrame(df.tail(1)['id'])
```

In [228]:

```
ddf = ddf.rename(columns= {'id':'match_id'})
final = pd.merge(data,ddf,on= 'match_id')
final
```

Out[228]:

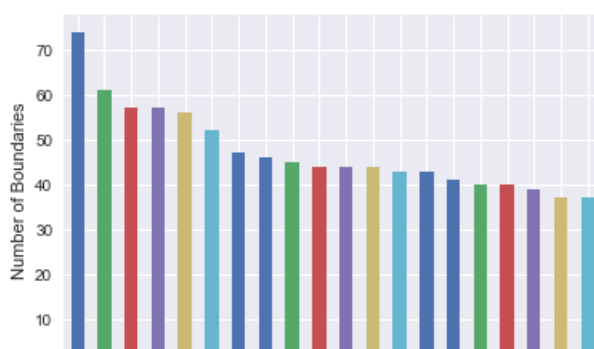|	match_id	inning	batting_team	bowling_team	over	ball	batsman	non_striker	bowler	is_super_over	...	bye_
0	59	1	Mumbai Indians	Rising Pune Supergiant	1	1	LMP Simmons	PA Patel	JD Unadkat	0	...	0
1	59	1	Mumbai Indians	Rising Pune Supergiant	1	2	LMP Simmons	PA Patel	JD Unadkat	0	...	0
2	59	1	Mumbai Indians	Rising Pune Supergiant	1	3	LMP Simmons	PA Patel	JD Unadkat	0	...	0
3	59	1	Mumbai Indians	Rising Pune Supergiant	1	4	LMP Simmons	PA Patel	JD Unadkat	0	...	0
4	59	1	Mumbai Indians	Rising Pune Supergiant	1	5	PA Patel	LMP Simmons	JD Unadkat	0	...	0
5	59	1	Mumbai Indians	Rising Pune Supergiant	1	6	LMP Simmons	PA Patel	JD Unadkat	0	...	0
6	59	1	Mumbai Indians	Rising Pune Supergiant	2	1	LMP Simmons	PA Patel	Washington Sundar	0	...	0
7	59	1	Mumbai Indians	Rising Pune Supergiant	2	2	LMP Simmons	PA Patel	Washington Sundar	0	...	0
8	59	1	Mumbai Indians	Rising Pune Supergiant	2	3	PA Patel	LMP Simmons	Washington Sundar	0	...	0
9	59	1	Mumbai Indians	Rising Pune Supergiant	2	4	PA Patel	LMP Simmons	Washington Sundar	0	...	0
10	59	1	Mumbai Indians	Rising Pune Supergiant	2	5	PA Patel	LMP Simmons	Washington Sundar	0	...	0
11	59	1	Mumbai Indians	Rising Pune Supergiant	2	6	PA Patel	LMP Simmons	Washington Sundar	0	...	0
12	59	1	Mumbai Indians	Rising Pune Supergiant	3	1	PA Patel	LMP Simmons	JD Unadkat	0	...	0
13	59	1	Mumbai Indians	Rising Pune Supergiant	3	2	AT Rayudu	LMP Simmons	JD Unadkat	0	...	0
14	59	1	Mumbai Indians	Rising Pune Supergiant	3	3	AT Rayudu	LMP Simmons	JD Unadkat	0	...	0
15	59	1	Mumbai Indians	Rising Pune Supergiant	3	4	LMP Simmons	AT Rayudu	JD Unadkat	0	...	0
16	59	1	Mumbai Indians	Rising Pune Supergiant	3	5	RG Sharma	AT Rayudu	JD Unadkat	0	...	0
	59	1	Mumbai	Rising Pune								

	match_id	inning	batting_team	bowling_team	over	ball	batsman	non_striker	bowler	is_super_over	...	bye_
17	59	1			3	6	RG Sharma	AT Rayudu	JD Unadkat	0	...	0
18	59	1	Mumbai Indians	Rising Pune Supergiant	4	1	RG Sharma	AT Rayudu	Washington Sundar	0	...	0
19	59	1	Mumbai Indians	Rising Pune Supergiant	4	2	RG Sharma	AT Rayudu	Washington Sundar	0	...	0
20	59	1	Mumbai Indians	Rising Pune Supergiant	4	3	RG Sharma	AT Rayudu	Washington Sundar	0	...	0
21	59	1	Mumbai Indians	Rising Pune Supergiant	4	4	AT Rayudu	RG Sharma	Washington Sundar	0	...	0
22	59	1	Mumbai Indians	Rising Pune Supergiant	4	5	AT Rayudu	RG Sharma	Washington Sundar	0	...	0
23	59	1	Mumbai Indians	Rising Pune Supergiant	4	6	AT Rayudu	RG Sharma	Washington Sundar	0	...	0
24	59	1	Mumbai Indians	Rising Pune Supergiant	5	1	AT Rayudu	RG Sharma	SN Thakur	0	...	0
25	59	1	Mumbai Indians	Rising Pune Supergiant	5	2	RG Sharma	AT Rayudu	SN Thakur	0	...	0
26	59	1	Mumbai Indians	Rising Pune Supergiant	5	3	AT Rayudu	RG Sharma	SN Thakur	0	...	0
27	59	1	Mumbai Indians	Rising Pune Supergiant	5	4	AT Rayudu	RG Sharma	SN Thakur	0	...	0
28	59	1	Mumbai Indians	Rising Pune Supergiant	5	5	RG Sharma	AT Rayudu	SN Thakur	0	...	0
29	59	1	Mumbai Indians	Rising Pune Supergiant	5	6	RG Sharma	AT Rayudu	SN Thakur	0	...	0
...	...	...	...	...	...	...	...	...	...	...	...	...
218	59	2	Rising Pune Supergiant	Mumbai Indians	16	1	MS Dhoni	SPD Smith	KH Pandya	0	...	0
219	59	2	Rising Pune Supergiant	Mumbai Indians	16	2	SPD Smith	MS Dhoni	KH Pandya	0	...	0
220	59	2	Rising Pune Supergiant	Mumbai Indians	16	3	MS Dhoni	SPD Smith	KH Pandya	0	...	0
221	59	2	Rising Pune Supergiant	Mumbai Indians	16	4	MS Dhoni	SPD Smith	KH Pandya	0	...	0
222	59	2	Rising Pune Supergiant	Mumbai Indians	16	5	SPD Smith	MS Dhoni	KH Pandya	0	...	0
223	59	2	Rising Pune Supergiant	Mumbai Indians	16	6	SPD Smith	MS Dhoni	KH Pandya	0	...	0
224	59	2	Rising Pune Supergiant	Mumbai Indians	17	1	SPD Smith	MS Dhoni	JJ Bumrah	0	...	0
225	59	2	Rising Pune Supergiant	Mumbai Indians	17	2	MS Dhoni	SPD Smith	JJ Bumrah	0	...	0
226	59	2	Rising Pune Supergiant	Mumbai Indians	17	3	MK Tiwary	SPD Smith	JJ Bumrah	0	...	0
227	59	2	Rising Pune Supergiant	Mumbai Indians	17	4	SPD Smith	MK Tiwary	JJ Bumrah	0	...	0
228	59	2	Rising Pune Supergiant	Mumbai Indians	17	5	MK Tiwary	SPD Smith	JJ Bumrah	0	...	0
229	59	2	Rising Pune Supergiant	Mumbai Indians	17	6	MK Tiwary	SPD Smith	JJ Bumrah	0	...	0
230	59	2	Rising Pune Supergiant	Mumbai Indians	18	1	SPD Smith	MK Tiwary	SL Malinga	0	...	0
231	59	2	Rising Pune	Mumbai	18	2	SPD Smith	MK Tiwary	SL Malinga	0		0

	match_id	inning	batting_team	bowling_team	over	ball	batsman	non_striker	bowler	is_super_over	...	bye_
232	59	2	Rising Pune Supergiant	Mumbai Indians	18	3	MK Tiwary	SPD Smith	SL Malinga	0	...	0
233	59	2	Rising Pune Supergiant	Mumbai Indians	18	4	SPD Smith	MK Tiwary	SL Malinga	0	...	0
234	59	2	Rising Pune Supergiant	Mumbai Indians	18	5	SPD Smith	MK Tiwary	SL Malinga	0	...	0
235	59	2	Rising Pune Supergiant	Mumbai Indians	18	6	SPD Smith	MK Tiwary	SL Malinga	0	...	0
236	59	2	Rising Pune Supergiant	Mumbai Indians	19	1	SPD Smith	MK Tiwary	JJ Bumrah	0	...	0
237	59	2	Rising Pune Supergiant	Mumbai Indians	19	2	MK Tiwary	SPD Smith	JJ Bumrah	0	...	0
238	59	2	Rising Pune Supergiant	Mumbai Indians	19	3	SPD Smith	MK Tiwary	JJ Bumrah	0	...	0
239	59	2	Rising Pune Supergiant	Mumbai Indians	19	4	MK Tiwary	SPD Smith	JJ Bumrah	0	...	0
240	59	2	Rising Pune Supergiant	Mumbai Indians	19	5	SPD Smith	MK Tiwary	JJ Bumrah	0	...	0
241	59	2	Rising Pune Supergiant	Mumbai Indians	19	6	SPD Smith	MK Tiwary	JJ Bumrah	0	...	0
242	59	2	Rising Pune Supergiant	Mumbai Indians	20	1	MK Tiwary	SPD Smith	MG Johnson	0	...	0
243	59	2	Rising Pune Supergiant	Mumbai Indians	20	2	MK Tiwary	SPD Smith	MG Johnson	0	...	0
244	59	2	Rising Pune Supergiant	Mumbai Indians	20	3	SPD Smith	DT Christian	MG Johnson	0	...	0
245	59	2	Rising Pune Supergiant	Mumbai Indians	20	4	Washington Sundar	DT Christian	MG Johnson	0	...	1
246	59	2	Rising Pune Supergiant	Mumbai Indians	20	5	DT Christian	Washington Sundar	MG Johnson	0	...	0
247	59	2	Rising Pune Supergiant	Mumbai Indians	20	6	DT Christian	Washington Sundar	MG Johnson	0	...	0

248 rows × 21 columns

In [230]:

```
mi = final[final['batting_team']=='Mumbai Indians']
rps = final[final['batting_team'] == 'Rising Pune Supergiant']
```

RUNS SCORED PER OVER BY MUMBAI INDIANS

In [232]:

```
mi.groupby(['bowling_team','over','bowler'])['total_runs'].sum()
```

Out[232]:

```
bowling_team            over  bowler
Rising Pune Supergiant  1     JD Unadkat          3
                        2     Washington Sundar   4
                        3     JD Unadkat          2
                        4     Washington Sundar   2
                        5     SN Thakur           5
                        6     LH Ferguson        16
                        7     A Zampa             9
                        8     LH Ferguson         5
```

```
 9      A Zampa              4
10      Washington Sundar    6
11      A Zampa              9
12      Washington Sundar    1
13      A Zampa             10
14      DT Christian         3
15      SN Thakur            2
16      DT Christian         5
17      JD Unadkat           6
18      DT Christian        13
19      JD Unadkat          10
20      DT Christian        14
Name: total_runs, dtype: int64
```

RUNS SCORED PER OVER BY RISING PUNE SUPERGIANTS

In [233]:

```python
rps.groupby(['bowling_team','over','bowler'])['total_runs'].sum()
```

Out[233]:

```
bowling_team     over   bowler
Mumbai Indians   1      KH Pandya      6
                 2      MG Johnson     8
                 3      JJ Bumrah      7
                 4      SL Malinga     2
                 5      KV Sharma      9
                 6      SL Malinga     6
                 7      KV Sharma      5
                 8      JJ Bumrah      5
                 9      KV Sharma      2
                 10     MG Johnson     8
                 11     KH Pandya      7
                 12     MG Johnson     6
                 13     KV Sharma      2
                 14     KH Pandya      4
                 15     SL Malinga     6
                 16     KH Pandya     14
                 17     JJ Bumrah      3
                 18     SL Malinga     7
                 19     JJ Bumrah     12
                 20     MG Johnson     9
Name: total_runs, dtype: int64
```

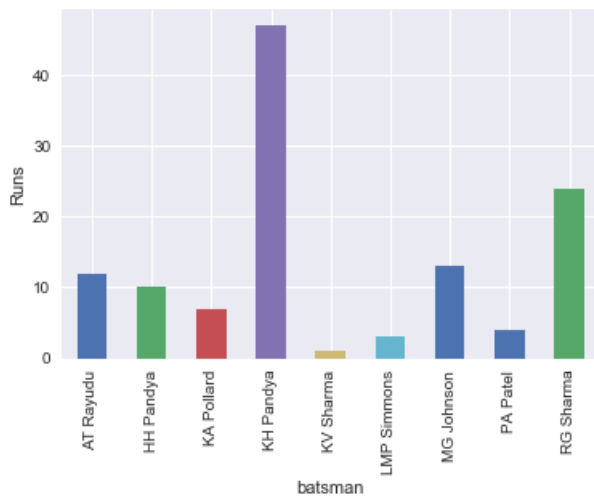## PLOT ON RUNS SECURED BY THE TWO TEAMS

In [234]:

```python
final.groupby(['over','batting_team'])['total_runs'].sum().unstack().plot(kind='bar')
mp.ylabel('Runs')
mp.show()
```
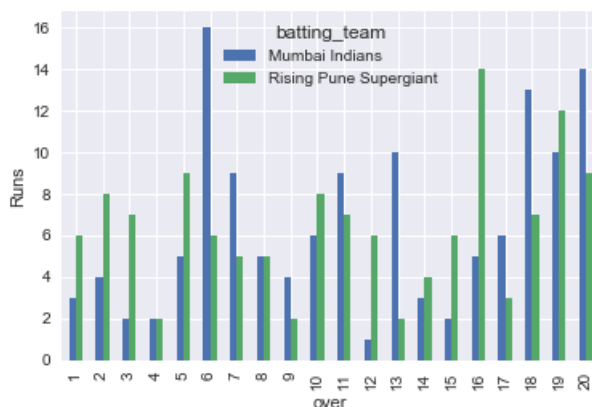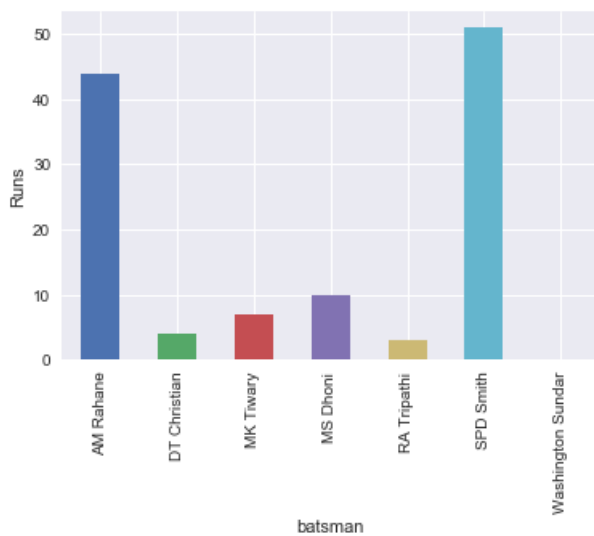

RUNS SCORED BY MUMBAI INDIANS TEAM

```
mi.groupby('batsman')['batsman_runs'].sum().plot(kind='bar')
mp.ylabel('Runs')
mp.show()
```
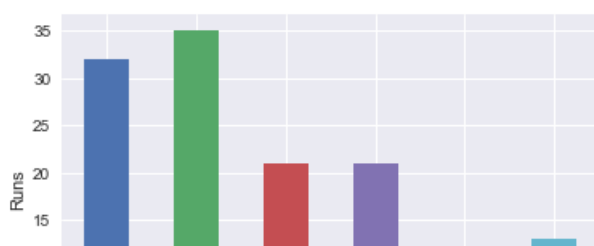

RUNS SCORED BY RISING PUNE SUPERGIANTS TEAM

In [239]:

```
rps.groupby('batsman')['batsman_runs'].sum().plot(kind='bar')
mp.ylabel("Runs")
mp.show()
```
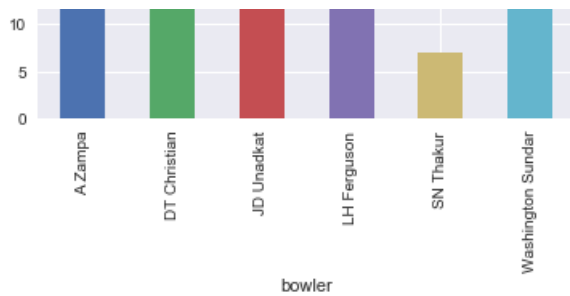

RUNS SCORED AGAINST RISING PUNE SUPERGIANTS TEAM BOWLERS

In [243]:

```
mi.groupby('bowler')['total_runs'].sum().plot(kind = 'bar')
mp.ylabel("Runs")
mp.show()
```
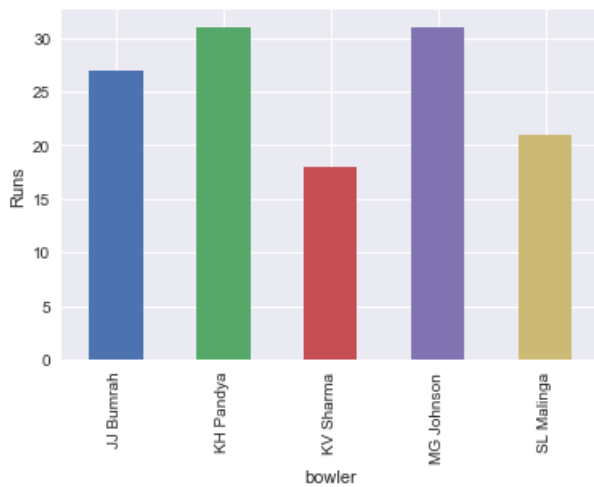
RUNS SCORED AGAINST MUMBAI INDIANS TEAM BOWLERS

In [244]:

```python
rps.groupby('bowler')['total_runs'].sum().plot(kind='bar')
mp.ylabel('Runs')
mp.show()
```


TOTAL SCORE OF EACH TEAM IN THE FINAL

In [245]:

```python
final.groupby(['inning','batting_team'])['total_runs'].sum()
```

Out[245]:

```
inning  batting_team
1       Mumbai Indians          129
2       Rising Pune Supergiant  128
Name: total_runs, dtype: int64
```

RESULT

        MUMBAI INDIANS DEFENDED RISING PUNE SUPERGIANTS BY 1 RUN