



Executive Summary

The Basketball Japan League (BJL) is professional league and the purpose is to provide entertaining basketball for fans, and earn money for the teams. It was founded in 2005 with 6 teams; the league has expanded rapidly, and today there are 21 teams. Due to rapid growth the game rules, league administration, and head coaches are constantly changing. Following the end of the 2010-2011 season 13 of the then 16 head coaches lost their jobs, including the coach of the championship team.

What does it take to be successful as a coach? The NBA, which is the world authority on professional basketball is moving increasingly toward analytics—the statistical analysis of success drivers—in order to maximize winning. NBA Coaches that are successful pay attention to analytics to guide decision making. NBA.com and ESPN.com both list efficiency ratings (EFF) and performance evaluation ratings (PER), in addition to clutch ratings and other important measures. The BJL website contains nothing beyond basic player stats. Coaches in this league are blind to analytics regarding their own team as well as their opponents.

What I have built is an EFF ranking system for the BJL. This can be used by a coach to see the most effective players on their own team as well other teams. This data is useful in making decisions about playing time, line-up dynamics, and as a starting point for studying other trends that go beyond data such as strategy formulation.

The EFF ranking system pulls cumulative season statistical data for every player in the league, and then runs that data through a formula that adds positive contributions and subtracts negative ones to produce a raw contribution number or EFF. The EFF is then divided by minutes played to give the efficiency per minute (EFF/MIN) rate, this rate can be used to compare players across the board. The final step is to rank the players in order from highest EFF/MIN to lowest.

Implementation Documentation

- Create a data query (query from web) that pulls all the player stats for a specific team

No	選手名	G	MIN	PTS	AVG	3P		
						M	A	%
1	澤口 誠	48	1069	369	7.7	29	98	29.6
3	小島 佑太	48	972	203	4.2	13	73	17.8
4	原 毅人	7	68	16	2.3	0	7	0.0
7	北向 由樹	48	1503	520	10.8	84	229	36.7
8	下山 大地	31	139	52	1.7	11	39	28.2
9	アンソニー・ケント	48	1093	352	7.3	0	5	0.0
11	山口 祐希	40	458	81	2.0	11	46	23.9

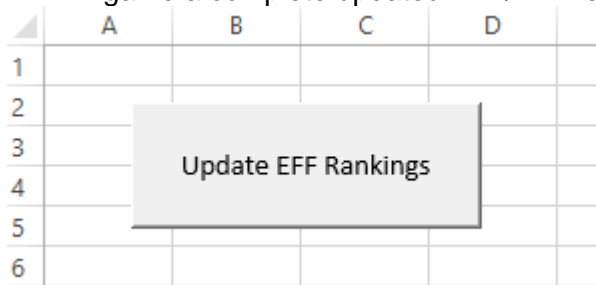
- Create a list of all the teams and the URL differences for each team required for editing the data query (Sheets.TeamID)
- Edit the data query so that it can be repeated in a loop for each team in the league
- Export the content from the data query to a different sheet (Sheets.AllPlayers2) before each repetition in the loop
- Modify the loop so that it doesn't pull the first 2 rows after the first data query to create a complete list of player stats for the league
- Run the data through the efficiency and EFF/MIN formulas using the FormulaR1C1 method for each player (This will give a complete list organized by team)

No	選手名	G	MIN	PTS	AVG	3P	2P	DK	FT	RBD	OR	DR	TOT	AST	STL	BLK	TO	PF	TF	EFF	EFF/MIN				
1	澤口 誠	48	1069	369	7.7	29	98	29.6	103	266	38.7	0	76	116	65.5	32	87	119	112	24	0	71	102	1	=E3+S3+T3+U3+V3-(H3-G3)-(K3-J3)-(O3-N3)-W3
3	小島 佑太	48	972	203	4.2	13	73	17.8	72	159	45.3	0	20	36	55.6	42	94	136	89	58	9	65	128	0	

- Create a new sheet (Sheets.EFF ranking) where the players will be ranked high to low based on EFF/MIN
- Export the content of the AllPlayers2 sheet to EFF ranking sheet
- Sort the data in the EFF/MIN column from high to low

	A	B	C	D	E	F
No		選手名	G	MIN	EFF	EFF/MIN
0		佐藤 優樹 マクファーレン	2	4	4	1
3		エグゼビア・ギブソン	48	1353	1032	0.76275
34		ディアンジェロ・ハミルトン	18	524	393	0.75
42		ジーノ・ボマーレ	48	1374	1028	0.74818
41		ルーベン・ボイキン	50	1683	1182	0.70232
13		チェイス・マクファーランド	45	1093	755	0.69076
54		キプエ・トリム	48	1094	734	0.67093
15		パトリック・サリバン	49	1269	851	0.67061
41		ウェンデル・ホワイト	44	1347	897	0.66592
4		ドワイト・パーク	16	248	165	0.66532
15		リチャード・ロビー	48	1315	872	0.66312
31		アザドホーラ・クウソー	48	1178	768	0.65195

- Create a button in a new sheet (Sheets.Update) that calls the macro (Now after each game a complete updated EFF/MIN ranking can be retrieved with the push of a button)



Learning, Difficulties and Assistance

The most difficult part of this project was figuring out how to properly edit the data query. When I first tried to write the macro I wanted to repeat the query over and over in the loop. With assistance from Professor Allen I found that this wouldn't work and instead the data query would need to be edited. This also meant that I couldn't keep all the data on the same sheet as the query, but had to export it to a different sheet before each subsequent query edit in the loop.

Another challenge was finding the right way to calculate the efficiency formula. At first I wanted to copy the formula in excel, but Professor Allen directed me to use the FormulaR1C1 method in VBA instead. This cleaned up the data in the excel sheets nicely.

The last hang up I had was that I needed to add the text EFF and EFF/MIN to the spreadsheet so that those new stats would be properly labeled. While this wasn't extremely difficult, it required stepping through the entire macro to understand the proper place to insert that step so it would only need to be done once, and not mess up anything else.