Introduction

It is summer of 2018. Chelsea started the 2017/18 season really well and were in 3rd place at the halfway mark. However, their performance declined significantly in the second half, with the team winning only nine matches. This led to a 5th-place finish in the Premier League, missing out on next Champions League. Therefore, I will closely examine their forwards to identify weaknesses and explore potential players in the market who could help improve the team.

Metrics

To evaluate forward players effectively, I have employed a range of key metrics, each shedding light on different aspects of their performance. These metrics are as follows:

- **Non Penalty Goals minus Expected Goals* (np Goals - xG):** this shows how well a player scored compared to the chances he had. A higher value means he scored more often than expected with the occasions he enjoyed.
- **Non Penalty Expected Goals* per shot (np xG/Shot):** a higher value in this metric underscores a player's aptitude for taking well-positioned shots, avoiding speculative attempts. It reflects their judicious shot selection.
- **Expected Assists (xA):** this measures how well a player sets up their teammates for shotting chances (based on xG*). A higher xA means he's good at creating those opportunities.
- **Expected Threat (xT):** I've trained my own model that not only accounts for the danger of a pass but also the type of pass and it also considers the threat generated with successful dribbles. The higher the value means the player can pass the ball or move it dribbling to positions that are more threatening.
- **Offensive Ground Duels Won:** shows a player's ability to get past opponents when dribbling. A higher number means he's good at one-on-one situations.
- **In-Box Air Duels Won:** indicates how well a player performs in winning headers in the opponent's penalty area. A higher value means he's strong in the air when it matters most.

* The provided xG model has been re-trained with data from all competitions.

Chelsea's Forwards

In order to visually represent the performance of Chelsea's forward players during the 2017/18 season, I have generated a radar plot for each player with the metrics mentioned above. The distance from the center of each metric indicates the player's percentile position in that particular metric relative to other forwards in the league. These metrics are adjusted per 90 minutes and per possession of the ball by the team. Only players with at least 400 minutes were taken into account. In Fig 1, we can observe that our squad consisted of players with distinct strengths and weaknesses.

For instance, Eden Hazard stands out as a top creative striker, excelling in metrics such as Dribbles, xT, and xA, while also scoring a significant number of goals (high in Goals - xG). However, his weaknesses are his

tendency to take shots from positions with low xG (bottom in xG/Shot) and his ability to win air duels.

On the other hand, Olivier Giroud (who was signed during that winter transfer window from Arsenal) tends to take shots from more advantageous positions. One of his notable strengths is his ability to win aerial duels inside the box. However, when we compare his performance metrics between the first and second halves of the season, it becomes evident that he experienced a significant decrease in his goal-scoring performance.

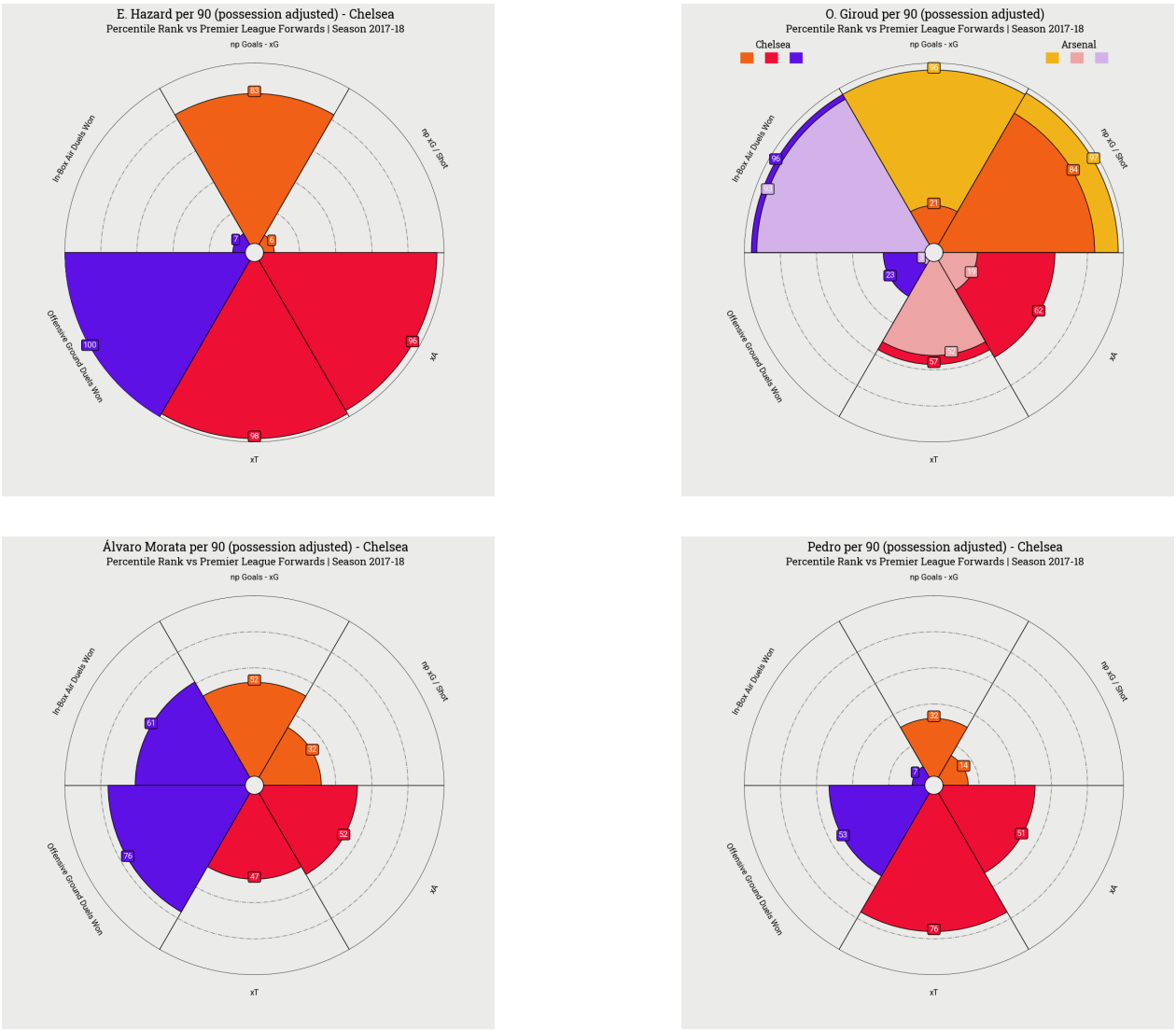

Figure 1. Radar plots of Chelsea forwards during 2017/18 season.

Álvaro Morata, in comparison, exhibits average performance in most metrics, with a particular standout in ground dribbles. However, he tends to shoot from less advantageous positions.

Pedro may be considered the weakest forward in terms of certain metrics, but he compensates with strong creativity, as reflected in his high xT in my model.

After analyzing Chelsea's forwards I've decided to replace O. Giroud. His decrease in goal production is the primary reason for my decision to explore a replacement. I'll be seeking a player who can provide similar strengths to Giroud while also contributing more goals to the team.

Scouting

Our search for a replacement player has led us to focus on League One. We are specifically interested in players who excel in In-Box Air Duels and score more goals than Giroud. Our criteria include considering players under the age of 27. To provide a reference point, Giroud averages 3.94 in-box air duels won per 90 minutes (adjusted for possession) and has a goal-to-expected goal difference of -0.11.

Player Name	Club	np Goals - xG	In-Box Air Duels	Height (cm)	Age	Value (€)
L. Traoré	Amiens SC	0.00	2.16	203	27	2.50m
G. Carrillo	Monaco*	0.78	2.10	191	27	6.00m
E. Crivelli	Caen	0.20	2.10	184	23	4.00m
Suk Hyun-Jun	Troyes	0.15	1.83	190	27	3.50m
Y. Sanogo	Toulouse	-0.23	1.55	191	25	2.00m
E. Sala	Nantes	-0.25	1.45	187	27	8.00m
M. Thuram	Guingamp	-0.19	1.38	192	21	4.50m
G. Laborde	Bordeaux	-0.02	1.30	182	24	8.00m
M. Braithwaite	Bordeaux*	0.10	1.09	177	27	8.00m
Nuno Da Costa	Strasbourg	0.11	1.08	190	27	2.00m

Table 1. Top 10 players under 27 with highest in-box air duels won per 90 minutes (possession adjusted) in League One. * players transferred during the previous winter transfer window.

After carefully reviewing Table 1, I have made the decision to sign the top-ranked player, L. Traoré.
Notably, he stands out as the tallest player among the available options, which can provide us with a significant advantage in aerial duels and set-piece situations. Furthermore, he consistently scores at least the expected quantity of goals from his opportunities. Additionally, he comes at an affordable price, and his performance across other metrics, as illustrated in Fig 2, aligns with my expectations.

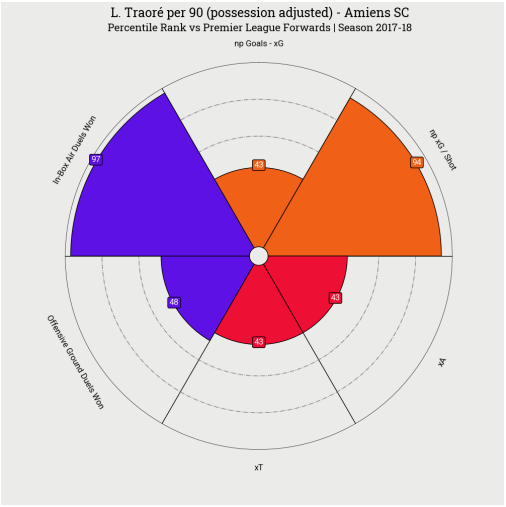

Figure 2. L. Traoré during 2017/18 season at Amiens SC.

Group discussion

The Chelsea group discussed our scouting recommendations. All of us scouted forward players, so there was no doubt we had to strengthen that position. Most of my teammates proposed to sign Neymar because he excelled in most of the metrics my teammates measured. However, it is evident that world-class players like him will consistently rank at the top of most attacking stats. In my humble opinion, we don't need data to know how good top-star players like him are. I believe we should use data to identify players with untapped potential and discover their unique strengths that may improve the team.

Furthermore, neither his high market value nor the frequency of his injuries were taken into account. During the meeting we thoroughly discussed these factors but as the vast majority of the team favored Neymar, our final club decision was to sign him.

My personal decision was to replace O. Giroud since he didn't perform as expected in terms of goal-scoring, while still maintaining his unique ability to win aerial duels. When we examine Neymar's radar plot, it becomes apparent that he excels in creative metrics such as dribbles, xT, and xA, and he consistently exceeds expected goals. However, he is not a direct replacement for Giroud.

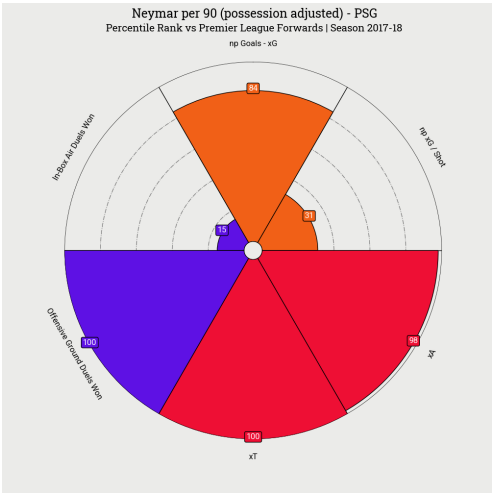

Figure 3. Neymar during 2017/18 season at PSG.

Additionally, when we compare Neymar to E. Hazard, we can see that they both were top generative players at that time, meaning that Chelsea already had a similar player in the squad. Taking all these factors into account, I stand by my final decision to sign my scouted player, L. Traoré, who could be a suitable replacement for Giroud at a more reasonable cost.