



The Sun

Erik ten Hag - Head Coach Assessment Overview

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1. How does Erik ten Hag compare to other manager candidates

The table at Exhibit 1 (below) summarises the key quantitative ratings and metrics for a number of head coach candidates that had been associated with being Manchester United’s next manager (together with comparative ratings for Rangnick and Solskjaer). An explanation of the ratings and metrics is provided in the [Glossary](#) in Section 4 this Overview (below).

Exhibit 1: Table outlining the ratings for each head coach, including quantitative metrics indicating relative strengths and weaknesses (as at April 2022)

Manager Name	Carteret Manager Rating	CMR CI	Normalised CMR	Strategic Intelligence Rating (Home)	Strategic Intelligence Rating (Away)	Strategic Intelligence Rating	Tactical Command Rating (Home)	Tactical Command Rating (Away)	Tactical Command Rating	Attacking Coefficient (Home)	Attacking Coefficient (Away)	Attacking Coefficient	Success-adjusted Attacking Coefficient (Home)	Success-adjusted Attacking Coefficient (Away)	Success-adjusted Attacking Coefficient	Shot Conversion Rating	Opposition Shot Conversion Rating	Shot Creation Ratio	Possession: Goal Conversion (Home)	Possession: Goal Conversion (Away)	Possession: KME Creation (Home)	Possession: KME Creation (Away)	Extrapolated League Position
Ralf Rangnick	438.70	4.03	272.60	37.78	26.67	64.44	2.20	1.80	4.00	9.66	8.74	18.39	6.90	4.90	11.80	30.70	19.61	1.00 : 1	2.67	3.55	9.02	9.68	5
Mauricio Pochettino	443.00	0.92	448.00	45.98	28.74	74.71	3.10	2.55	5.66	13.08	12.25	25.33	12.45	6.62	19.06	42.62	22.49	1.24 : 1	4.01	2.55	8.82	7.45	3
Erik ten Hag	459.40	0.89	467.40	41.98	39.51	81.48	2.15	2.52	4.67	9.32	9.07	18.39	7.62	7.58	15.20	43.41	14.20	3.52 : 1	5.42	3.35	13.82	8.94	3
Brendan Rogers	375.40	0.82	388.90	29.63	14.81	44.44	1.67	0.85	2.52	10.34	9.45	19.80	6.19	2.72	8.92	37.49	31.27	0.86 : 1	3.35	3.08	9.12	9.70	5
Carlo Ancelotti	462.80	0.91	469.10	39.08	36.78	75.86	2.41	2.31	4.72	0.48	12.66	13.14	10.31	9.61	19.92	29.94	24.89	1.85 : 1	3.46	3.27	11.35	10.27	3
Antonio Conte	491.70	0.94	496.00	33.33	29.82	63.16	1.21	2.63	3.84	10.71	10.62	21.32	7.92	6.26	14.19	35.32	24.20	1.57 : 1	4.97	3.45	10.99	11.83	2
Luis Enrique	568.80	4.36	330.10	47.13	34.48	81.61	3.10	3.14	6.24	13.56	13.32	26.87	12.29	9.51	21.80	39.43	21.69	1.82 : 1	5.25	3.89	12.07	10.85	5
Julen Lopetegui	430.80	1.57	399.50	39.08	26.44	65.52	1.97	1.28	3.24	12.37	13.02	25.39	9.99	6.40	16.39	43.15	21.22	1.32 : 1	3.42	1.31	7.19	5.18	5
Thomas Tuchel	503.60	0.96	505.80	30.95	39.29	70.24	2.14	2.14	4.29	10.16	10.34	20.50	7.04	7.84	14.88	38.16	21.05	1.60 : 1	3.52	3.20	9.69	7.58	2
Ole Gunnar Solskjaer	352.70	0.94	355.40	19.44	27.78	47.22	1.50	1.25	2.75	10.06	10.06	20.11	4.02	5.46	9.48	29.69	33.69	1.09 : 1	2.97	0.84	9.35	2.37	7

	Key Metric - Upper Tier
	Key Metric - Middle Tier
	Key Metric - Lower Tier
	Secondary Metric - Upper Tier
	Secondary Metric - Middle Tier
	Secondary Metric - Lower Tier

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2. Headlines: should Manchester United have gone for ten Hag, and did they have any choice really?

- **Enrique.** He was a riskier option for MUFC than many of the other managers on the list: notably because he has not managed a club team since 2016/17 (nor has he managed in the EPL – although that is not weighted as heavily in the Confidence Index (CMR CI)). This **CMR CI** – as mentioned in the Glossary – is important; because, for instance, a manager might have a high **Carteret Manager Rating** but has only demonstrated that level of objective performance over a short period of time, or some time ago, or there are gaps in his managerial CV (in respect of club management in this case). **Enrique** is a perfect example of a manager with a very high **Carteret Manager Rating**, but we have less confidence in extrapolating that performance level forward over the next three seasons because of his limited recent club management experience. This is why the **Normalised Carteret Manager Rating** is more instructive. NB. Managers with a **CMR CI** of 1.00 or below represent a high level of quantitative confidence that the objective performance levels they have demonstrated to date can be extrapolated forward for the next three seasons.
- **Conte.** **Conte** should have been of interest to MUFC because he achieves results, although his individual metrics are not the most exceptional in the sample of managers. He does have a relatively high **Attacking Coefficient** which might be attractive to the ‘attack, attack, attack’ mantra that is often associated with MUFC supporters; but he is only average in achieving positive match outcomes from his more attacking style of play compared to the rest of the group. Where **Conte** appears to be relatively successful is utilising **Possession** to achieve positive match outcomes. **Possession** of itself is a relatively poor predictor of future success – it is what the manager is able to achieve in match scenarios (such as key match events) from **Possession** that makes a substantial difference. Conte is pretty good in this regard, although he is not as good as, for instance, **Enrique**.
- **Enrique**, again. The other thing to mention about **Enrique** is that he has the best **Strategic Intelligence** rating and the best **Tactical Command** rating in the group. In short, **Enrique** is the best of any of the managers in the sample population for achieving match wins from the way that he prepares ahead of a match (**Strategic Intelligence**), and in achieving match wins from tactical changes within a match (**Tactical Command**). He is closely followed in this regard by **ten Hag**, **Pochettino** and **Ancelotti**. These four managers are the “thinkers” in the group – they use an extremely high level of ‘football intelligence’ to achieve match wins, through understanding the strengths of their own squad in the context of an analysis of the opposition squad that they will be playing in the next match (and this manifests itself both in terms of preparation before that next match, and in tactical nous within the match itself). Indeed, if you look across all the metrics for **Enrique**, he has the most *green* of any of the managers. He has all the hallmarks of being an exceptional manager for MUFC, but he is compromised by not having managed a club team since 2016/17.
- **Tuchel.** The most likely of any of these managers to achieve the highest league position with the current MUFC squad – he has the highest **Normalised Carteret Manager Rating**. He is very good at setting-up his team to achieve a high probability of winning the next match (**Strategic Intelligence**), but, interestingly, only has an average **Tactical Command** rating – suggesting that he is not as capable of turning an in-match position into an incrementally better position or win.
- **Ancelotti.** A subjective view might be that MUFC supporters may have been disappointed if Ancelotti was appointed as manager, but the objective view from the quantitative analysis is that he is very good at understanding how to win matches – in terms of his **Strategic Intelligence** in preparing for the next match, his ability to transform a match to a win, and how he can best achieve results from the right level of attacking play and possession.
- **Pochettino.** He has excellent overall **Strategic Intelligence** and **Tactical Command** – he is one of the “thinkers” of the group, who is extremely capable of understanding the strengths and weaknesses of his squad (and those of the next opponents) to achieve a high probability of winning that next match. There is a slight disparity in his abilities for both **Strategic Intelligence** and **Tactical Command** between home and away matches – he achieves noticeably more successful outcomes from home matches than away matches. He has a very high **Attacking Coefficient**, which MUFC supporters may

have appreciated; and achieves a very good level of success from the attacking style of play. He is less successful in transforming **Possession** to positive match outcomes (than, for example, **ten Hag**, **Conte**, **Enrique** and **Ancelotti**), and, again, there is a notable disparity between the relative success he achieves at home matches vs away matches.

- **Ten Hag**. He has a number of exceptional ratings and metrics: **Strategic Intelligence**, **Shot Conversion** (of his teams), prevention of shot conversion by opposing teams, **Shot Creation** (which is exceptionally high) and conversion of **Possession** into successful match outcomes. However, there are some 'yellow' flags... First, he manages in the Eredivisie which, as a league, is not as competitive as the EPL (by which we mean that it is statistically (and materially) more difficult to achieve a win in the EPL than in the Eredivisie). One of our slight concerns would be a relatively average **Tactical Command** which suggests that he is not as good as transforming in-match positions into an incrementally better outcome (including a win); and if he is relatively average in this regard in the Eredivisie, then his rating is likely to fall further in the EPL where matches are more difficult to transform. **Ten Hag** also has a relatively low **Attacking Coefficient**, suggesting a more reserved style of play (and this is in the less competitive Eredivisie) – which might not chime particularly well with MUFC supporters, especially if matches are not being won. Moreover, this relatively reserved style of play is not contributing significantly to winning matches – **ten Hag** is much more successful at achieving positive match outcomes from **Possession**, rather than from his [slightly reserved] style of play.

3. Headlines: what can Manchester United supporters expect from Erik ten Hag?

- **Ten Hag** is exceptional at setting-up his team to win the next football match. His **Strategic Intelligence Rating** of **81.48** is second only to **Enrique (81.61)** in our group of managers, and demonstrates that he really understands the strengths and weaknesses of each player within his squad, and how to best combine those players in the optimal positions and formations for the next match.
- His high **Strategic Intelligence Rating** is also underpinned by an extraordinary ability to analyse the strengths and weaknesses of the opposition for the next match. This combination of being able to 'read' the strengths and weaknesses of players, to identify their optimal positioning on the pitch and formations, increases the probability of winning the next match by magnifying the strengths of his own players, nullifying the strengths of opposition players, and exploiting opposition weaknesses.
- What is also notable, is that **ten Hag** has a similarly strong **Strategic Intelligence Rating** for both home and away matches. This is unusual - and is certainly better than his closest rivals on **Strategic Intelligence**, **Pochettino** and **Enrique** (who are much more effective for home matches than away matches).
- By comparison, **ten Hag's** strategic ability to set-up his team to maximise the chances of winning the next match is **26% higher than Rangnick**, and a **massive 73% higher than Solskjaer**.
- **Ten Hag's** very strong **Strategic Intelligence Rating** does tend to support many reports in the media that he is exceptionally detailed and thorough in training, with excellent attention to detail in understanding the relative strengths and weaknesses of his own players and his upcoming opposition.
- **Ten Hag's** ability to transform a match (during the match itself) to an incrementally better outcome (i.e. from a losing position, to a draw; or a drawing position, to a win) is also good. This **Tactical Command Rating** is **lower than Pochettino and Enrique**, but it is well above average and, importantly, is stable between home and away matches.
- By comparison, **ten Hag is 17% better than Rangnick at transforming match positions, and a whopping 70% better than Solskjaer**.
- Satisfying the '**attack, attack, attack**' mantra often associated with Manchester United supporters could be more problematic for **ten Hag**.

- His **Attacking Coefficient** (propensity for a more attacking style of play) is only average, and is over **25% lower than Pochettino**. Indeed, **ten Hag's Attacking Coefficient is actually identical to Rangnick and lower than Solskjaer**.
- Nevertheless, it is important to measure the match-winning success generated by having an attacking style of play (**Success-adjusted Attacking Coefficient**), and in this regard **ten Hag** represents a significantly better option than both **Rangnick** and **Solskjaer**.
- This suggests that **ten Hag** does not play an attacking style of football for the sake of what he perceives supporters want to see, and instead plays each match in the manner that he considers maximises the chances of winning that match. In contrast, both **Rangnick** and, especially, **Solskjaer**, appear to have been attempting a more attacking style of play (possibly to appease the supporters) but with limited success in terms of it contributing to the winning of matches.
- The analysis of how the manager utilises possession to create *Key Match Events* (i.e. that lead to a higher probability of scoring a goal), and to utilise possession to convert goal scoring opportunities, also indicates exceptionally high ratings for **ten Hag**.
- **Ten Hag** clearly plays a possession based style of football. This would appear to be the bedrock of his strategy and tactics to win each match. He has demonstrated - albeit in the **Eredivisie** - that he understands how to utilise possession to out-manoeuvre the opposing team to create the chances to score goals, and to shut-out the opposition and tactically manage a football match to a positive result.
- This is further demonstrated by an exceptional **Shot Creation Ratio** of **3.52:1**. This means that **ten Hag's** team creates 3.52 shots on goal, to every 1 created by the opposition. By comparison, **Solskjaer's Ratio** is only **1.09:1** and **Rangnick** is even lower at **1.00:1**. Even the next best **Shot Creation Ratio** on the list of managers (**Ancelotti, 1.85:1**) is significantly lower than ten Hag.
- **Ten Hag** also has the **best Shot Conversion Rating** (converting a shot to a goal), and the **best Opposition Shot Conversion Rating** (limiting the opposition converting a shot on a goal), of all the managers under consideration. **Solskjaer** has the worst ratings for both metrics.
- There is a note of caution, of course, the **Eredivisie** is not a league that is as competitive as the **EPL, La Liga, Serie A** or even **Ligue 1**. Nevertheless, even allowing for this disparity in competitiveness, the difference in both **Shot Creation Ratio** and conversion of **Possession** to key match events and shot conversion between **ten Hag** and the other managers that might have been considered by Manchester United, is significant.
- In summary, **ten Hag** is an exceptional manager in his ability to deploy a strategic understanding of his own team and the opposition to maximise the probability of winning the next match. With this level of successful preparation he is possibly in the **top 3-4%** of top flight professional football managers, and **in the context of the EPL puts him close to Guardiola and Klopp**.
- Football, however, is a dynamic sport that requires tactical ability to be able to transform a match during the course of the match itself. In this respect **ten Hag** is also very good (possibly in the **top 15%** of top flight managers), and is certainly a huge improvement on both **Rangnick** and **Solskjaer**. He is **not as good as Pochettino in this regard**, but it is certainly arguable that because **ten Hag** is more effective at strategically setting-up his team to maximise the chances of winning the next match he is less reliant on having to transform a match during the match itself.
- **Manchester United fans should not expect ten Hag to play an attacking style of football by default**. **Ten Hag** is driven by the objective of winning the next match, even if that requires a more defensive approach based on the relative strengths and weaknesses of the opposition for that match.
- **Ten Hag** appears to be more focused on utilising **Possession** to achieve his strategic objectives for the match, and, in particular, to understand how he can use possession of the ball to create positive *Key Match Events* that can lead to shot creation and, most importantly, shot conversion. In this regard, he is possibly in the **top 3-4%** of top flight managers.
- The question marks, of course, arise from **ten Hag's** ability to replicate his high objective performance levels in a league (**EPL**) that is significantly more competitive than the **Eredivisie**; and at a club that has exceptionally high expectations - exacerbated by a long period without winning the **EPL**. It is also

a club that contains very high profile players, and the *behavioural science* to understand how **ten Hag** is able to manage the mindsets of those players is unclear.

- With the objective performance levels of the Manchester United squad of players, versus the objective performance levels of the players in every other **EPL** squad, at the start of the 2021/22 season, we extrapolated that **ten Hag**, with his objective ratings and metrics, was **capable of taking Manchester United to 3rd place in the EPL at the end of the 2021/22 season**. By comparison, we extrapolated that **Rangnick** would place the club **5th**, and **Solskjaer 7th**. It will be interesting to do the same analysis at the start of the 2022/23 season, with many changes likely in the Manchester United squad over the summer transfer window.

4. Glossary

Carteret Manager Rating (CMR)

This is a unique quantitative measure of overall ability. It is based on the premise that the primary objective of a manager/head coach is to win football matches, and the Carteret Manager Rating (CMR) is an assessment of his success in this regard over the last five seasons. Whilst we can determine a manager's CMR over a longer period (if necessary), we have calculated that the most accurate and predictive indicator of success for a manager is based on his prior five seasons, with an incremental weighting towards the most recent seasons.

The CMR is also weighted for the level of the league in which the manager has operated at any point in time during the last five seasons. We apply a significance metric based on the level of data population for the last five seasons (the lower the figure the better), and which could be impacted, for example, by periods of inactivity within that period. Finally, as a means of comparison, we have also worked on a club specific premise that the club would want their next manager to guide the club to a particular position in the English Premier League (EPL) at the conclusion of Season 2022/23. With this objective in mind, our analysis focuses on league performances of the manager over the prior five seasons.

Carteret Manager Rating Confidence Index (CMR CI)

The overall purpose of the quantitative analysis in the football sector is to accurately predict the future performance levels of players, managers and teams - in a variety of league, style, player combination and formation scenarios. We have built a series of algorithms that are able to utilise a huge amount of raw data to produce highly accurate predictions - which we constantly measure after every match to ensure the predictive levels (R-squared value) remain high. The line of predictive extrapolation in any data analysis will always be dependent on the quality and quantity of raw data. We are usually very confident with the quality of raw data that we are able to utilise, but sometimes the quantity of the raw data is lower for one manager for a particular period than another manager. We need to recognise that difference in quantity, and the CMR CI is our mechanism for doing so. A CMR CI rating of 1.00 or lower suggests an extremely high level of confidence that the quantity and quality of the raw data is of a sufficiently high level to produce a strong extrapolated line of prediction.

Normalised Carteret Manager Rating

In addition to the Carteret Manager Rating, we have also developed a series of algorithms to take account of the volume, variability and veracity of the raw data for each manager. The Normalised Carteret Manager Rating takes account of the fact, for instance, that one manager might have an exceptional rating and individual metrics but has only managed for a relatively short period and, perhaps, in a single league. In this scenario it would be a relatively high risk to assume that the manager in question might continue on the same trajectory and at the same levels for, say, the next three seasons. The CMR for a manager with longer and broader experience (across leagues, and particularly in the target league) might be a better predictor of medium-term success, than for a manager with very limited experience or with gaps in his managerial career. The Normalised Carteret Manager Rating takes account of the CMR CI (see above) to rebalance/homogenise the probability of a successful outcome with each manager over the next three seasons.

Strategic Intelligence Rating

This measures the manager's ability to prepare and set his team, and analyse the opposition, to maximise the chances of the team winning the next match. The higher the figure, the better. We consider this to be a very important metric because a manager who is able to achieve a high probability of a successful match outcome through a combination of understanding the objective performance abilities and form of his/her [available] players, and their players' contributions to successful outcomes from pitch positions and formations, increases the probability of achieving a higher league position at the conclusion of the season. This metric also includes manager ability to adjust for the same objective indicators in the opposition players (in various formations and combinations).

Tactical Command Rating

This is a measure of the manager's ability to transform a match (during the match), and, in particular, to develop a winning position for the team from various match scenarios. The Key Match Events (KMEs) are those events within a match that lead to a goal being scored; could lead to a goal being scored; lead to a goal being conceded; or could lead to a goal being conceded. This part of the analysis assesses how the probability of each and every specific KME is altered within each and every match to transform a leading, equal, or deficient scoreline into a win (or, as a secondary measure, a draw). A match loss will lead to a weighted negative assessment, based on the preceding scoreline position within every match. The Tactical Command Rating is a 'per match' rating, the higher the figure the better.

Attacking Coefficient

Success-adjusted Attacking Coefficient

The attacking coefficient measures the manager's propensity to play an attacking style of football - the higher the figure, the more attack minded is the manager. We have also measured the relative impact of the manager's attacking coefficient on the success of the team winning matches - again, the higher the figure the

better. Success is not wholly related to a manager's attacking coefficient, but an attacking style of play, married to the team winning football matches, might be a consideration for the Club.

Team Shot Conversion Rating

Opposition Shot Conversion Rating

This is an extract of one of the KMEs. Based on the premise that the primary objective of the Club is to win matches, in order to achieve the specific target of guiding the Club to a particular position in the EPL at the conclusion of Season 2022/23, this is a key metric that highlights a team's ability to increase the probability of winning matches. There are a whole series of impact metrics that measure and rate the contribution to KMEs, but this is a useful metric to extract both in terms of its overall objective influence, and as an illustration of attacking efficiency. We have also included the requisite metric for the opposition teams from each of the matches, to give a relative sense of attacking and defensive efficiency. It is preferable for the Team Shot Conversion Rating to exceed the Opposition Shot Conversion Rating.

Shot Creation Ratio

It is obvious that a shot on goal significantly increases the team's opportunity of scoring a goal, which in turn significantly increases the team's chances of winning the match. It is a statistically significant exercise to assess the comparative ratio of shots on target, between the team and the opposing team, as an indicator of propensity for winning matches. In the ratio above, the manager's team is listed first. It is sometimes preferable that his figure should exceed the opponent's figure, but the key factor, of course, is the conversion of a shot on goal to an actual goal (as per the Shot Conversion Rating above).

Possession - Goal Conversion Rating (Home)

Possession - KME Creation Rating (Home)

Possession - Goal Conversion Rating (Away)

Possession - KME Creation Rating (Away)

Possession is a metric that is often referenced and debated - and misapplied. Possession is a good base for KMEs - if the team has possession at a specific point in time, then it is highly unlikely that a goal will be conceded at that point in time (unless it is an own goal) - and equally the team is only likely to score a goal if it has possession (again, a specific type of own goal being an exception). However, football provides an immensely fluid data population with a myriad of time points, and so it is vital to identify the key points (in relation to possession) that have the highest relative impact on winning matches. The Possession Goal Conversion Rating assesses the positive impact of possession at key points within each and every match, that lead to a goal being scored - a high figure indicates a more effective conversion of possession by the team, rather than possession for the sake of possession. Likewise a high Possession KME Creation Rating indicates a positive utilisation of possession to improve the quantity of KMEs that lead, or could lead, to match winning scenarios.

Projected League Position (Complete 2021/22 EPL Season)

Perhaps the most exciting, and the ultimate, metric. We have weighted the CMR and all the other metrics, based on a comprehensive analysis of the empirical impact that each metric has had on finishing in a particular position in the requisite league over the last 20 years, and undertaken an identical process for all the other managers in the requisite league (during this season) as at the date of the report. We have then considered the Carteret Ratings for each of the players in each squad in the league, to determine how the target manager might have performed with that squad (as if he had control of team selection at the start of the season - in this case, control of the actual Manchester United squad at the start of Season 2021/22).