



BBC - January 2020 Potential Transfers: *Carteret Ratings* and *Intrinsic Values* for various players for 'Who could be on the move in January?' BBC Sport website feature

Jack Morris¹, Henry Powell²

1. The headlines

- In spite of injuries and some supporter criticism, **Paul Pogba** is still incredibly valuable to the [future] success of Manchester United. Indeed, he is the player with the highest *Intrinsic Value* in the table (in Section 4 below), even though he has only the fourth highest *Carteret Rating* this season (**348.6**) - behind **Timo Werner (435)**, **Erling Braut Haaland (432.8)** and **Jadon Sancho (399.1)**.
- In pure performance terms, **Timo Werner** has been the best player on the list this season so far; closely followed by **Erling Braut Haaland**. The *Carteret Rating* for these players, and all the other players on the list, is already weighted for the league in which they are currently playing - and so it is a highly accurate (and objective) guide to the player's ability.
- **Christian Eriksen's** performances have dropped by **38.5%** this season, which is a huge drop. His *Intrinsic Value* has similarly dropped by **£32.22m** from last season to this season.
- **Nathan Ake** has remained consistent in his performance levels between last season and this season, and his *Intrinsic Value* to Bournemouth has also remained stable (**£52.01m** for Season 2019/20). This is particularly interesting because it is rumoured that Chelsea have a 'buy-back' clause (which expires shortly after the January 2020 transfer window), and allows Chelsea to buy **Ake** for **c£40m**. This is significantly lower (**23.1%**) than his *Intrinsic Value* to Bournemouth, and a massive **42.7%** lower than his *Intrinsic Value* to Chelsea (which we have calculated as **£69.75m**).
- Bournemouth are believed to have paid **c£20m** for **Ake**, and, in normal circumstances, a return of **100%** over 18 months would be regarded as good business. However, the *Intrinsic Value* analysis demonstrates that this is not optimal business for Bournemouth (who probably thought that the transfer embargo would still be in place for Chelsea), but could be very good business for Chelsea.
- Another interesting juxtaposition is the *Carteret Ratings* for **Wilfred Zaha** and **Jarrod Bowen**. **Bowen** is actually enjoying objective performance levels this season that are higher than **Zaha**, but his *Intrinsic Value* to Hull City is obviously substantially lower than **Zaha** at Crystal Palace (for reasons outlined in Section 3 below). There are rumours that Newcastle, Aston Villa and West Ham United are all interested in **Bowen**, and by comparison his *Intrinsic Value* for each of those clubs is **£34.13m**, **£31.97m** and **£43.79m** respectively.

2. A little bit of science...

At Carteret Analytics we have developed the quantitative analysis utilised to good effect in investment banking for trading strategy, portfolio optimisation, derivatives pricing and hedging, and risk management by our sister corporate finance firm, Carteret Capital - and applied it to football.

¹ Jack Morris, Corporate Analyst - Carteret Analytics, London.

² Henry Powell, Corporate Analyst - Carteret Analytics, London.

In particular, our work provides an objective measure of how good a football player really is - removing all the subjective noise and opinions.

An integral part of the analysis is to calculate a **Carteret Rating**³ for every football player, which rates and values a player's contribution to his team winning football matches. It is incredibly accurate at predicting a player's capabilities. Indeed, we always start with the premise that a professional football club's primary objective is to win matches - and therefore the more a player contributes to his team winning matches, the better the player.

Carteret Analytics has also extended the *Carteret Rating* to give each player an **Intrinsic Value** (in monetary terms). This is essentially the value of the player 'in use' - the monetary value of his contribution to his club winning football matches. It is a sophisticated financial calculation - utilising proprietary algorithms - and which can be applied to and by other clubs. This enables, for example, a prospective buying club to virtually (yet objectively) 'transplant' a player into its own team to determine his potential *Intrinsic Value* for the buying club. Once the prospective buying club has this information, it can help inform them of the appropriate transfer fee to offer to the player's current club.

3. Side Note: The distinction between *Carteret Rating* and *Intrinsic Value*

Carteret Rating

This is a completely objective measure. It only takes account of a player's performance metrics, and analyses these metrics utilising a proprietary algorithm to determine how good a player really is - and predict how he will perform in the future.

It ignores characteristics such as age and nationality, and avoids the 'noise' of subjective considerations that are often taken into account (often wrongly) in trying to determine the quality of a player.

It is an exceptionally accurate rating, with an *r-squared value* of **0.89** for Premier League players - demonstrating that it is very precise at predicting how good a player will be in the future. It is also a dynamic measure, allowing us to accurately predict the impact of the player in different clubs and different leagues.

Intrinsic Value

This is a proprietary monetary measure of the player's objective performance. In other words, it monetises a player's *Carteret Rating*.

It is incredibly useful to a club because it allows them to compare a player's intrinsic value to his market value. For instance, if a player's *Intrinsic Value* is £10m and a club is offering £20m to buy him, then this would strongly suggest that his current club should sell him.

Of course, if you are the buying club then you will also benefit enormously from an insight into what that player's *Intrinsic Value* might be if he were to join the buying club. If his *Intrinsic Value* for the buying club is £25m, then it suggests that a purchase price of £20m also offers good value for the buying club.

³ *Carteret Rating*: this is a proprietary method of determining how good a player really is. It is a significant and leading-edge algorithm. We assess a player by identifying every match in which he has been involved (for which we have data) and identifying the key events in each and every one of those matches. These Key Match Events ("KMEs") are events that led to a goal being scored; could have led to a goal being scored; led to a goal being conceded; or could have led to a goal being conceded. Then, for each and every KME, in each and every single match, we analyse that player's contribution to each of those KMEs. This is a substantial piece of analysis, and one which produces a unique *Carteret Rating* for the player. It is a dynamic rating, and it changes with each additional match played.

This also illustrates that a player's *Intrinsic Value* can vary between clubs. It is obvious that this should be the case because the context for valuing that player will be different at each club - the quality and performance levels of the other players at the other club, the quality and performance of the coaching staff, the 'best fit' analysis of that player into preferred and optimal formations at the other club, the league and league position of the other club, the player's projected value as an intangible asset as part of the enterprise/corporate value of the other club, the cost/benefit analysis (including opportunity cost) of the other club with and without that player etc.

It is important to note that it is unlikely that both clubs - the selling and buying club - will have access to the *Carteret Rating* or *Intrinsic Value*. This provides a substantial competitive advantage to the club that does have access to these measures, because it will help that club successfully negotiate the best possible price for the player whilst ensuring (in the case of the selling club) that the player is not sold for a price lower than his *Intrinsic Value* to the selling club; or (in the case of the buying club) that the player is bought for a price lower than his *Intrinsic Value* to the buying club.

4. The List: *Carteret Ratings* and *Intrinsic Values* for each player

The table below provides the *Carteret Ratings* and *Intrinsic Values* for each of the players identified by Shamoan Hafez on 20 December 2019:

Player Name	Current Club	Carteret Rating 2019/20	<i>Intrinsic Value</i> (2019/20) £	Carteret Rating 2018/19	<i>Intrinsic Value</i> (2018/19) £
Paul Pogba	Manchester United	348.6	85.03m	343.1	83.69m
Christian Eriksen	Tottenham Hotspur	205.6	51.38m	334.5	83.6m
Lucas Torreira	Arsenal	188.6	37.85m	258.6	51.9m
Nathan Ake	Bournemouth	326.7	52.01m	323.6	51.52m
Wilfried Zaha	Crystal Palace	269.7	41.1m	303.2	46.21m
Dwight McNeil	Burnley	263.7	24.74m	249.8	23.44m
Erling Braut Haaland	RB Salzburg	432.8	13.81m	*Variable raw data	---
Jadon Sancho	Borussia Dortmund	399.1	44.57m	301	33.62m
Gareth Bale	Real Madrid	223.7	44.71m	230.6	46.09m
Timo Werner	RB Leipzig	435	60.61m	291	40.54m
Nicolo Zaniolo	AS Roma	177.8	21.98m	152.2	18.81m
Jarrod Bowen	Hull City	278.9	7.36m	238.6	6.3m
Joe Worrall	Nottingham Forest	203.9	5.78m	243.8	5.63m
Jed Wallace	Millwall	246.1	5.07m	148.6	3.06m

About Carteret Analytics

Carteret Analytics is part of the Carteret Group of companies, based in the City of London, New York and Geneva. It provides leading-edge quantitative analysis and commercial analytics to clients worldwide, with particular expertise in the sports sector. In football our work includes player rating and valuation, head coach assessment, team performance analysis, and applying proprietary analytics to transform commercial revenues.