THE 2018 ALGORITHMIC TRADING SURVEY

HEDGE FUND

Upping the algo ante

The arrival of MiFID II has shaken up capital markets and algorithmic trading has been no exception to this trend. The 2018 algo survey provides a glimpse into where hedge funds are setting their priorities in the early days of the new regulatory landscape.

Hedge funds have shown far higher levels of expectations from their algo providers in 2018 as the realities of the new electronic trading environment under MiFID II bed in. Hedge funds were asked to rate their algo providers across a series of metrics and capabilities within the first few weeks of the new trading landscape under the MiFID II regulatory regime.

Although these may be early days in the grander scheme of the MiFID II era, the results of this year's survey indicate that hedge funds are already targeting key areas of algo functionality for review which could go some way to informing strategies and provider relationships further down the road.

"As with their long-only counterparts, hedge funds have shown far higher levels of expectations from their algo providers in 2018 as the realities of the new electronic trading environment bed in."

The scores metered out by hedge funds in Figure 1 show both this and last year's ratings for algorithm performance across 14 different categories and it's clear to see that heightened expectations are already making an impression on how algo providers are viewed on the buy-side. The overall score for algo performance this year was 5.47, which, while a respectable score in the face of a changing trading landscape, was still lower than last year's average of 5.68.

There were decreased year-on-year scores in 12 of the 14 performance categories reviewed, with the only increase seen in the execution consulting category (up from 5.35 to 5.59), which is to be expected given the sell-side's intense focus on this attribute in the run-up to, and hopefully beyond, the introduction of MiFID II. As was the case in the long-only section of this year's algo survey, the highest score of any category was awarded for customer support, with a rating of 5.71, although this represented a 0.29 decrease year-on-year, so there is still work to do in this space for algo providers according to their hedge fund clients.

Elsewhere there were decent scores in the anonymity (5.72), ease of use (5.76), dark pool access (5.6) and smart order routing capabilities (5.57) categories, with the latter facet recording a consistent year-on-year rating from hedge fund respondents. The most significant areas where algo providers require improvement according to this year's hedge fund respondents, were in the crossing (5.07), price improvement (5.22) and customisation (5.23) categories. The results suggest that hedge funds are

Figure 1: Rating of algorithm performance

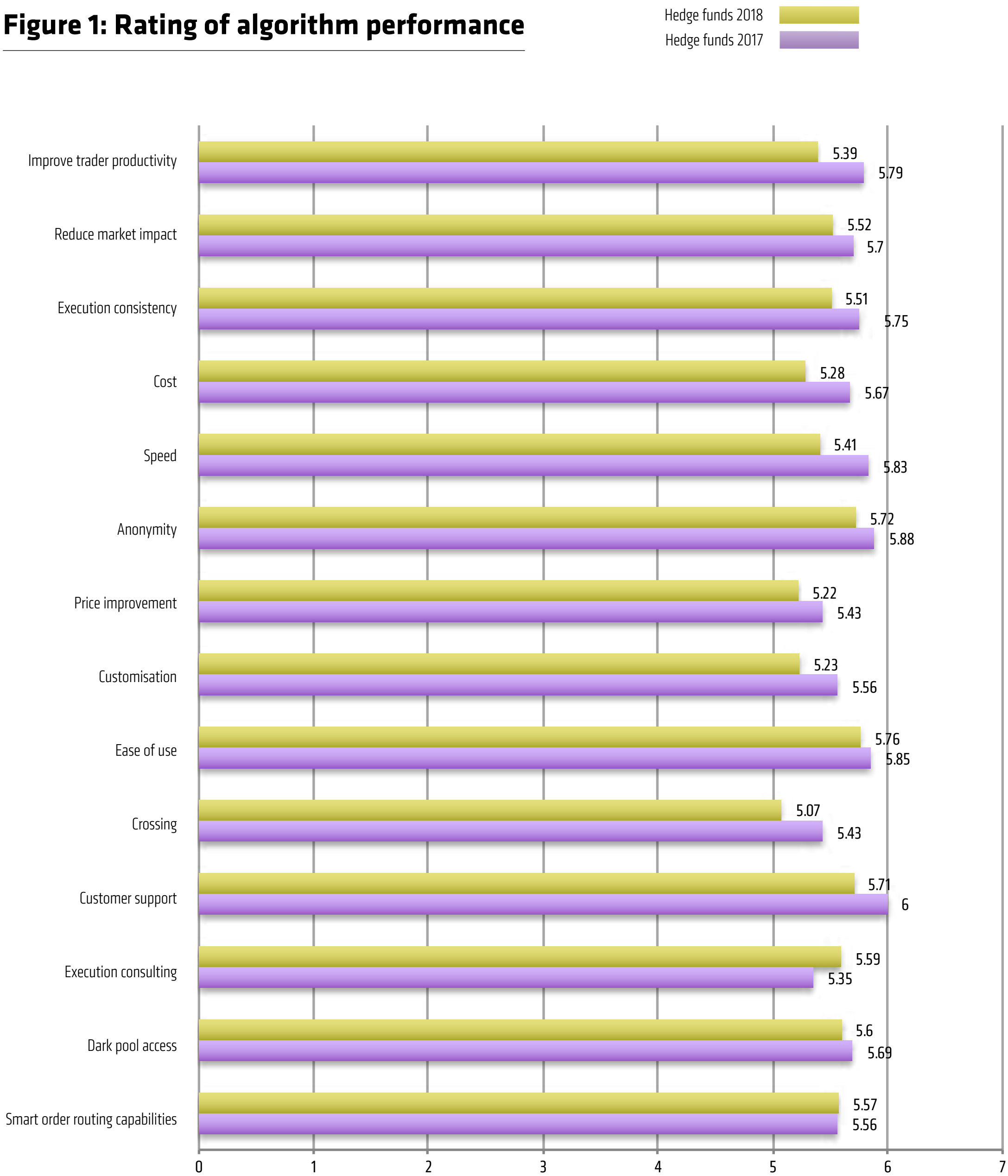


Figure 2: Reasons for using algorithms (% of responses)

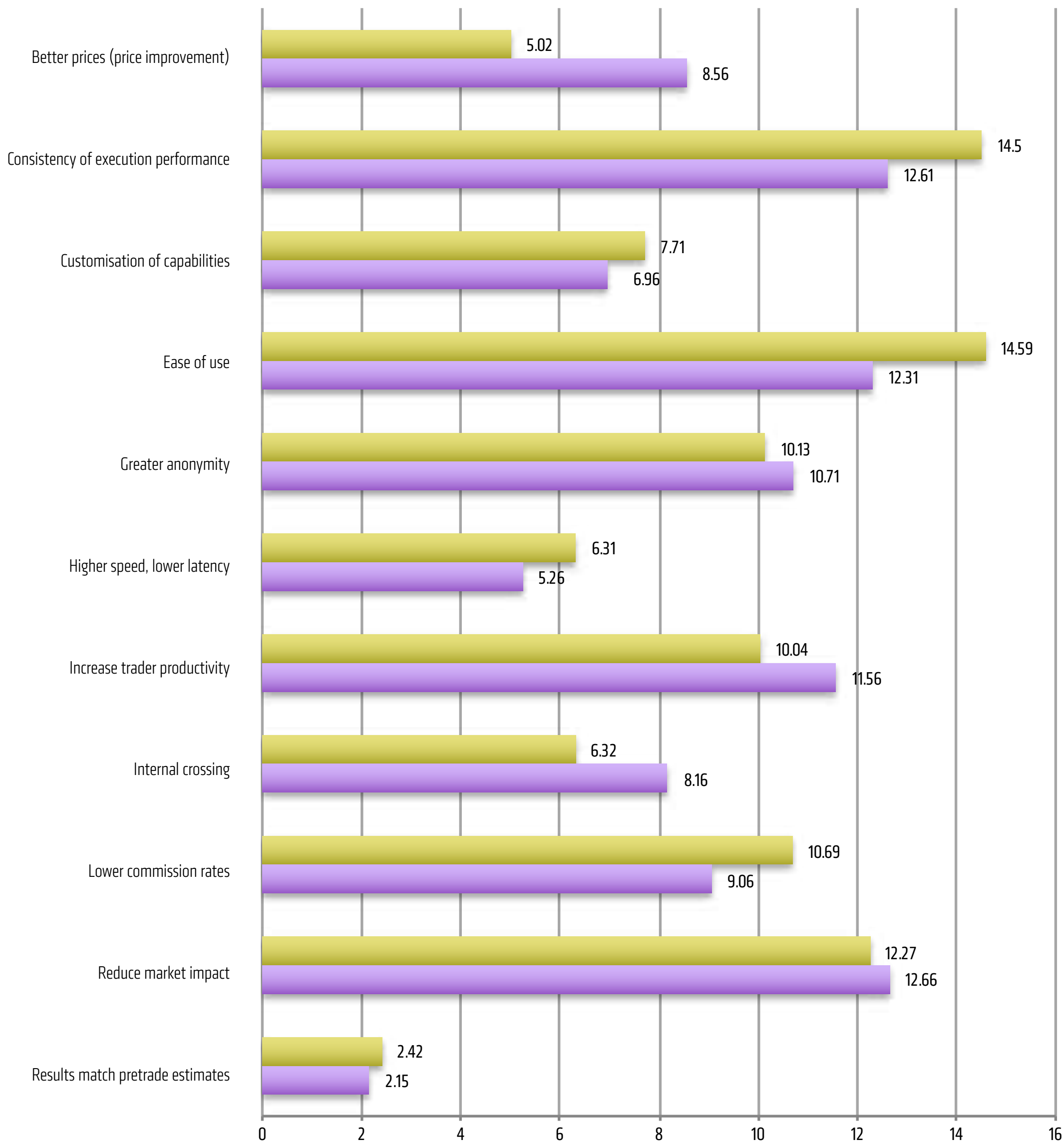
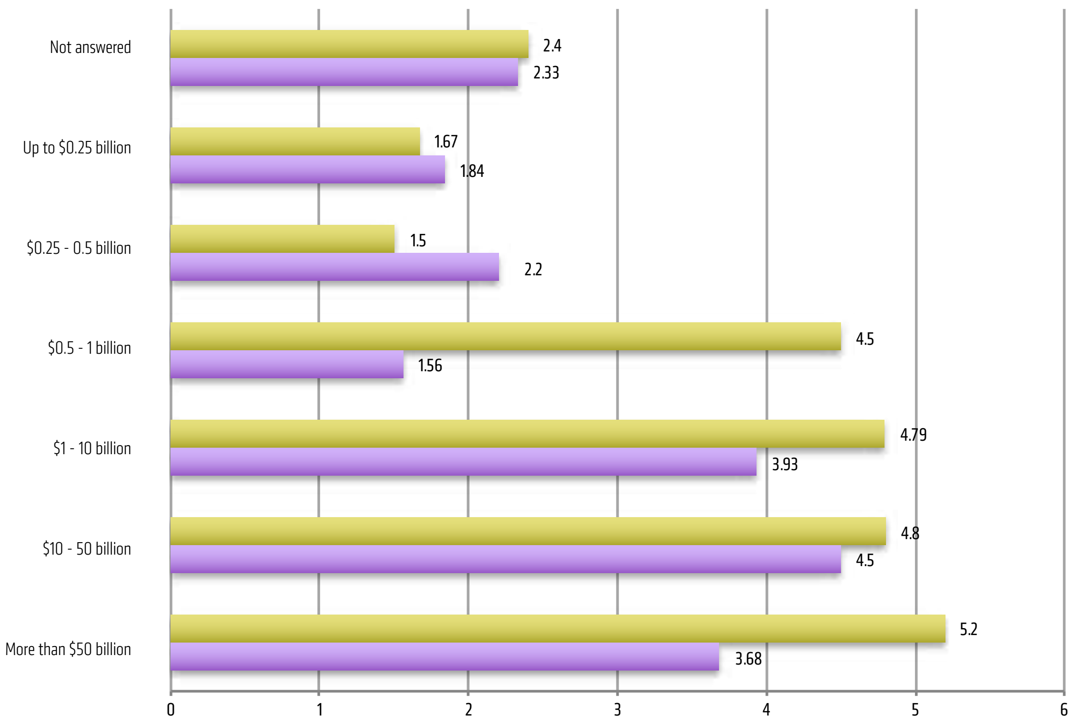


Figure 3: Average number of providers used by AUM



placing a high emphasis on being able to trade via algos in a simple, flexible manner, particularly for off-exchange trading.

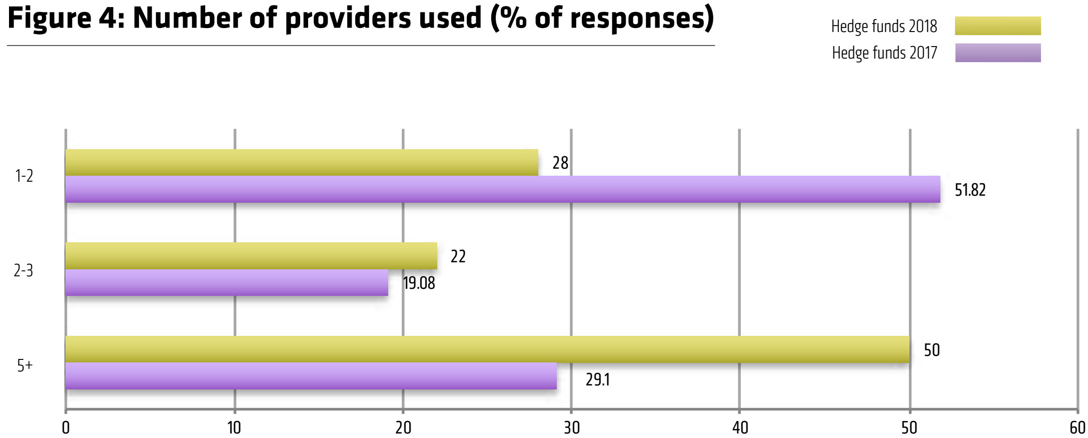
"This year hedge funds seem to have shifted their strategies in favour of algo trading, with a significantly higher proportion of respondents indicating that more value has been traded using algos."

Consistent simplicity

A desire for reliability and simplicity from hedge funds was also evident in Figure 2, which displays respondent's various collective reasons for using algos. This trend was also evident among long-only firms, where, in a post-MiFID II environment, buy-side firms are less concerned with getting better prices from their algo trading – one of the most significant year-on-year decreases among hedge funds – with around 5% of respondents using algos for price improvement.

The most popular reasons for adopting algos among hedge funds were consistency of execution performance (14.5%), ease of use (14.59%) and reducing market

Figure 4: Number of providers used (% of responses)



impact (12.27%). There were marginal year-on-year increases for hedge funds using algos to achieve lower commission rates or higher speed/lower latency, but similarly to decreases in improving trader productivity or internal crossing, these levels have stayed relatively consistent since last year. While greater customisation was mentioned often by individual hedge fund respondents as reasons for seeking out new algo providers, overall there was little change in when firms cited this as a main reason to trade via algorithms.

Long-only firms displayed a greater appetite for taking on more relationships with more algo providers, with firms managing more than $0.25 billion all adopting multiple providers this year. The same was largely true of hedge funds, with only those in the smaller end of the assets under management (AuM) range scaling back the number of providers they used over the last year, particularly those managing between $0.25-0.5 billion of assets reducing the average number of providers to 1.5.

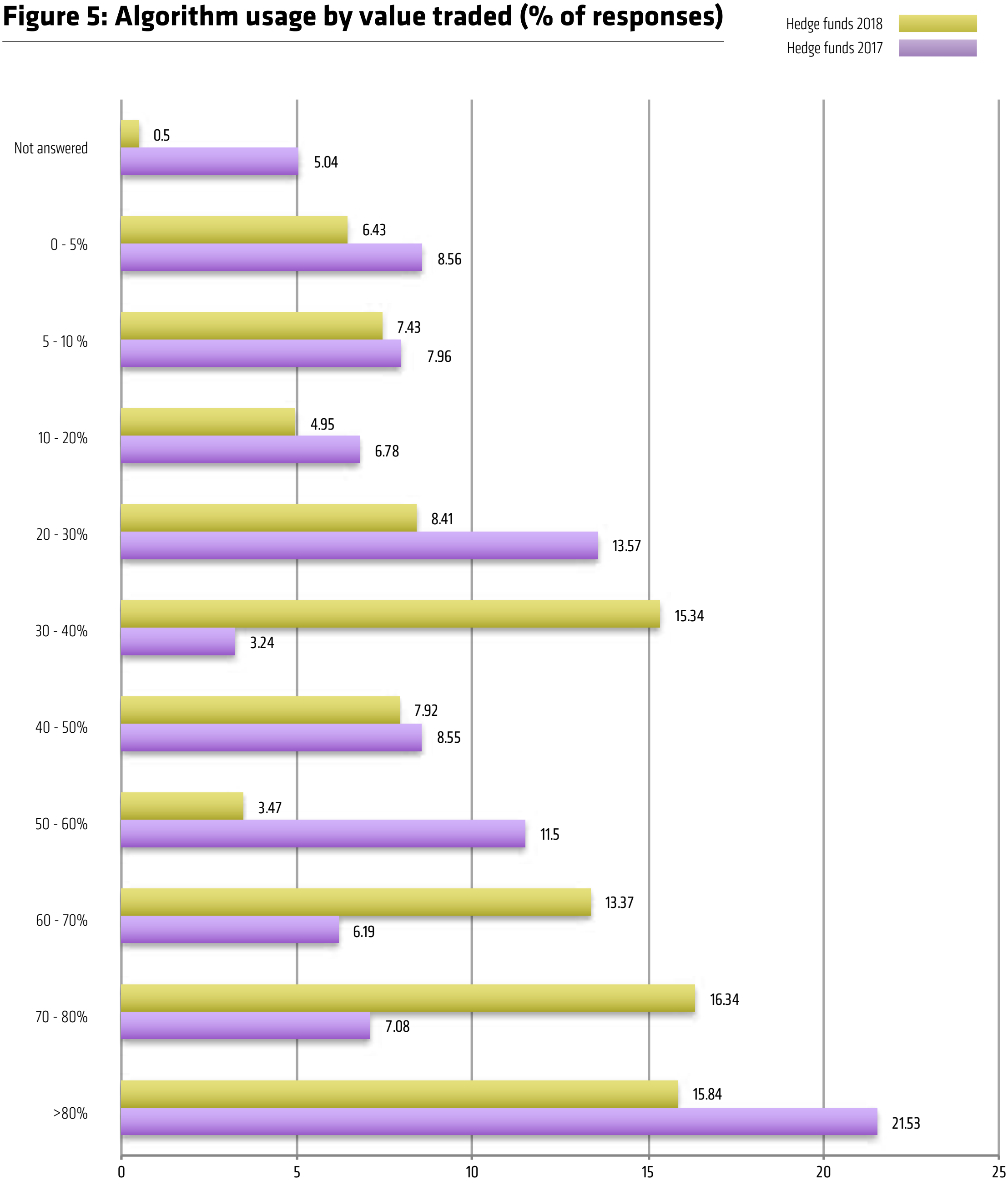
Mid-sized hedge funds however, displayed much more willingness to engage with a host of algo providers over the course of the year, with the average number of relationships increasing from 1.56 to 4.5. Clearly mid-sized asset managers are taking advantage of the competition in this space to review their options in the new regulatory-heavy environment as a competitive differentiator. On the largest end of the scale, hedge funds with over $50 billion of AuM also increased the number of algo providers they used with an average of 5.2, up from 3.68 in last year's survey.

Figure 4 lends more credence to these trends, showing that half of all hedge fund respondents for this year's survey now utilise, on average, five or more algo providers each, while one-quarter either use one-two or three-four providers. This represents a huge shift from last year's survey which found that half of respondents were using between one and two algo providers, with just over one-quarter using five or more.

Those firms with the means to implement more algos may, for now,

"Those firms with the means to implement more algos may, for now, merely be testing the waters and shopping around for the best functionality before settling on long-term strategic relationships with select providers in future."

Figure 5: Algorithm usage by value traded (% of responses)



> **"Trading in the dark has also been a hot topic within the context of the new regulations and its importance is clearly being recognised."**

merely be testing the waters and shopping around for the best functionality before settling on long-term strategic relationships with select providers in future, but it will be interesting to see what the results in 2019's version of the survey show.

Shifting favour

In terms of how much hedge funds have been using algos over the past year, there were some interesting changes regarding how much value was traded in this manner, as shown in Figure 5. Last year showed hedge funds were more likely to predominantly use algos for their trading strategies – over 20% of respondents said more than 80% of value traded was via algo – or for more specialised purposes with around 20-30% of value traded via algo.

This year, hedge funds seem to have shifted their strategies in favour of algo trading, with a significantly higher proportion of respondents indicating that more value has been traded using algos. Just under half of hedge fund respondents said algo trading represents over 60% of value traded, while even the more modest range from last year increased, with over 15% of respondents saying 30-40% of value traded was conducted via algo.

Clearly the increasing importance of easy-to-use and consistent algos is driving hedge funds to use this method for more of its trading activity, although this may again come back to firms adopting multiple algos from different providers in the short-term before reducing the volume of those relationships.

When it comes to which types of algos hedge funds are choosing to use within their trading strategies, this year's survey showed a similar attitude to long-only firms, displayed in Figure 6, whereby a move away from dark liquidity seeking algos was the most significant trends. In last year's survey over 70% of hedge fund respondents said they used these types of algos and that proportion fell to around 58% this year, while there were also significant decreases in firms using participation based and implementation shortfall (both basket and single stock) algos, whereas TWAP and VWAP algos saw relatively consistent usage. The increase in using algos under the "Other" category may indicate that firms are embracing new algo types

MEASURING FUNCTIONAL CAPABILITIES

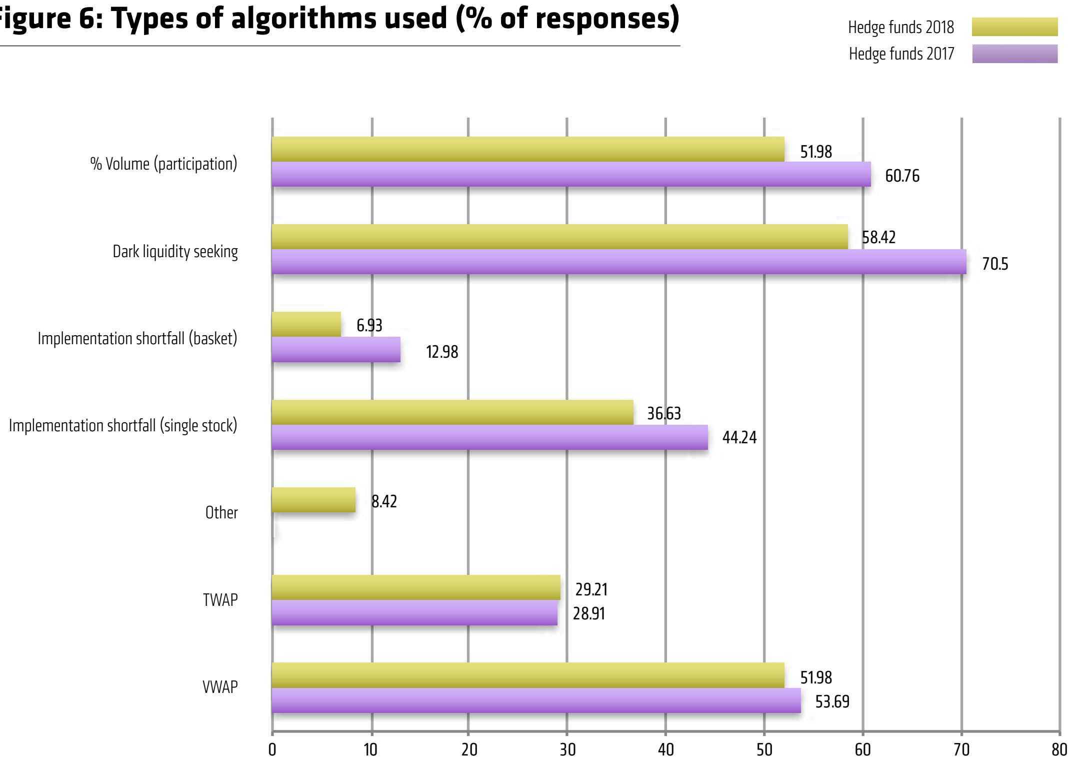
Survey respondents (both long-only and hedge funds) were asked to give a rating for each algorithm provider on a numerical scale from 1.0 (very weak) to 7.0 (excellent), covering 14 functional criteria. In general, 5.0 is the 'default' score of respondents. In total, more than 30 providers received responses and the leading banks obtained dozens of evaluations, yielding thousands of data points for analysis. Only the evaluations from clients who indicated they that they were engaged in managing long-only firms or hedge funds have been used to compile the provider profiles and overall market review information.

Each evaluation was weighted according to three characteristics of each respondent: the value of assets under management; the proportion of business done using algorithms; and the number of different providers being used. In this way the evaluations of the largest and broadest users of algorithms were weighted at up to three times the weight of the smallest and least experienced respondent.

Due to the changing market conditions as a direct result of the introduction of MiFID II, the researchers decided to reinstate short profiles of the leading providers, which were not included in the 2017 edition of the survey. Each profile outlines their share of responses, including a comparison with 2017 and the overall survey outcomes.

Finally, it should be noted that responses provided by affiliated entities are ignored. A few other responses where the respondent could not be properly verified were also excluded. We hope that readers find this approach both informative and useful as they assess different capabilities in the future.

Figure 6: Types of algorithms used (% of responses)



coming to market, although hedge fund respondents were reticent to provide details on what sort of algos these may be.

Ultimately there are some overlaps between long-only and hedge fund algorithmic trading during the nascent stages of MiFID II; there is an increasing appetite for algos that are consistent and simple to use, and hedge funds in particularly seem to have grown far more confident in using automated trading strategies for higher levels of value than they have in the past.

Whether hedge funds continue to engage with as many algo providers going forward remains to be seen, but the onus is now firmly placed on the sell-side to outperform and meet the increasing expectations of their clients in what will surely be an ongoing evolution to the markets, as life under MiFID II becomes less about regulatory compliance and more about getting the best returns possible.

The TRADE would like to thank all of the buy- and sell-side firms that took part in this year's survey. As always, we encourage as many firms as possible to take part as possible and to get their clients involved. In the autumn 2018 edition of The TRADE we will publish the results of this year's Execution Management System (EMS) Survey.

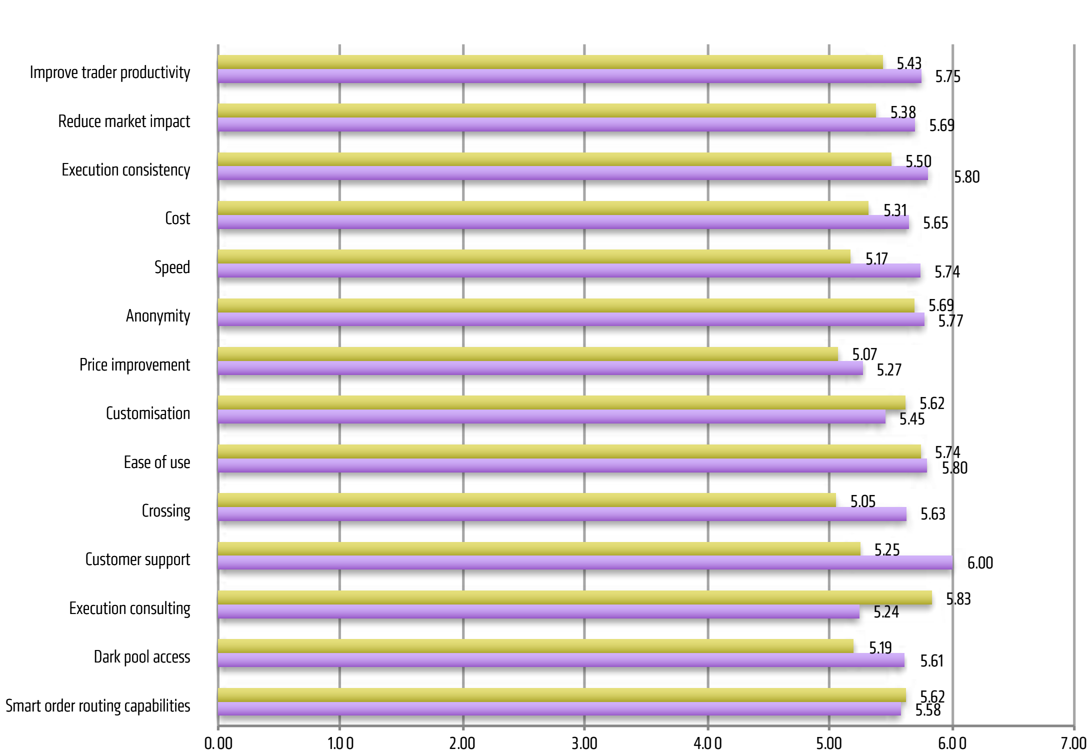
Bank of America Merrill Lynch

Bank of America Merrill Lynch (BAML) drew the second-highest percentage of hedge fund respondents within this year's survey, with only Kepler Cheuvreux receiving more responses. BAML's percentage of the total hedge fund respondents, was consistent with its percentage of responses in last year's survey. Just under half of these responses were from very large clients managing more than $50 billion of assets, with around one quarter from the $10-50 billion of assets under management bracket.

The majority of respondents said their usage of BAML algos increased year-on-year, with just under one quarter recording consistent usage and one respondent indicating that usage had declined. One-third of respondents said they are considering adopting algos from other providers in the future, with optimised LIS interaction, mid-touch service, SI routing selection and innovative liquidity listed as desired algo features.

While BAML did record decreasing scores in nine of the 14 categories ranked by respondents, these were in-line with the overall survey averages. The bank saw the most significant drop in rankings in the speed, crossing and dark pool access, however the most concerning will be a drop in its customer support rating, which fell from a score of 6 in 2017 to 5.25 in this year's survey. BAML received marginally increased ratings for its customisation and smart order routing capabilities this year, with the largest increase coming for its execution consulting, which was scored 5.83 by hedge fund respondents.

RATINGS FOR ALGORITHM PERFORMANCE



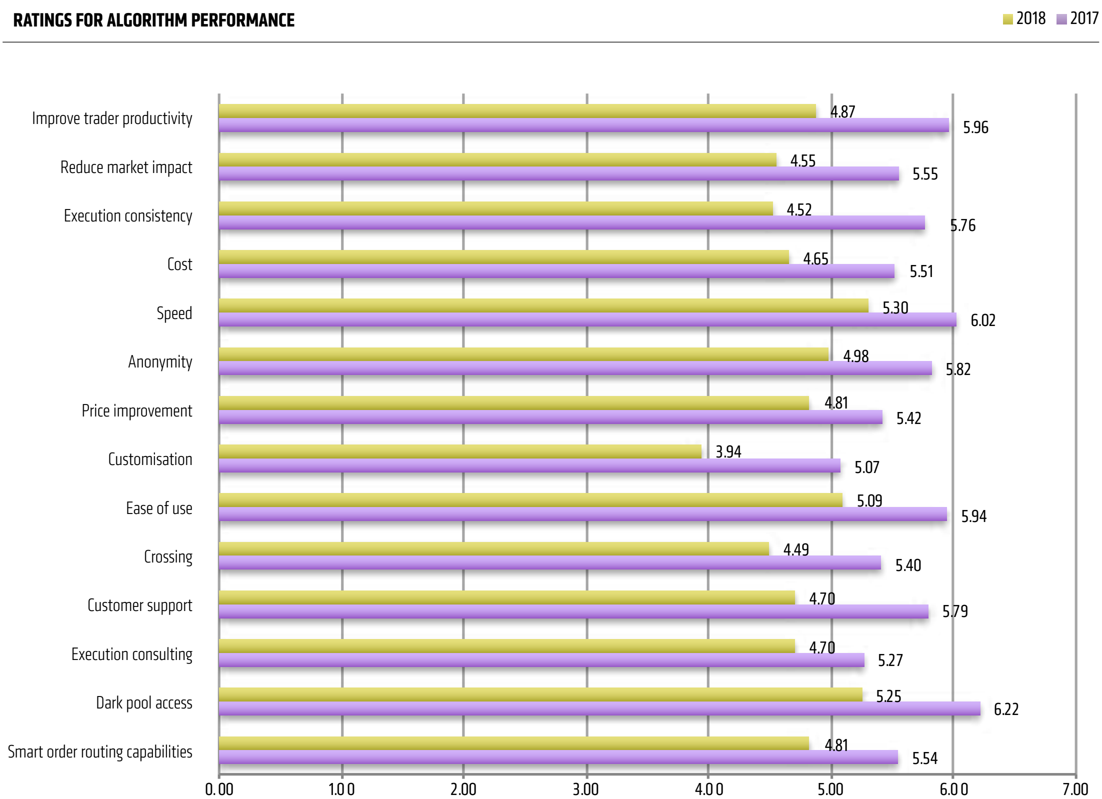
Barclays

Barclays saw a slight decrease in the percentages of responses from hedge fund firms for this year's survey, with the third-lowest percentage of responses among the algo providers profiled, ahead of only ITG and Bloomberg. Two-thirds of Barclays respondents were small-to-mid sized, managing assets of $1-10 billion, with one firm from the more than $50 billion bracket. Respondents ranged from equities-only firms to those that were also trading foreign exchange, fixed income and listed derivatives via algo.

Half of hedge funds respondents indicated that use of Barclays algos had increased over the past year. Only one respondent said they were looking at adopting algos from providers other than Barclays, with greater depth of commentary and SI routing selection highlighted as desired features. Bloomberg was the EMS provider of choice for Barclays' respondents, with half of respondents using the EMSX system.

Barclays recorded a score of less than 5 in all but three of the categories reviewed by respondents in this year's survey, with a year-on-year decrease across all categories. The most significant decreases came in the improving trader productivity, reducing market impact, execution consistency and customer support categories, which all dropped by at least 1 score point in this year's survey. However, of more concern will be significant score drops in areas where Barclays performed well last year; dark pool access and speed both dropped below a score of 6 this year, while customisation fell to below a score of 4.

RATINGS FOR ALGORITHM PERFORMANCE



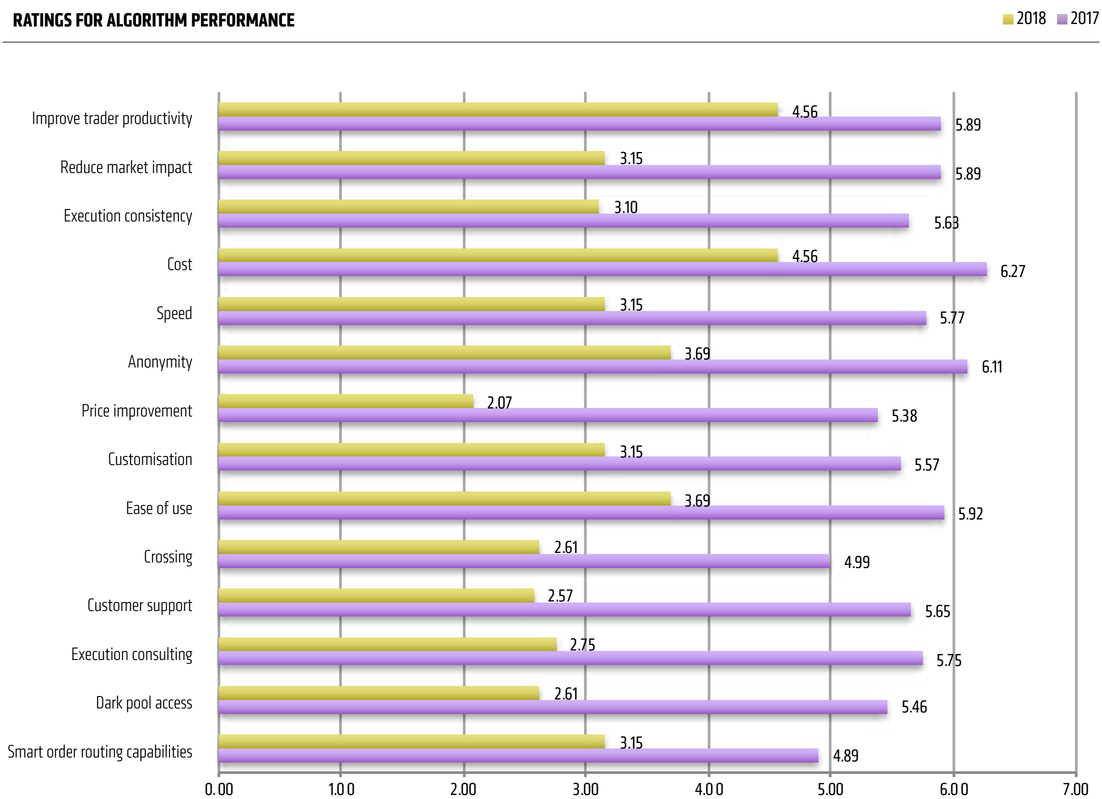
Bloomberg

Bloomberg will have every reason to be disappointed with its results in the hedge fund portion of this year's algo survey. The data specialist received the lowest percentage of responses of all providers profiled, although this was consistent with its percentage in last year's survey, as well as the lowest scores in all but one of the categories reviewed.

Two-thirds of respondents were from the $1-10 billion in assets under management range, with one from the larger end of the range with $10-50 billion in AuM. All of Bloomberg's hedge fund respondents said usage of algos had either stayed consistent or increased year-on-year, some as much as 25%. Despite the low scores handed to Bloomberg this year, only one-third of hedge fund respondents said they are looking to adopt algos from other providers, while all but one respondent use the firm as its EMS provider as well.

Hedge fund respondents were extremely critical of Bloomberg algos in this year's survey, ranking the firm bottom of the profiled providers in 11 of the 12 categories reviewed. While there were decreases in scoring for many providers this year, Bloomberg saw their scores drop below 4 in all but two categories. Respondents scored Bloomberg under 3 for crossing (2.61), customer support (2.57), execution consulting (2.75) and dark pool access (2.61), while its score for price improvement fell by 3.3 points year-on-year to 2.07 in this year's survey. The firm's highest score was 4.56, for both its improving trader performance and cost categories.

RATINGS FOR ALGORITHM PERFORMANCE

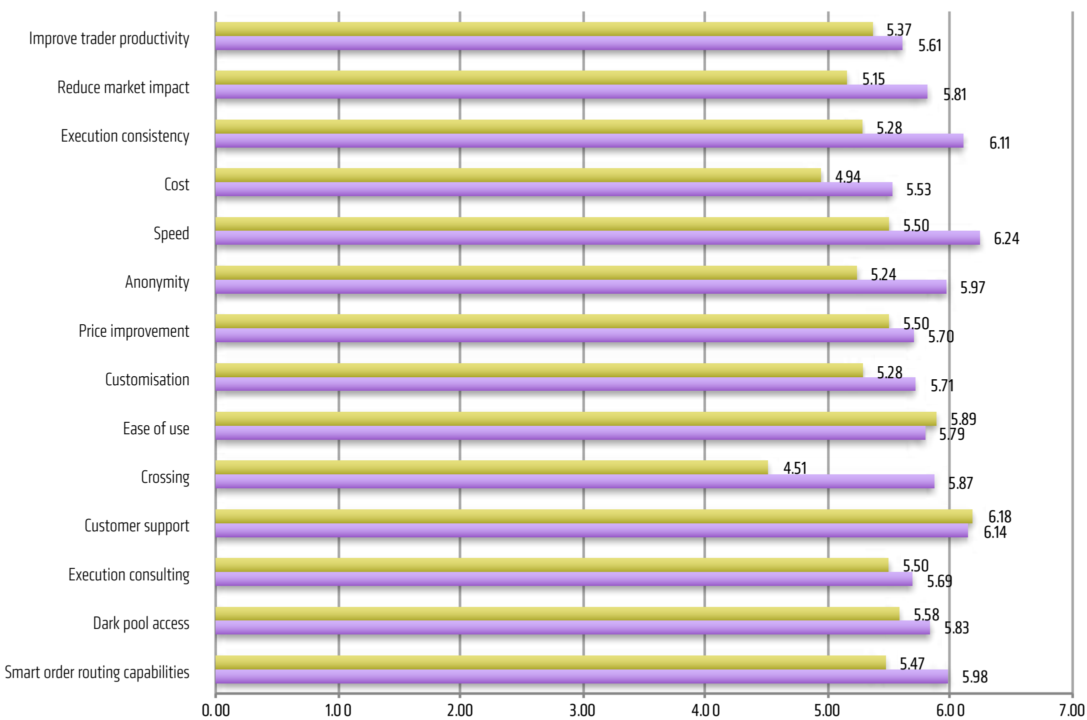


Citi

The watchword for Citi in this year's survey for hedge funds was consistency. The investment bank recorded the same percentage of respondents as in last year's survey and although it did receive mostly declining year-on-year scores, these were consistent with the larger trends on display. Respondents came from a range of AuM brackets, with one-third managing over $50 billion of assets, trading a variety of product classes via algorithms. There was an even split among Citi respondents that recorded an increase in algo usage over the past year and those that saw usage remain the same. Just under half of respondents said they were considering adopting algos from additional providers in future, particularly for FX portfolios. There was also an even spread of EMS providers used among Citi respondents, with Bloomberg, ITG, Fidessa and FlexTrade all in use.

Citi scored highest in the customer support category in this year's survey with a rating of 6.18, consistent with its score last year of 6.14, while the bank also performed well in the ease of use (5.89), dark pool access (5.58), speed, price improvement and execution consulting (all 5.49) categories. There were some significant score decreases for Citi this year however, with respondents rating its crossing capabilities at 4.51 – a decrease of 1.36 year-on-year – while there were also notable decreases in the execution consistency and anonymity categories (rated 5.49 and 5.23 respectively), there are clearly areas where the bank's offering can be improved.

RATINGS FOR ALGORITHM PERFORMANCE



Credit Suisse

Credit Suisse saw a slight fall in the percentage of its respondents for this year's hedge fund survey compared with the previous year. All of the bank's respondents managed at least $10 billion, with half counting more than $50 billion in AuM. Respondents were almost exclusively from the equities market, with a few also trading foreign exchange via algos. All but one of Credit Suisse respondents saw increased usage of the bank's algos over the past year, some as much as 25%, while the same level said that they use Credit Suisse algos exclusively. Half of respondents indicated that they were considering adopting algos from other providers however, with optimised LIS interaction, mid-point service and foreign exchange portfolios among the desired functionalities.

Respondents were largely consistent with their scoring of Credit Suisse algos compared to last year's results. There were year-on-year decreases in the improving trader productivity, reduce market impact, execution consistency, price improvement, ease of use, and crossing categories – although the latter did outperform the survey average. The most significant score decrease was in the customer support category, down from 5.75 to 5.12 this year. Credit Suisse saw a marked improvement in its score for anonymity from hedge fund respondents this year, which increased from 4.97 to 5.88 year-on-year, while its smart order routing capability and cost scores ranked the highest of any provider. The bank also outperformed the survey average in the speed, customisation and execution consulting categories.

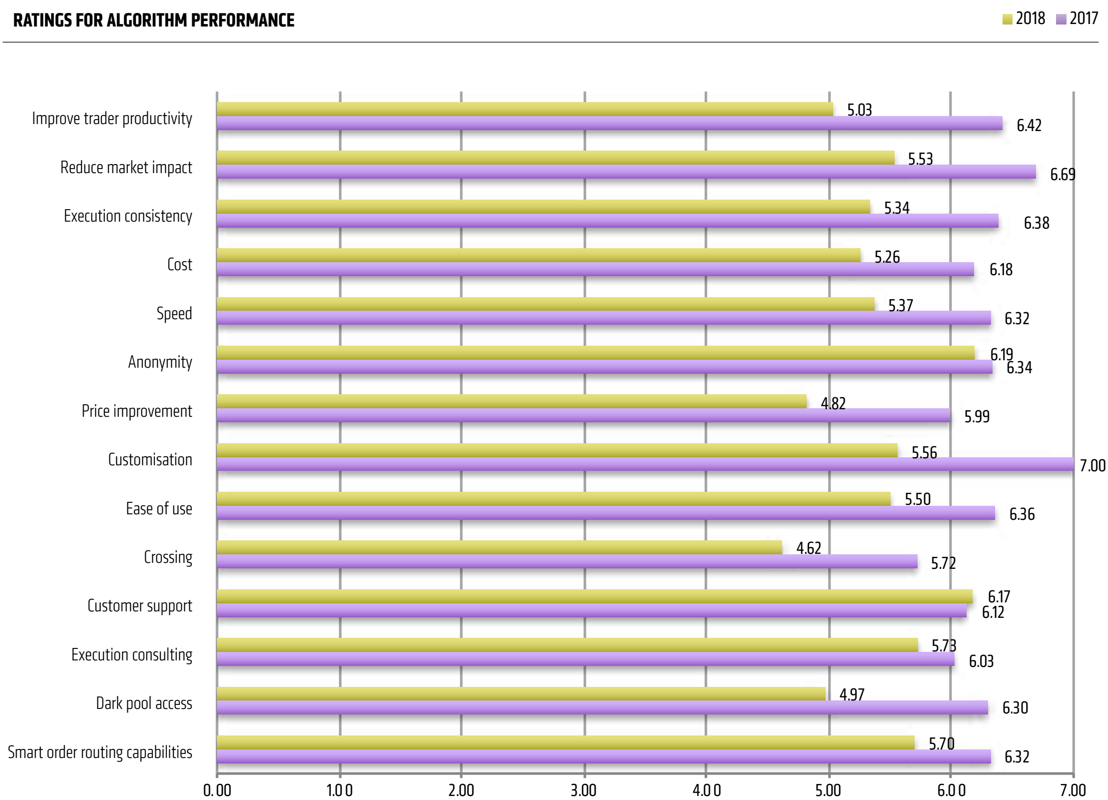
RATINGS FOR ALGORITHM PERFORMANCE

Exane BNP Paribas

Exane BNP Paribas attracted only half as many hedge fund respondents year-on-year, although this translated into a small decrease in the percentage of overall respondents for this year's survey. The majority of the Paris-based firm's respondents were from small-to-medium AuM brackets, with just one hedge fund managing more than $50 billion of assets. Over half of respondents indicated they had increased their usage of Exane BNP Paribas algos over the past year, while all respondents said that the firm was their only provider of trading algos. However, just under one-third of hedge fund respondents indicated that they were considering adopting algos from other providers.

Following an impressive showing in last year's survey, Exane BNP Paribas received far more critical scores from this year's hedge fund respondents, with decreased scores in all but one of the 14 categories reviewed. There were significant declines in the improving trader productivity, reducing market impact, price improvement, customisation, crossing and dark pool access categories compared to last year's ratings, however Exane BNP Paribas still outperformed the survey average in six of the 14 categories under review. The only category in which the firm received an increased year-on-year score was for its customer support, which saw a marginal uptick from 6.12 in 2017's survey to 6.17 this year. Exane BNP Paribas' highest score from hedge fund respondents was in the anonymity category, which was rated 6.19, a year-on-year decrease of 0.15.

RATINGS FOR ALGORITHM PERFORMANCE



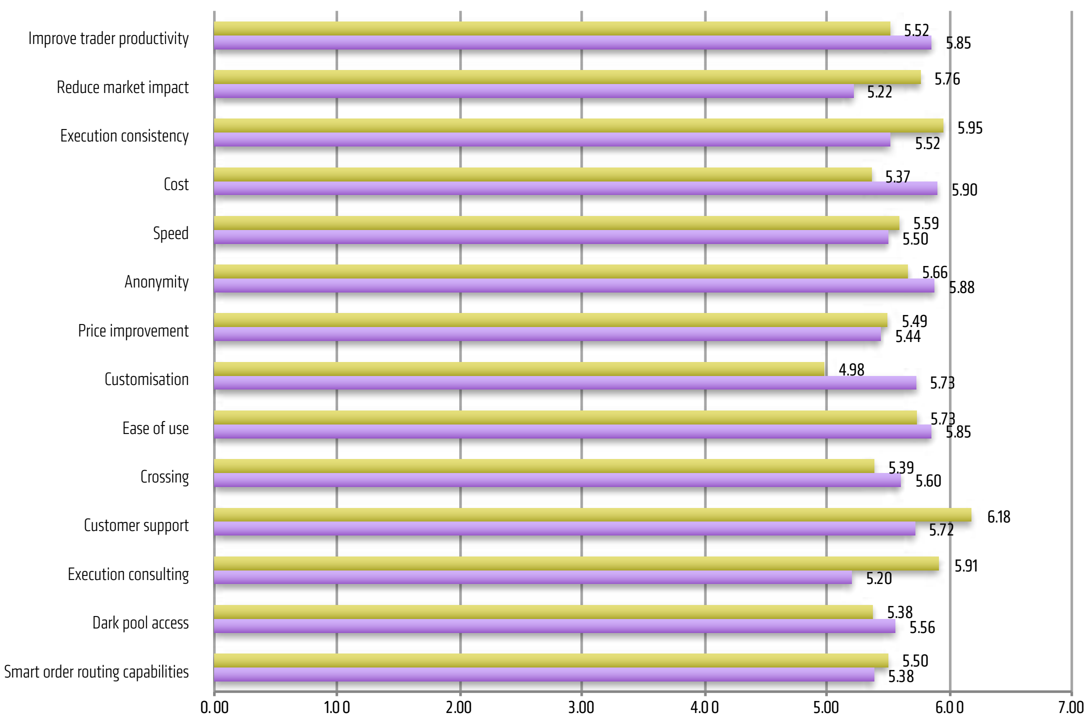
Goldman Sachs

Goldman Sachs saw a marked increase in the number of hedge fund respondents in this year's survey, with just under half of respondents managing more than $50 billion of assets, while there was an even spread of hedge funds from other AuM brackets accounting for the rest of the bank's respondents. Just over one-third of hedge funds respondents for Goldman Sachs traded listed derivatives and fixed income via algos. Over half of respondents recorded increased usage of the bank's algos year-on-year, while the rest said their usage had remained consistent over the period, and one-third of respondents said they are considering adopting algos from other providers. Bloomberg EMSX was the popular choice for execution management for Goldman Sachs respondents, while Eze Software, ITG and Portware were also mentioned.

Building on its solid showing in last year's hedge fund algo survey, Goldman Sachs outperformed the survey average in nine of the 14 categories on review this year. The bank saw increased year-on-year scores in the reducing market impact, execution consistency, speed, price improvement, customer support, execution consulting and smart order routing capability categories. A score of 6.17 in the customer support category was the highest achieved by Goldman Sachs in this year's survey, while the bank was most improved in the execution consulting category, which increased 0.71 year-on-year. The most significant decline in scoring for the bank was for its customisation capabilities, which dropped to a score of 4.97.

RATINGS FOR ALGORITHM PERFORMANCE

2018 2017

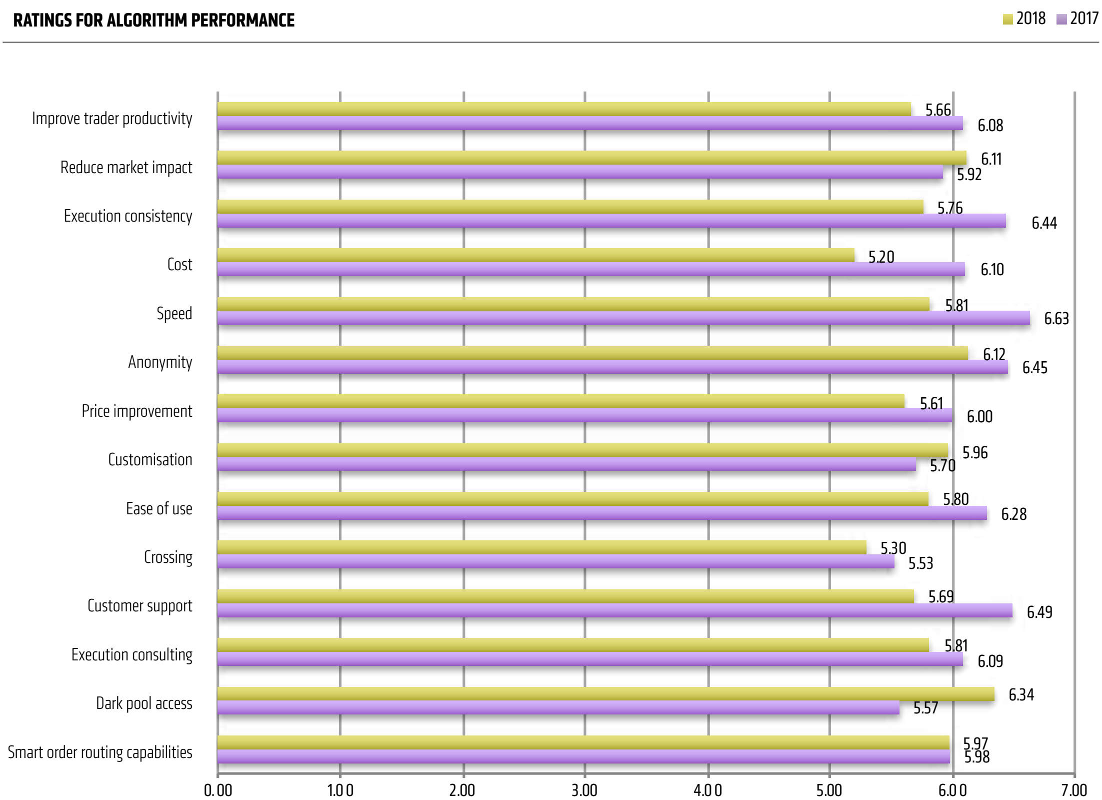


Instinet

Instinet will have a number of reasons to be satisfied with its showing in this year's hedge fund algo survey, although it was unable to surpass the already high scoring bar it set last year. The firm saw a slight increase in the percentage of responses from hedge funds this year, with over half of respondents managing more than $10 billion of assets, from a range of trading markets including listed derivatives, fixed income, foreign exchange and ETFs. All but one of Instinet's hedge fund respondents indicated that they have recorded increased usage of the firm's algos, as much as 25% year-on-year in some instances. Only one respondent said they were currently using algos from other providers, to fulfil a need for greater customisation options, while just under half of hedge fund respondents are reviewing adopting additional algos in future.

Similarly to many of the other providers profiled in this year's hedge fund survey, Instinet recorded mostly declining year-on-year scores from respondents, however these were largely in line with the overall survey averages, with the largest decreases in scores for Instinet came in the cost, speed and customer support categories. The firm outperformed the survey average in all but one category. Instinet scored over 6 for its dark pool access (6.34), reducing market impact (6.11) and anonymity (6.12) capabilities, while its customisation functionality drew the highest score of the category this year (5.96).

RATINGS FOR ALGORITHM PERFORMANCE

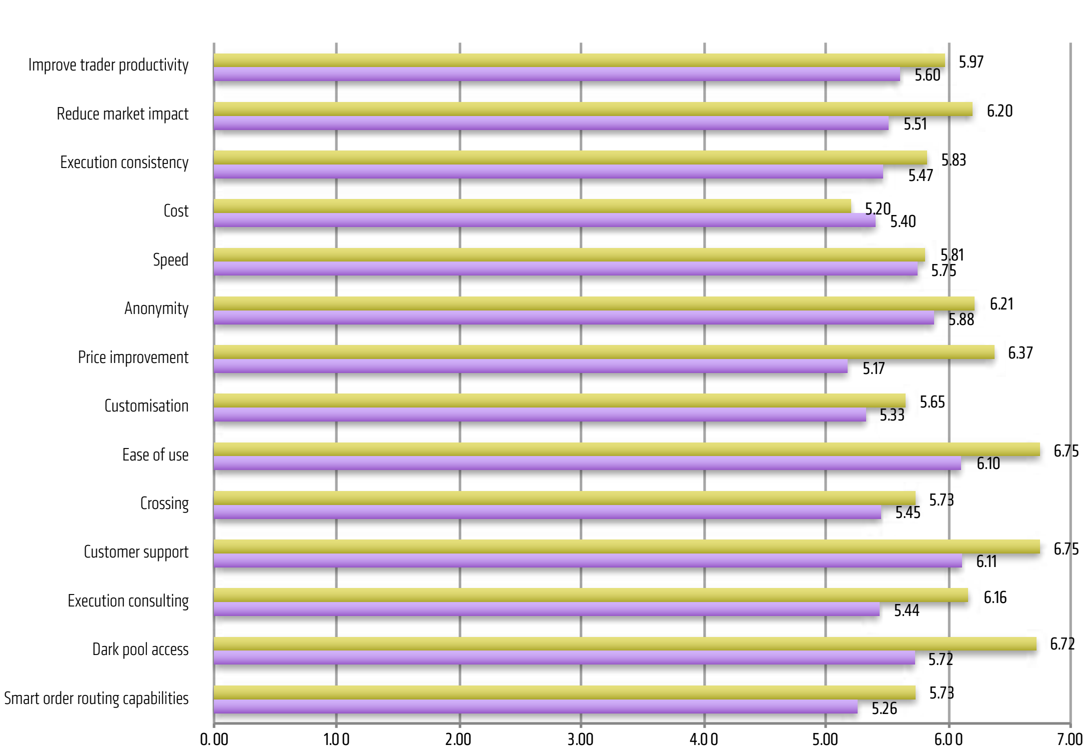


ITG

ITG was the standout performer in this year's hedge fund algo survey, outscoring the survey average in all but one category and garnering the highest score in eight of the 14 categories reviewed by respondents, despite recording a small decrease in percentage of hedge fund respondents year-on-year. Respondents were primarily from the small-to-mid-sized AuM bracket, while one-third manage more than $50 billion of assets. Half of ITG respondents have used algos to trade ETFs over the past year, while one-third have been active in listed derivatives, and two-thirds of respondents recorded increased usage of ITG algos year-on-year. One-third of respondents said they are considering using algos from other providers, with functionality for SI routing highlighted as desired.

One of the few providers to receive increased year-on-year scores from hedge funds for this year's survey for most of the categories reviewed, ITG saw only its cost score decrease this year, from 5.4 to 5.2. Respondents handed out scores of over 6 for ITG's reducing market impact, anonymity, price improvement, execution consulting, dark pool access and customer support, while the firm also beat the survey average in every category except cost. It's most significant increase came in the price improvement category, which rose from 5.17 last year to 6.37 in this year's edition of the survey, while almost attaining a perfect score in the customer support and ease of use categories, which both scored 6.75.

RATINGS FOR ALGORITHM PERFORMANCE

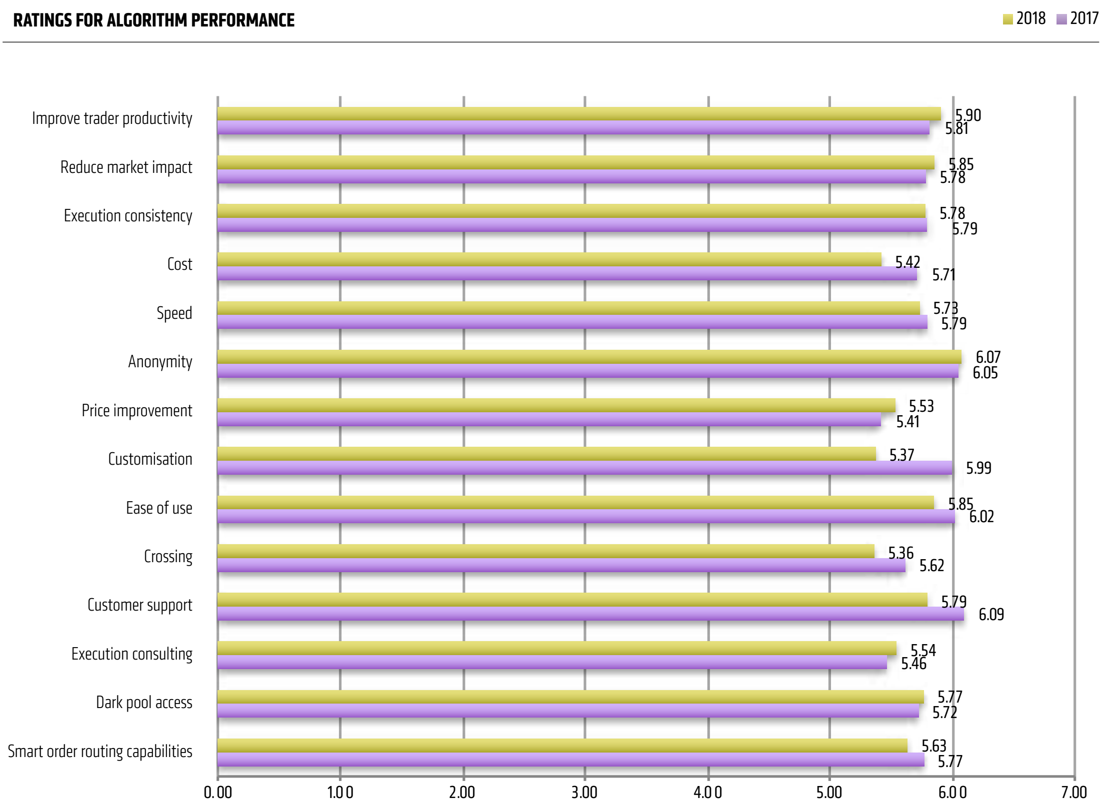


JP Morgan

JP Morgan saw a slight decrease in the percentage of responses from hedge funds in this year's survey. One-third of respondents for the bank manage more than $50 billion of assets, while the remainder call came from mid-sized AuM brackets. Around half hedge fund respondents indicated that they are using JP Morgan algos to also trade foreign exchange and listed derivatives. Two-thirds of respondents said that their usage of the bank's algos had increased year-on-year, some as much as 15%, while under one-quarter said they are considering adopting algos from other providers in future. Desired algo functionality included greater depth of information regarding fills and wider foreign exchange portfolio capabilities.

While JP Morgan has placed significant emphasis on its support and consulting services for algorithmic trading in the recent past, responses from its hedge fund users indicate mixed results. The bank saw a year-on-year increased score for its execution consulting capability, although its customer support rating fell over the period. However, JP Morgan outperformed the survey average for customer support, but not in execution consulting, the only category where it failed to do so. There were also year-on-year score increases in the improving trader productivity, reducing market impact, anonymity, price improvement and dark pool access categories for JP Morgan, although most of the bank's ratings stayed consistent with last year's results. The most significant decrease came in the customisation category, which dropped by 0.62 year-on-year.

RATINGS FOR ALGORITHM PERFORMANCE

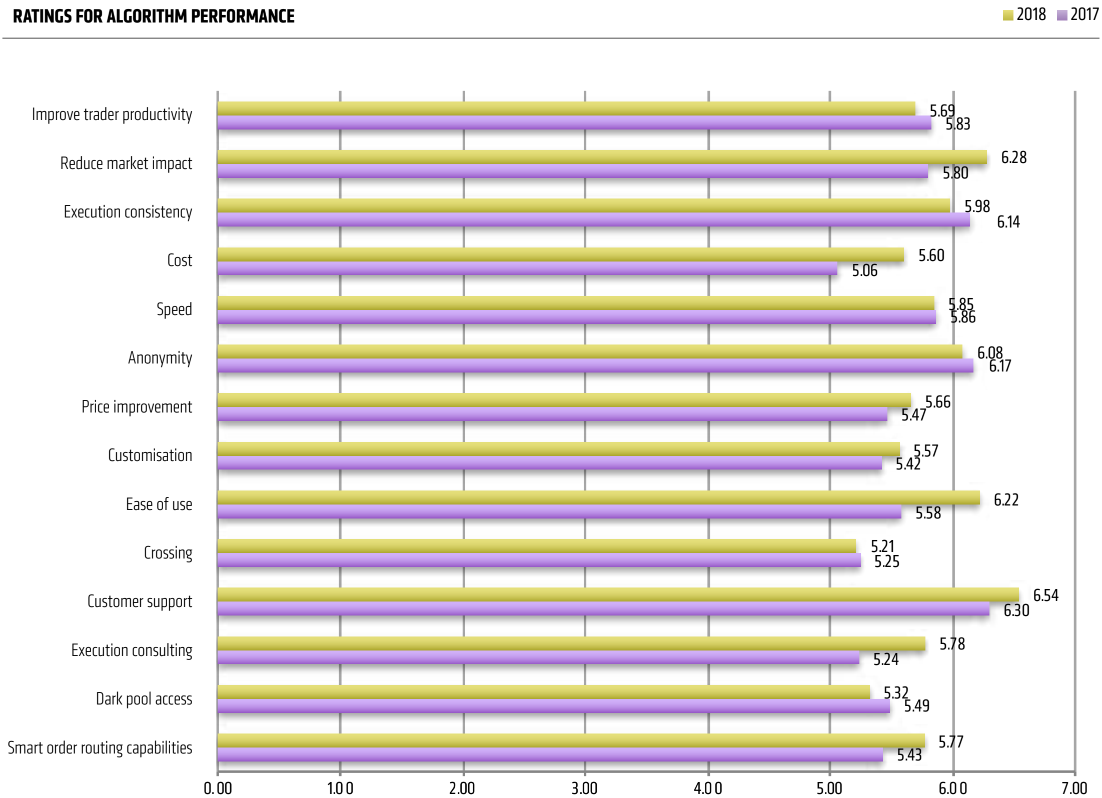


Kepler Cheuvreux

Kepler Cheuvreux recorded the largest year-on-year percentage increase in responses from hedge funds for this year's survey, as well as the most respondents by number. Respondents came from a range of AuM brackets, although primarily from small-to-medium sizes, with only two respondents managing more than $50 billion of assets. Over half of Kepler Cheuvreux respondents use algos to trade ETFs, while around one-quarter trade listed derivatives or fixed income via algo. Half of respondents said their usage of the firm's algos had increased during the previous year, while the remainder recorded consistent levels of usage. Only 12% of hedge fund respondents said they are looking to adopt algos from providers other than Kepler Chevreux, with the ability to easily change algo parameters and greater depth of insight highlighted as a desired functionality.

The firm will have a number of reasons to be happy with the scores awarded by this year's respondents. Kepler Cheuvreux outperformed the overall survey average in every category bar one – its score for its dark pool access capability was both its second-lowest from respondents and the highest year-on-year decrease. There were also year-on-year declines in the improving trader productivity, execution consistency, speed, anonymity and crossing categories, although these were in line with the wider survey average. Kepler Cheuvreux was awarded the highest scores of any provider in the reducing market impact (6.28), execution consistency (5.98) and speed categories (5.85), while scoring over 6 for ease of use, customer support and anonymity.

RATINGS FOR ALGORITHM PERFORMANCE

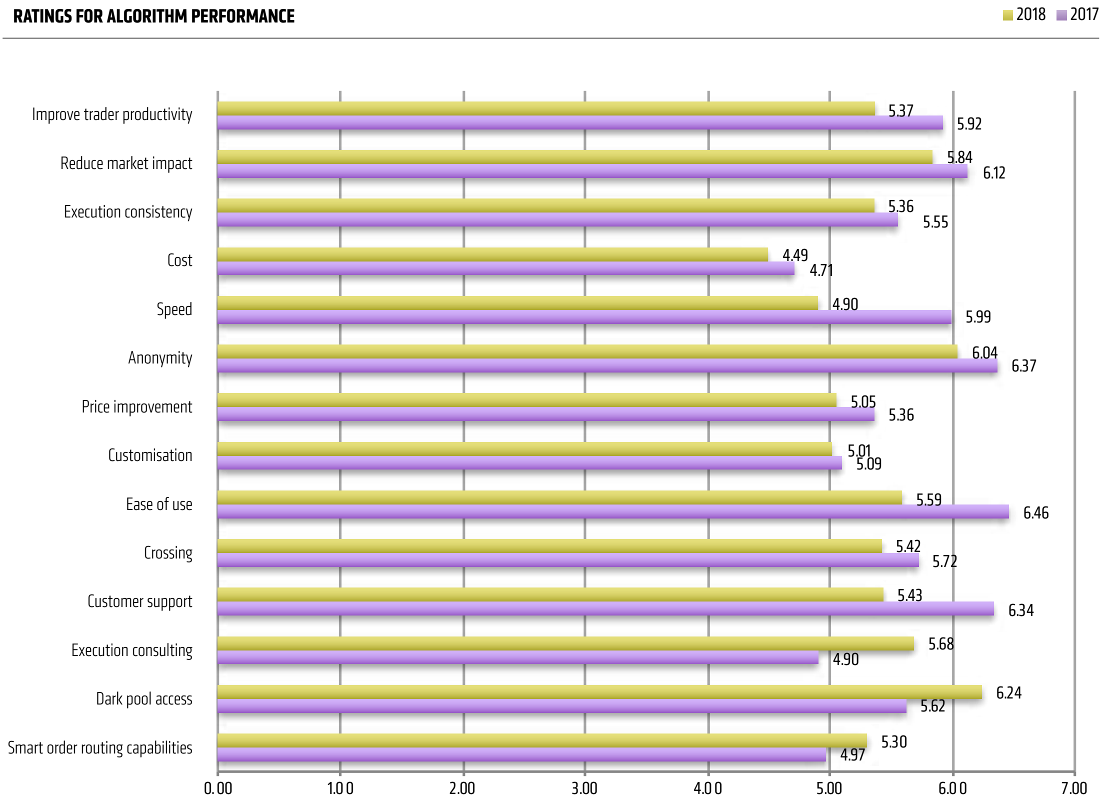


Liquidnet

Liquidnet saw a slight increase in the percentage of hedge fund responses it received in this year's survey. Respondents were primarily from small-to-medium sized AuM brackets, with only one respondent managing more than $50 billion of assets. All but two of Liquidnet's hedge fund respondents indicated that they have increased usage of the firm's algos over the past year, with no firm noting a decrease in usage. Around one-quarter of respondents said they are reviewing using algos from other providers, with systematic internaliser routing selection and optimised LIS interaction cited as desired functionalities. For execution management, Liquidnet's respondents cited systems from Bloomberg, ITG, Fidessa, Eze, Portware and Linedata, among others.

Liquidnet recorded decreased year-on-year scores from hedge funds in nine of the 14 categories reviewed in this year's survey. The firm recorded significant year-on-year decreases in the ease of use (down 0.87) and customer support (down 0.9) categories, while its lowest ranking came in the speed category with a score of 4.9, representing a year-on-year score decrease of 1.09. Liquidnet's most improved areas of performance were in the execution consulting (5.68) and dark pool access (6.24) categories, which increased by 0.78 and 0.62 year-on-year respectively. It also scored well in the anonymity category (6.04). Despite being unable to replicate the scores achieved in last year's survey, Liquidnet did outperform the survey average this year in the reducing market impact, anonymity, ease of use, crossing, execution consulting and dark pool access categories.

RATINGS FOR ALGORITHM PERFORMANCE

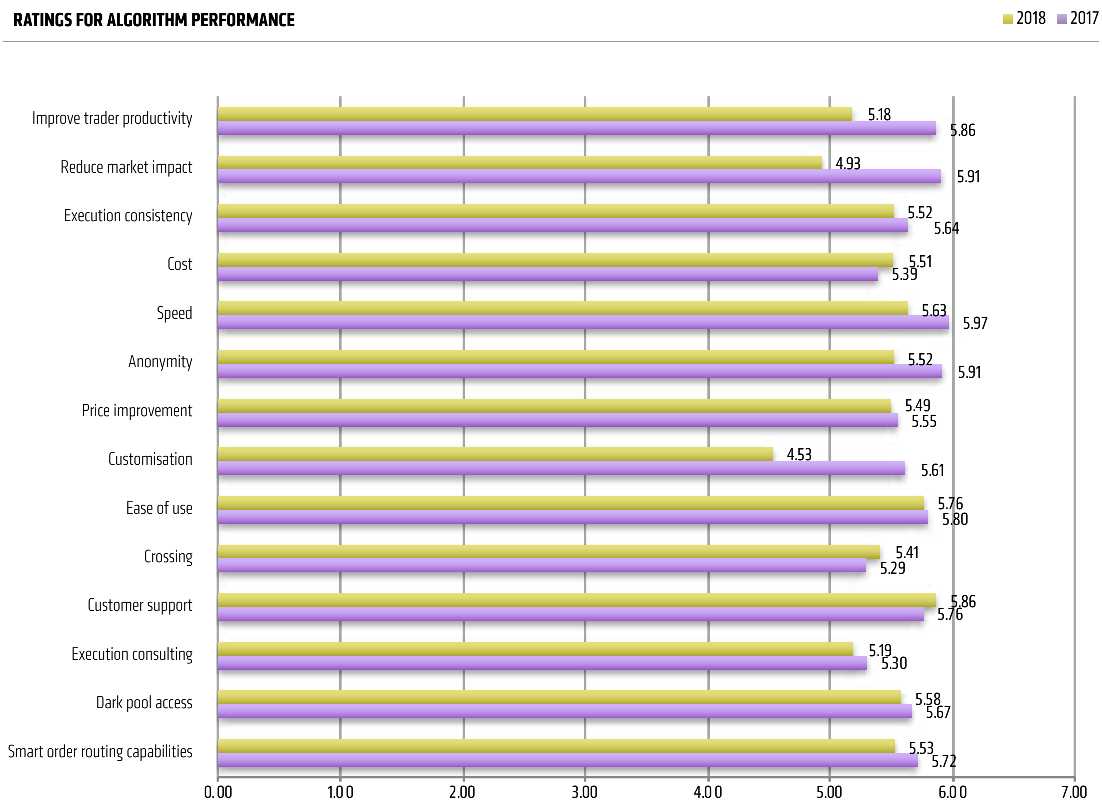


Morgan Stanley

Morgan Stanley attracted the third-highest level of responses to this year's hedge fund algo survey, representing a significant increase on its percentage of responses year-on-year. Over half of respondents manage more than $10 billion in assets, while the remainder were from mid-sized AuM brackets. Hedge fund respondents for Morgan Stanley were highly active in the listed derivatives and foreign exchange market via algos, while one-third also traded in the ETF space. Less than half of respondents indicated that their usage of Morgan Stanley algos had increased year-on-year, with the majority stating that usage remained at a consistent level. Only one-fifth of respondents said they are considering adopting algos from other providers.

While the majority of scores attributed to Morgan Stanley stayed at a consistent level in this year's survey, with some minor fluctuations both up and down, there were some areas of performance that will be of concern. Morgan Stanley saw decreasing year-on-year scores in the improving trader productivity (down 0.68), reducing market impact (down 0.98) and customisation (down 1.08) categories in particular, with the bank's lowest score coming in the latter category, where its customisation was ranked at 4.53. There were increased scores for Morgan Stanley's cost, crossing, and ease of use capabilities, while its' highest score came in the customer support category (5.86). The bank was able to outperform the overall survey average in half of the categories under review in this year's survey.

RATINGS FOR ALGORITHM PERFORMANCE



UBS

UBS saw a marked decrease in the percentage of response it garnered for this year's hedge fund survey. There was an even split of respondents from different AuM brackets for UBS, with one-third of firms managing either $10-50 billion or more than $50 billion of assets. Over two-thirds of hedge fund respondents recorded increased usage of UBS algos over the past year, as high as 15% in some cases, with the rest saying usage had remained at a consistent level. Only two respondents indicated that they were considering adopting algos from other providers, however optimised LIS interaction, greater depth of insight into fills and strategies, and a mid-touch service were all highlighted by respondents as desired functionalities.

UBS recorded decreasing year-on-year scores in 10 of the 14 categories, with the anonymity, ease of use, execution consulting and smart order routing capabilities the only categories to show improvement on last year's hedge fund algo survey results. UBS' highest score was awarded in the anonymity category, where it scored 6.02. The bank's most significant year-on-year decreases in scoring were in the improving trader productivity and price improvement categories, which declined 0.83 and 0.84 respectively compared to last year's results. Most of the bank's scores which were down on last year's results were in line with the wider survey trends, while UBS outperformed the overall survey average in half of the categories under review.

RATINGS FOR ALGORITHM PERFORMANCE