

THE
2023
**ALGORITHMIC
TRADING
SURVEY**

LONG-ONLY

With special analysis from
Aite-Novarica Group

AiteNovarica

Heightened volatility leaves buy-side demanding more from their algo providers

The long-only results of The TRADE's 2023 Algorithmic Trading Survey saw ratings decrease, marking an end to the past years of consistent increases. A frustrating and challenging year is reflected in the decrease in ratings, which left buy-traders expecting more.

Deep losses and market volatility continued throughout 2022 as investors shunned long-term assets due to concerns about inflation, recession and more. Last year marked the worst year for equities since 2008, punctuated by drops in valuation in nearly every sector with tech and consumer discretionary leading the way. Volatility as measured by the CBOE Volatility Index (VIX) also added to trading challenges. The average closing VIX was 25.6 in 2022 as compared to the prior five-year average of 18.4 which included the significant volatility around the pandemic in 2020. The onslaught wasn't limited to stocks however, as rising rates also caused bond prices to fall precipitously. The changes to market dynamics impacted asset managers across the board, forcing them to rapidly adjust positions and rethink

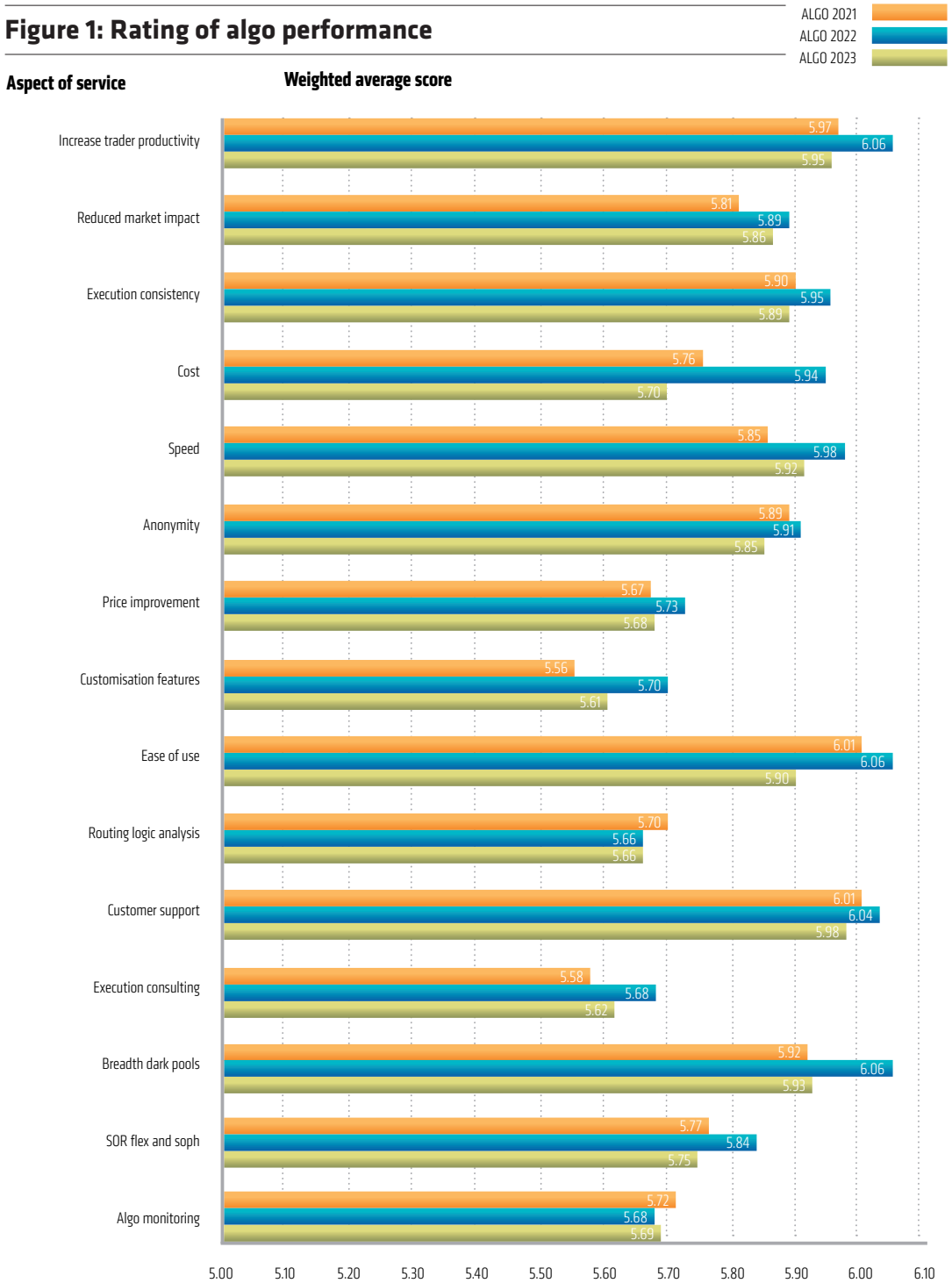
strategies, leaving everyone on the edge of their seat waiting to see what happens in 2023. These challenges flowed down to the trading desk making execution timing and quality all the more critical and making the results of this year's Algorithmic Trading Survey and the factors impacting the use, choice and perception of algo performance all the more timely.

Ratings of algorithmic trading providers from long-only respondents decreased in this year's survey, marking an end to the past few years of consistent increases. Survey results show users of algorithms provided an overall rating of 5.80 in 2023, a decrease from the 5.88 rating in 2022 and below the 2021 rating of 5.81. The most impactful features of algorithms identified in this year's survey differed slightly from 2022 and were identified as customer support, increased trader productivity,

breadth of dark pools, and speed (Figure 1). All but two categories, routing logic analysis and algo monitoring, experienced year-over-year rating decreases. The largest decreases were recorded in the categories of cost (-.24), ease of use (-.16), and breadth of dark pools (-.13), however it should be noted that despite this, ease of use and breadth of dark pools remained comfortably above the overall survey average of 5.80.

The reasoning behind some of the decreases in ratings could be due, at least in part, to the likely frustrating and challenging year that many firms faced. Additionally, when asked what features and capabilities they would like to see added, many of the responses mirrored those from prior years and remain a reflection of ongoing market evolution. Firms said they want increased pre-trade analytics and venue analysis. They want help

Figure 1: Rating of algo performance



with trading at close strategies as well as the ability to combine strategies for algorithms to adapt quickly as liquidity presents itself and performance fluctuates. They want increased customisation and monitoring capabilities. It's a tall order, but if the past is any indication, this set of providers is up to the challenge.

Respondents' reasons for using algorithms are presented in Figure 2 as a percentage of responses for years 2021-2023. The top reasons respondents claim to use algorithms have not changed in the last few years and despite all experiencing slight year-over-year decreases, just over 44% of all respondents still say their top four reasons for using algos remain ease of use, reduce market impact, increase trader productivity, and consistency of execution performance. Given recent market conditions, it's perhaps unsurprising that the categories with the largest increases in responses were data on venue/order routing logic and flexibility and sophistication of smart order routing. Firms are increasingly looking for sophisticated SOR that allow them to customise the functionality to their liking. When firms were asked in this year's survey what use they are making of SOR at present, responses ranged from those that said they do not use it at all to those that indicated they use it for 100% of their in-scope trades. A few respondents even went so far as to acknowledge they are not using the functionality as often as they should.

On the other side, the areas that saw the largest year-

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

Feature	2023	2022	2021
ease of use	▼ 12.18	12.25	12.04
reduce market impact	▼ 11.43	12.03	10.45
increase trader productivity	▼ 10.64	10.87	10.32
consistency of execution performance	▼ 10.02	10.74	10.19
flexibility and sophistication of smart order routing	▲ 8.14	7.35	7.24
greater anonymity	▼ 7.67	7.85	8.96
lower commission rates	▲ 6.95	6.77	8.69
better prices (price improvement)	▼ 6.94	7.94	6.68
higher speed lower latency	▼ 6.58	6.87	7.64
customisation capabilities	▲ 6.45	6.33	6.21
algo monitoring capabilities	▲ 6.29	5.67	5.30
data on venue/order routing logic or analysis	▲ 4.86	3.93	3.84
results match pretrade estimates	▲ 1.84	1.39	2.45

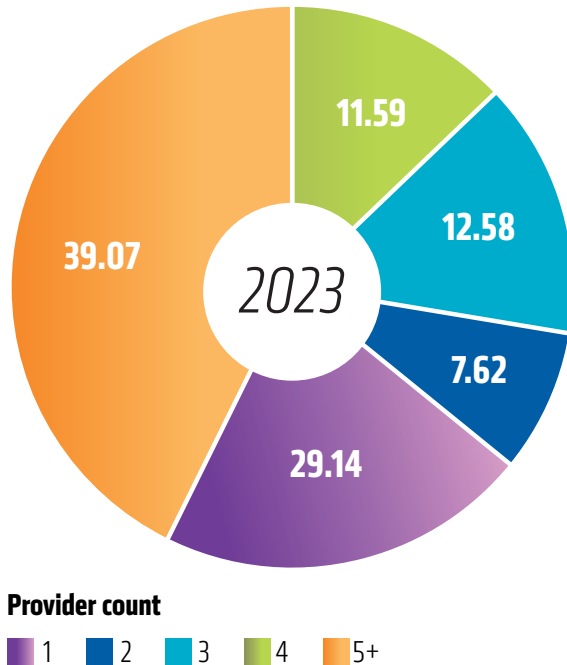
over-year decreases all shared a common theme: execution. They were price improvement, consistency of execution performance, and reduce market impact. It should be made clear however that these decreases were very slight, and the results do not indicate that these features are not as important to algorithm users anymore. It is that these features are ones that most users simply expect their broker algos to accomplish and this was a challenging task in a year of heightened volatility.

We continue to see a positive

correlation between a firm's AUM and the number of algo providers they use (Figure 3). In this year's survey, firms with more than US\$50 billion in AUM report using nearly five algo providers (4.99), an increase of .56 providers from last year, and although firms with \$10-\$50B report using slightly less algo providers this year (-.34), they still use on average over four. The largest year-over-year increase in the number of algo providers used came from firms in the \$.5-\$1B asset band, who reported an increase of 1.07 algo providers bringing their average to 2.9. This

Figure 3: Average number of providers used by AUM (USD billions)

AUM (billions USD)	2023	2022	2021
Up to 0.25	▼ 2.55	3.00	2.13
0.25-0.5	▲ 2.43	2.22	2.50
0.5 to 1	▲ 2.90	1.83	2.64
1 to 10	▲ 3.88	3.32	2.94
10 to 50	▼ 4.19	4.53	3.47
More than 50	▲ 4.99	4.43	3.89
Not Answered	▼ 3.28	3.51	2.93

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

was followed by an increase of .56 providers by firms with \$1-\$10B in AUM, who are now approaching the four-provider mark.

Whether or not firms continue to add additional algo providers to their mix remains to be seen, but recent trends show the average number will stay largely consistent. When asked if they were planning to make use of additional providers in the next 12 months, the vast majority of respondents answered that they were not. This isn't to say that algo usage is expected to decrease going forward. The current market environment as well as upcoming regulatory and market structure changes will likely lead firms to continue increasing the use of algorithms to trade in asset classes outside of just equities, namely

fixed income, and FX. Given the stickiness of the relationship between algo providers and their clients, the more likely scenario is that firms will look to their current providers to support their needs with additional capabilities and types of algorithms.

When AUM is removed from the equation, the number of providers used by long-only managers continues to show a barbell like distribution, with 68% of respondents either using five or more algo providers or just one (Figure 4). This is just a hair more than last year, but the barbell has gotten stronger in the last two years. In 2021 and 2020, the same distribution existed, but only captured roughly 61% of respondents. The explanation for this trend is multi-faceted.

Although the overall rating for algo performance dropped in this year's survey, it has generally increased over the past few years and there have been efforts to consolidate relationships on both sides. At the same time however, there is a desire to diversify vendor exposure and find solutions that fit the evolving needs of traders during challenging market conditions.

The distribution of algo usage by value traded in this year's survey was evenly distributed with around half of respondents saying they use algos to trade less than half of their trade value and those that use them to trade over half of their value (Figure 5). This is a decrease from last year, when 57% of respondents said they traded the majority of their value via algorithms but is in line with the results from 2021 (49.4%) and 2020 (49.2%). When looking at only the firms with more than US\$50 billion in AUM, the percentage of those that traded over 50% of their portfolio's value via algorithms is right in line with the overall survey results. However, the distribution within the greater than 50% bands shows a different picture. For firms with over \$50B in AUM, survey results showed an 18% decrease year-over-year in the percentage of respondents trading between 50-70% of their value, but an increase of roughly 8% among those trading over 70%. While one year does not make for a long-term trend, these results may be indicative of firms evaluating their trading approach to accessing liquidity.

Long-only managers were asked to select the types of

algorithms they used from their providers (Figure 6). In 2023, we see participants decreasing the use of nearly every type of algorithm, albeit very slight decreases, resulting in the distribution remaining almost identical to last year. Respondents continue to use algorithms that ensure participation most often with over half noting use of % volume, dark liquidity seeking, and VWAP. Although the percentage of respondents using these algos is relatively flat from last year, they remain much higher than two years ago, reflecting the shift in market dynamics that has taken place during that time. Since 2021, there has been a noticeable increase in not only participation algorithms, but algorithms in general as the technology behind solutions has and will continue to improve. Additionally, Aite-Novarica believes market uncertainty and confusion has led firms to further employ algorithms in an effort to ride out the waves of volatility as neatly as possible.

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

Percentage of respondents	2023	2022	2021
unanswered	▼ 2.98	4.11	3.46
0-5%	▼ 6.29	6.96	5.19
5-10%	▼ 5.30	6.65	6.82
10-20%	▲ 7.62	6.65	4.55
20-30%	▲ 9.27	8.23	12.19
30-40%	▲ 7.28	5.70	6.64
40-50%	▲ 11.26	4.75	11.74
50-60%	▲ 11.26	10.13	9.65
60-70%	▼ 15.23	19.94	12.37
70-80%	▼ 8.94	9.18	6.64
80% and over	▼ 14.57	17.72	20.75

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

Algo type	2023	2022	2021
% Volume (Participation)	▼ 72.19	73.42	56.96
Dark Liquidity Seeking	▼ 75.17	75.63	59.78
Implementation Shortfall (Basket)	▲ 23.51	23.42	15.56
Implementation Shortfall (Single Stock)	▲ 52.98	49.68	46.22
TWAP	▼ 36.42	38.29	25.75
VWAP	▼ 78.81	80.70	59.51
Target Close/Auction Algos	▼ 52.65	53.80	no data
Other	▲ 4.97	4.43	4.91

Methodology

Buy-side survey respondents were asked to give a rating for each algorithm provider on a numerical scale from 1.0 (very weak) through to 7.0 (excellent), covering 15 functional criteria. In general, 5.0 (good) is the 'default' score of respondents. In total, a record number of 1,661 ratings were received across 35 algo providers, yielding thousands of data points for analysis. Only the evaluations from clients who indicated that they were engaged in managing long-only strategies 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. Finally, it should be noted that some responses provided by affiliated entities were 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. This year's analysis for the Algorithmic Trading Survey has been carried out by Aite-Novarica Group.

Barclays

BARX cross-asset electronic trading platform supports a full range of core algorithms, covering global equities markets as well as ETFs, fixed income, FX and listed derivatives. “January 2023 marked Barclays’ 27th consecutive #1 monthly volume rank on the LSE” states the British bank in its provider submission to the survey. The “market structure team continues to deepen relationships with clients with timely insights on the regulatory divergence between the UK and EU, the EU’s Mifid review and developments towards consolidated tapes in the UK and EU”.

Barclays average overall score in this year’s survey was 5.65, which represents a slip from 2022 (-.18) and came up short of the survey average of 5.80 by 16 basis points. The firm saw declines across every category in 2023, with the largest year-over-year decreases recorded in routing logic analysis (-.34) and price improvement (-.27). Despite its scores, client comments were very positive, “Excellent coverage and market commentary from Andrew Alder” states one large UK based asset manager. “Overall, an outstanding service supported by a helpful and professional team at Barclays” remarks a

UK-based head of dealing. Barclays outperformed the survey benchmark in the key category of cost, scoring .13 higher than the category average of 5.70, and landing in the top three across all 21 providers featured in the long-only results. The bank’s highest scores were in customer support (5.92), cost (5.83), and increase trader productivity (5.80).

Barclays received 48 responses this year from long-only managers – in line with the 47 responses received in 2022 – which in terms of submissions, once again ranks the bank 14th amongst its peers. Exactly half of the respondents were from Europe, with the remainder split between the UK (37.5%), and the US (12.5%). In terms of AUM, over 43% of responding firms manage assets in excess of US\$50 billion. Finally, 12.5% of Barclays’ clients responding to the survey stated that they expect to make use of additional algorithmic trading providers in the next 12 months. According to the bank’s provider submission to the survey, a deep understanding of individual venue microstructure and order types has driven improved liquidity capture and client trading performance.

BARCLAYS RATINGS FOR ALGORITHMIC PERFORMANCE

Increased trader productivity	Reduced market impact	Execution consistency	Cost	Speed	Anonymity	Price improvement	Customisation
5.80 ▼	5.62 ▼	5.76 ▼	5.83 ▼	5.77 ▼	5.66 ▼	5.30 ▼	5.42 ▼
Ease of use	Order routing logic/analysis	Customer support	Execution consulting	Dark pool access	Flexibility and sophistication of SOR	Algo monitoring	Average score
5.77 ▼	5.45 ▼	5.92 ▼	5.47 ▼	5.69 ▼	5.56 ▼	5.65 ▼	5.65 ▼

KEY STATS

Overall Outperformer: NO

Category Outperformer: ★ X1

5.92
Highest score
(Customer support)



5.30
Lowest score
(Price improvement)

-0.03
Most improved
(Customisation)



-0.34
Least improved
(Routing logic analysis)

Berenberg

Berenberg Algorithmic Trading (BEAT) provides algorithmic trading services in equity and ETF markets across Europe and North America. Berenberg received 72 responses from long-only managers in this year’s survey, in line with the 71 responses received in 2022. Of these, around one-third of responding firms manage assets over US\$50 billion. Around 44% of the respondents were from Europe, 40% from the UK and the remainder from North America.

Despite Berenberg’s overall score dropping to 6.04 in this year’s survey, from 6.17 in 2022, the firm comfortably outperformed this year’s broader survey average of 5.80 by 24 basis points. The bank outperformed the category average in all of the 15 categories under review in this year’s survey. The areas where it differentiates itself from the competition the most are customer support (+.49), algo monitoring (+.43) and execution consulting and pre-trade cost estimates (+.36), which score within the top three scores across all 21 providers featured in the long-

only results. At 6.17, ease of use scores second highest. In terms of year-over-year comparisons, Berenberg did, however, decrease its score in all but two categories in 2023, reduced market impact and price improvement, which both increased .03. The firm’s highest scores in 2023 were in the areas of customer support (6.47) and breadth of dark pools (6.21), while its lowest scores were in cost (5.74), customisation (5.84), and routing logic analysis (5.84).

Feedback from clients was very positive. One US-based trader comments “hands down the best algo service on the Street. Continually seeking to improve and innovate.” While in the UK another trader remarks on “Great customisation, and ease of use. Henry Jones has been proactive in teaching and bringing new algos to market”. Finally, just over 22% of clients responding to Berenberg state they expect to make use of additional algorithmic trading providers in the next 12 months.

BERENBERG RATINGS FOR ALGORITHMIC PERFORMANCE

Increased trader productivity	Reduced market impact	Execution consistency	Cost	Speed	Anonymity	Price improvement	Customisation
6.05 ▼	6.05 ▲	6.17 ▼	5.74 ▼	6.11 ▼	5.86 ▼	5.98 ▲	5.84 ▼
Ease of use	Order routing logic/analysis	Customer support	Execution consulting	Dark pool access	Flexibility and sophistication of SOR	Algo monitoring	Average score
6.17 ▼	5.84 ▼	6.47 ▼	5.98 ▼	6.21 ▼	5.97 ▼	6.12 ▼	6.04 ▼

KEY STATS

Overall Outperformer: 🏆

Category Outperformer: ★ X15

6.47
Highest score
(Customer support)



5.74
Lowest score
(Cost)

0.03
Most improved
(Reduced market impact)



-0.36
Least improved
(Customisation)

Bernstein

Bernstein offers a comprehensive suite of core algorithms to trade equities and ETF markets across all regions. “Bernstein continues to invest in the future development of our algorithmic offering. A full overhaul of the US trading infrastructure is underway that is already demonstrating major performance and latency benefits,” states the broker in their provider submission to the survey. Bernstein received 51 responses from long-only managers in this year, slightly down from 59 responses in 2022.

Bernstein records a score of 5.82 in this year survey, which outperforms the survey average by two basis points, yet marks a significant decrease from the broker’s rating of 6.05 in 2022. Bernstein experiences year-over-year decreases across all 15 categories, with execution consulting (-.45) and cost (-.40) being the largest. Compared to the category benchmarks however, the broker outperforms the category average in eight of the 15 service areas under review, most notably in ease of use (+.18), anonymity and increase trader

productivity (both up by +.14). Bernstein’s highest score was in ease of use and increase trader productivity, both of which came in at 6.09.

Long-only managers responding to this year’s survey were based primarily in Europe (49%), North America (25%), and the UK (24%). A little over 15% of clients responding to Bernstein state that they expect to make use of additional algorithmic trading providers in the next 12 months. Client feedback was limited, “great custom algo for ETF trading” says one European based senior trader. In terms of the AUM profile, 55% of long-only respondents manage assets of more than US\$10 billion, half of which fill into the more than US\$50 billion bracket. Final comments from the broker include “Bernstein always prides itself as being one of the first to work with new venues and sources of liquidity, providing an unconflicted view on liquidity quality and optimal interaction. Some recent liquidity partnerships examples include Appital, SideCaps Pool and OptimX.”

BERNSTEIN RATINGS FOR ALGORITHMIC PERFORMANCE

Increased trader productivity	Reduced market impact	Execution consistency	Cost	Speed	Anonymity	Price improvement	Customisation
6.09 ▼	5.97 ▼	5.92 ▼	5.80 ▼	5.84 ▼	5.98 ▼	5.66 ▼	5.49 ▼
Ease of use	Order routing logic/analysis	Customer support	Execution consulting	Dark pool access	Flexibility and sophistication of SOR	Algo monitoring	Average score
6.09 ▼	5.61 ▼	5.97 ▼	5.40 ▼	5.98 ▼	5.75 ▼	5.80 ▼	5.82 ▼

KEY STATS

Overall Outperformer: 🏆

Category Outperformer: ★ X8

6.09
Highest score
(Ease of use)



5.40
Lowest score
(Execution consulting)

-0.02
Most improved
(Reduced market impact)



-0.45
Least improved
(Execution consulting)

BNP Paribas Exane

BNP Paribas Exane offers a full suite of algorithms covering asset classes such as equities, ETFs, FX and listed derivatives across all regions. In its provider submission to the survey, the bank notes “over the past three years we have continued to invest in our product, our people and our liquidity access” including growth of the Execution Consulting Team and working with Aquis to introduce benchmark crossing, “which has led to improved performance in our schedule based and passive trading algorithms,” the provider adds.

This year we see a strong showing from BNP Paribas Exane once again, receiving 96 responses from long-only managers (up from 92 in 2022), the most of any provider featured in the survey and represents input from a significant portion of the banks 250 buy-side client base. Of those 96, 90 are located in continental Europe. The firm scored an impressive 6.37 for their overall survey average and although this is a decrease from their 2022 score of 6.42, it is still the highest score of any other provider in this year’s survey and is significantly higher

than the overall 2023 provider score of 5.80.

BNP’s strongest areas in this year’s survey were increase trader productivity (6.57), customer support (6.56), and anonymity (6.54). Despite achieving the highest score in nearly every category, BNP did experience a decrease year-over-year in 11 out of 15 service areas under review. The most notable of which were cost (-.23) and ease of use (-.19). Nonetheless, the firm outperform the survey benchmarks across every single category. The most significant being customisation features, which scored 70 basis points above the category average, followed by anonymity and execution consulting, both of which scored 69 basis points above the category average.

Over a third (37%) of long-only managers responding to this year’s survey that do business with BNP indicate they have US\$50 billion or more in AUM. Client feedback was limited, but positive. Only 9% of clients responding to BNP state they expect to make use of additional algorithmic trading providers in the next 12 months.

BNP PARIBAS EXANE RATINGS FOR ALGORITHMIC PERFORMANCE

Increased trader productivity	Reduced market impact	Execution consistency	Cost	Speed	Anonymity	Price improvement	Customisation
6.57 ▼	6.42 ▼	6.48 ▼	6.04 ▼	6.49 ▲	6.54 ▲	6.25 ▼	6.31 ▼
Ease of use	Order routing logic/analysis	Customer support	Execution consulting	Dark pool access	Flexibility and sophistication of SOR	Algo monitoring	Average score
6.33 ▼	6.32 ▼	6.56 ▲	6.31 ▲	6.35 ▼	6.37 ▼	6.14 ▼	6.37 ▼

KEY STATS

Overall Outperformer: 🏆

Category Outperformer: ★ X15

6.57
Highest score
(Increase trader productivity)



6.04
Lowest score
(Cost)

0.09
Most improved
(Customer support)



-0.23
Least improved
(Cost)

BofA Securities

BofA Securities (formerly Bank of America Merrill Lynch) received 53 responses from long-only clients in this year's survey (down from 58 in 2022), which in terms of number of submissions, ranks the bank tenth amongst its peers. BofA's clients responding to the survey were based in Europe (45%), the UK (38%), and the US (17%).

BofA achieved an overall average score of 5.65 in this year's survey, which falls 15 basis points below the survey average of 5.80. The investment bank failed to reach the benchmarks in 13 of the 15 categories under review, the most notable being customer support (-.37) and anonymity (-.27). It's worth noting, however, that almost half (43.4%) of clients reported their AUM in excess of US\$50 billion, and represent some of the world's largest asset managers, who typically are tougher to please and apply lower ratings across the categories, compared with smaller firms. Despite this, BofA did outperform the category average in two aspects of service, namely cost and execution consulting and pre-

trade cost estimates.

BofA recorded year-over-year increases across six categories with the largest improvements observed in the areas of routing logic analysis (+.18), increase trader productivity (+.11) and price improvement (+.10). By comparative standards, they lost the most ground in the key areas of customer support (-.21), cost (-.18), speed (-.17), and anonymity (-.17). Their average score of 5.65 marks a five basis point decrease from its score last year (5.70).

The most common algo used by BofA's respondents was VWAP (68%), followed closely by % volume (64%), dark liquidity seeking (58%), and implementation shortfall (single stock) (52%). Client comments were very few, one large European based asset manager complains of "awful customisation; no new algos, missing PEG algo for futures". In addition, almost a quarter of all clients responding to BofA state they expect to make use of additional algorithmic trading providers in the next 12 months.

BOFA SECURITIES RATINGS FOR ALGORITHMIC PERFORMANCE

Increased trader productivity	Reduced market impact	Execution consistency	Cost	Speed	Anonymity	Price improvement	Customisation
5.85 ▲	5.62 ▼	5.67 ▼	5.71 ▼	5.68 ▼	5.57 ▼	5.47 ▲	5.42 ▲
Ease of use	Order routing logic/analysis	Customer support	Execution consulting	Dark pool access	Flexibility and sophistication of SOR	Algo monitoring	Average score
5.83 ▲	5.61 ▲	5.60 ▼	5.70 ▲	5.89 ▼	5.52 ▼	5.62 ▼	5.65 ▼

KEY STATS

Overall Outperformer: NO

Category Outperformer: ★ X2

5.89

Highest score

(Dark pool access)



5.42

Lowest score

(Customisation)

0.18

Most improved
(Routing logic analysis)



-0.21

Least improved

(Customer support)

Goldman Sachs

Goldman Sachs Electronic Trading (GSET) offers a comprehensive suite of core algorithms, covering global equity markets, ETFs, fixed income, FX as well as listed derivatives. The New York-headquartered investment bank comments “We constantly strive to differentiate ourselves and remain at the forefront of the industry through constant product investment and innovation, across all assets. This forward outlook is key to our growth strategy and ensures that we remain best placed to help our clients trade the widest array of products in the most efficient way”. GSET garnered 76 responses from long-only managers in this year’s survey – in line with the 79 responses received in 2022 – which in terms of submissions, ranks the bank fourth amongst its peers. Responding clients were based mainly in Europe (55%), the UK (32%), and North America (11%).

Goldman Sachs achieved an overall average of 5.63 in this year’s survey, slightly lower than its 2022 score of 5.69 (-.06) and 17 basis points below the survey average of 5.80. The firm saw its highest scores in the categories of ease of use (5.88), speed (5.87), and execution

consistency (5.81). Year-over-year improvements were recorded across five key categories, including routing logic analysis (+.12) and ease of use (+.05). In contrast, the largest drops in ratings were seen in customisation features (-.19), flexibility and sophistication of SOR (-.15), and cost (-.15).

Compared to the survey benchmark ratings, Goldman Sachs underperformed in all 15 areas under review, the most notable of which were customer support (-.43), breadth of dark pools (-.31), and anonymity (-.29). However, it’s worth noting that over 42% of clients indicate they have US\$50 billion or more in AUM and represent some of the world’s largest asset managers, who tend to score less generously than smaller buy-side firms.

Overall scores across all categories remain in the mid-to-high good range of 5.00-5.99, usually recognised as the default score of respondents. Client comments were few, but praised customer support. Lastly, around 22% of all clients responding to Goldman Sachs state they expect to make use of additional algorithmic trading providers in the next 12 months.

GOLDMAN SACHS RATINGS FOR ALGORITHMIC PERFORMANCE

Increased trader productivity	Reduced market impact	Execution consistency	Cost	Speed	Anonymity	Price improvement	Customisation
5.80 ▼	5.70 ▲	5.81 ▼	5.65 ▼	5.87 ▼	5.56 ▲	5.42 ▼	5.44 ▼
Ease of use	Order routing logic/analysis	Customer support	Execution consulting	Dark pool access	Flexibility and sophistication of SOR	Algo monitoring	Average score
5.88 ▲	5.55 ▲	5.54 ▼	5.60 ▼	5.62 ▼	5.60 ▼	5.46 ▲	5.63 ▼

KEY STATS

Overall Outperformer: NO

Category Outperformer: NO

5.88
Highest score
(Ease of use)



5.42
Lowest score
(Price improvement)

0.12
Most improved
(Routing logic analysis)



-0.19
Least improved
(Customisation)

Instinet

Instinet offers a full suite of core algorithms that support equities, ETFs and listed derivatives across all regions. In its prover submission to the survey, Instinet states “extracting client behaviors... informs our design and product requirements. We continue to invest in areas of desktop platforms, algorithmic development, liquidity strategy, and quant analytics to support and deliver on tools for clients.” The Execution Services team serve around 1,000 clients on the buy-side, 40 of which are long-only managers who responded to this year’s survey (down from 55 responses in 2022). In terms of geography, 45% were based in Europe, 35% in the UK and 10% in the US. Meanwhile, 35% of responding clients manage upwards of US\$50 billion in assets.

This year the agency broker achieved an overall average of 5.89, which represents a three basis point increase on their 2022 score and lands nine basis points above the survey average of 5.80. Instinet records year-over-year increases across seven key categories, including customisation features (+.56) and speed

(+.26). Compared to the survey benchmarks, Instinet outperforms the category average in 11 service areas under review, most notably ease of use, anonymity and speed score within the top three highest ratings of all 21 providers profiled within the long-only results, recording scores of +.26, +.24 and +.22 respectively.

Feedback from clients was highly complementary of support services, with one trader stating “excellent coverage from Adam Cork and Karl Tetska, always on top of orders and proactive with reaching out and offering value add suggestions”. Over 22% of clients responding to Instinet state they expect to make use of additional algorithmic trading providers in the next 12 months.

In October of 2022, Instinet completed its purchase of the algorithmic trading services business of FIS, formerly known as Fox River, from FIS Global. Key products of FIS include a suite of quantitative trading algorithms and execution services, including direct market access and electronic sales trading.

INSTINET RATINGS FOR ALGORITHMIC PERFORMANCE

Increased trader productivity	Reduced market impact	Execution consistency	Cost	Speed	Anonymity	Price improvement	Customisation
6.05 ▼	5.68 ▼	5.92 ▼	5.74 ▼	6.15 ▲	6.08 ▲	5.70 ▼	5.96 ▲
Ease of use	Order routing logic/analysis	Customer support	Execution consulting	Dark pool access	Flexibility and sophistication of SOR	Algo monitoring	Average score
6.17 ▲	5.62 ▲	6.17 ▲	5.64 ▲	6.10 ▼	5.72 ▼	5.66 ▼	5.89 ▲

KEY STATS

Overall Outperformer: 🏆

Category Outperformer: ★ X11

6.17

Highest score

(Customer support)



5.62

Lowest score
(Routing logic analysis)

0.56

Most improved
(Customisation)



-0.31

Least improved
(Reduced market impact)

Jefferies

Jefferies' Electronic Trading Solutions (JETS) offers a global electronic trading platform with algorithmic access spanning APAC, EMEA and the Americas. The investment bank provides a full suite of liquidity seeking and benchmark tracking algorithms working to minimise market impact, improve trading performance and add consistency to the trading process. Jefferies garnered 59 responses this year from long-only managers, down marginally from the 61 responses received in 2022.

Jefferies' average of 5.95 was down from its 2022 score of 6.11 yet remains significantly higher than the survey average (5.80). The bank outperformed the survey benchmark in every area except breadth of dark pools. The most notable aspects of service where Jefferies differentiates itself relative to the category average are in the areas of customisation features (+.35), increase trader productivity (+.27), and customer support (+.27). In fact, its rating of 6.22 for increase trader productivity scores within the top two of all 21 providers profiles in this year's long-only results.

The firm scored above a 6.0 (Very Good) in five key categories, including customer support, increase trader

productivity, ease of use, reduced market impact, and execution consistency. Despite this, Jefferies recorded a number of year-over-year decreases, including speed (-.36), cost (-.30), and breadth of dark pools (-.26). Around 40% of clients responding to Jefferies state they expect to make use of additional algorithmic trading providers in the next 12 months.

Clients were based mainly in Europe (41%), the UK (32%), and the US (20%), with 41% of respondents coming from long-only firms managing more than US\$50 billion in AUM. Client comments were highly complementary of customisation features and personnel. One South African-based manager commented that Jefferies is "my go to provider". "Corey Spells - excellent service, expertise" states a US-based trader, while another respondent remarks he "is one of the best traders on the Street". Furthermore, in the UK, one trader proclaims "Ellen Gallagher is an incredibly inspiring and enthusiastic algo trader. She has a natural ability to cover clients to a world-class standard whilst also offering competitive commission and customisation capabilities. Without doubt she is a future star of this industry."

JEFFERIES RATINGS FOR ALGORITHMIC PERFORMANCE

Increased trader productivity	Reduced market impact	Execution consistency	Cost	Speed	Anonymity	Price improvement	Customisation
6.22 ▼	6.11 ▼	6.07 ▼	5.75 ▼	5.93 ▼	5.98 ▼	5.93 ▼	5.96 ▼
Ease of use	Order routing logic/analysis	Customer support	Execution consulting	Dark pool access	Flexibility and sophistication of SOR	Algo monitoring	Average score
6.14 ▼	5.83 ▲	6.25 ▼	5.64 ▼	5.86 ▼	5.81 ▼	5.73 ▼	5.95 ▼

KEY STATS

Overall Outperformer: 🏆

Category Outperformer: X14

6.25
Highest score
(Customer support)



5.64
Lowest score
(Execution consulting)

0.02
Most improved
(Routing logic analysis)



-0.36
Least improved
(Speed)

JP Morgan

Global investment giant JP Morgan received 87 responses from long-only managers in this year's survey, which represents a 26% increase compared to the 69 responses received in 2022. In terms of number of submissions, JP Morgan ranks second among the 35 algo providers surveyed this year. Over half of long-only clients responding to the bank were based in Europe (52%), 36% based in the UK, 10% in North America, and 1% ROW.

JP Morgan's average score of 5.77 marks an 8 basis point decrease from its 2022 score (5.85), yet keeps it largely in line with the overall survey average of 5.80 this year. The New York-headquartered investment bank's highest scores in 2023 were in customer support (5.92), ease of use (5.90), and breadth of dark pools (5.90). Year-over-year improvements were observed in five categories, including algo monitoring (+.13), anonymity (+.05), routing logic analysis (+.04) and customer support (+.03).

Despite some improvements, JP Morgan fell marginally short of the survey benchmark in 13 areas

of service under review. The most notable being increase trader productivity and speed, where the bank underperformed the category average by 12 and 9 basis points, respectively. Unsurprisingly however, a large proportion (44%) of the participant funds using JP Morgan's algos manage over US\$50 billion in assets and represent some of the world's largest asset managers, who typically score less generously than smaller buy-side firms. Meanwhile the bank outperformed the category average in the areas of algo monitoring (+.10) and cost (+.05).

Long-only respondents to this year's survey reported implementation shortfall as the most frequently used algo performance measurement followed closely by VWAP TCA. Almost 23% of clients responding to JP Morgan state they expect to make use of additional algorithmic trading providers in the next 12 months. Client comments were few, but very positive: "great client service and post trade TCA" states one senior trader at a large European asset manager.

JP MORGAN RATINGS FOR ALGORITHMIC PERFORMANCE

Increased trader productivity	Reduced market impact	Execution consistency	Cost	Speed	Anonymity	Price improvement	Customisation
5.83 ▼	5.82 ▼	5.87 ▼	5.75 ▼	5.83 ▼	5.77 ▲	5.64 ▼	5.58 ▲
Ease of use	Order routing logic/analysis	Customer support	Execution consulting	Dark pool access	Flexibility and sophistication of SOR	Algo monitoring	Average score
5.90 ▼	5.61 ▲	5.92 ▲	5.59 ▼	5.90 ▼	5.75 ▼	5.79 ▲	5.77 ▼

KEY STATS

Overall Outperformer: NO

Category Outperformer: ★ X2

5.92
Highest score
(Customer support)



5.58
Lowest score
(Customisation)

0.13
Most improved
(Algo monitoring)



-0.31
Least improved
(Cost)

Kepler Cheuvreux

Independent European financial services company Kepler Cheuvreux offers a full suite of core algorithms to around 500 buy-side clients, across ETFs and equity markets throughout Europe and North America. In 2022, Kepler Cheuvreux Execution underwent a rebrand to KCx. The company noted in its provider submission to the survey that “with integration of AI and machine learning practices, the KCx brand is undergoing an extensive remodeling across the algo and SOR suite, TCA approach, market access insights, and API deployment”. Kepler received 76 responses from long-only managers in this year’s survey, in line with 75 responses received in 2022. Of those, 18% represented firms with more than US\$50 billion in AUM, which equals a lower percentage than many of the other providers profiled in this year’s report.

Kepler Cheuvreux’s records an overall average score of 5.82 in this year’s survey, outperforming the survey

average by two basis points. On a category level, Kepler outperforms the benchmarks across 11 aspects of service, including key areas such as customer support (+.15), customisation (+.07) and cost (+.07). In terms of year-over-year comparisons, an 11 basis point drop was recorded in the firm’s 2022 average of 5.93. The categories where Kepler slipped the most compared to last year’s ratings were in the areas of algo monitoring (-.30), customisation (-.30), and cost (-.21).

Almost three quarters of long-only respondents to Kepler in this year’s survey were based in continental Europe, with the remaining in the UK (21%), US and ROW. Just over 21% of clients state they expect to make use of additional algorithmic trading providers in the next 12 months. Respondent feedback was very positive: “Top grades. We love trading with Kepler” states one trader, “my algo of choice” and “excellent service quality” remarks two others.

KEPLER CHEUVREUX RATINGS FOR ALGORITHMIC PERFORMANCE

Increased trader productivity	Reduced market impact	Execution consistency	Cost	Speed	Anonymity	Price improvement	Customisation
5.97 ▼	5.93 ▲	5.95 ▼	5.78 ▼	5.92 ▲	5.89 ▼	5.74 ▲	5.68 ▼
Ease of use	Order routing logic/analysis	Customer support	Execution consulting	Dark pool access	Flexibility and sophistication of SOR	Algo monitoring	Average score
5.94 ▼	5.60 ▼	6.13 ▼	5.64 ▼	5.85 ▼	5.78 ▼	5.55 ▼	5.82 ▼

KEY STATS

Overall Outperformer: 🏆

Category Outperformer: ★ X11

6.13
Highest score
(Customer support)



5.55
Lowest score
(Algo monitoring)

0.13
Most improved
(Price improvement)



-0.30
Least improved
(Algo monitoring)

Liquidnet

Liquidnet, part of interdealer broker TP ICAP, offers equity algorithmic trading solutions to over 400 buy-side clients. The company stated in its provider submission to the survey that it “continues to invest heavily into its algorithmic trading services, alongside its traditional block crossing technology, including continuing work on Liquidnet’s new algo container technology”. The firm’s algorithmic solutions support equities trading and include Implementation Shortfall (IS), Market-On-Close (MOC), Percentage of Volume (POV), TWAP, VWAP, and Dynamic POV. Liquidnet received 66 responses from long-only managers using its algorithms in this year’s survey – up from 47 in 2022 – of which 29% represent firms managing assets of over US\$50 billion. Respondents are primarily located in Europe (41%), the UK (32%), and North America (17%).

In 2023, Liquidnet received an overall survey score of 5.61, representing a decrease from its score of 5.68 last year. This also brings the firm’s score in 19 basis points below the overall survey average of 5.80. Liquidnet did, however, increase its scores in several categories

from last year, most notably anonymity (+.18), algo monitoring (+.15), execution consulting (+.06), and reduced market impact (+.06). The largest year-over-year decreases for Liquidnet were in increased trader productivity (-.44), ease of use (-.36), and customer support (-.26).

When compared to the survey benchmarks, Liquidnet achieves category outperformer status in three key services areas, namely anonymity (+.09), reduced market impact (+.16) and unsurprisingly breath of dark pools (+.23). In contrast, the most notable underperformance was recorded in cost (-.43) and customisation features (-.54), which also represents the firm’s lowest scoring category.

Client feedback was mixed, comments include “best dark pool liquidity provider” and “very happy with the support”, while one investment manager complains of “service slipping” and “innovation seems to be lagging.” Finally, only 15% of clients state they expect to make use of additional algorithmic trading providers over the next 12 months.

LIQUIDNET RATINGS FOR ALGORITHMIC PERFORMANCE

Increased trader productivity	Reduced market impact	Execution consistency	Cost	Speed	Anonymity	Price improvement	Customisation
5.63 ▼	6.02 ▲	5.56 ▼	5.27 ▼	5.82 ▲	5.93 ▲	5.54 ▼	5.07 ▼
Ease of use	Order routing logic/analysis	Customer support	Execution consulting	Dark pool access	Flexibility and sophistication of SOR	Algo monitoring	Average score
5.68 ▼	5.41 ▲	5.87 ▼	5.26 ▲	6.17 ▲	5.46 ▼	5.51 ▲	5.61 ▼

KEY STATS

Overall Outperformer: NO

Category Outperformer: ★ X3

6.17

Highest score

(Dark pool access)



5.07

Lowest score

(Customisation)

0.18

Most improved
(Anonymity)



-0.44

Least improved
(Increase trader
productivity)

Morgan Stanley

Morgan Stanley Electronic Trading (MSET) received 83 responses from long-only funds in this year's survey, a significant increase from the 63 responses received in 2022, and in terms of number of overall submissions, ranks the bank third among the 35 algo providers surveyed this year. By way of measuring algo performance, respondents primarily use implementation shortfall TCA and VWAP TCA. Nearly forty percent (39%) of long-only clients manage assets greater than US\$50 billion, about the same as responding clients in last year's survey.

The firm achieved an average score of 5.74, an increase from its score in last year's survey (5.64) but still marginally below the overall survey average of 5.80. Despite this, Morgan Stanley outperform the category average in five key service areas, including cost (+.07), speed (+.04) and algo monitoring (+.04), a marked improvement from last year when the bank underperformed the survey benchmark across every category. The bank's highest scoring category remained

speed (5.97) which was followed closely by increase trader productivity (5.95).

Morgan Stanley's most significant year-over-year improvements were recorded in the areas of routing logic analysis (+.43), algo monitoring (+.36), customisation (+.28), and execution consulting (+.21). Scores slipped in the areas of ease of use (-.16), cost (-.09), price improvement (-.06), and breadth of dark pools (-.02).

Responding long-only managers were based in Europe (61%), the UK (21%), North America (10%), South Africa (7%), and APAC (1%), 23% of which state they expect to make use of additional algorithmic trading providers over the next 12 months. Clients use a range of strategies, most commonly benchmark algos such as VWAP, and POV, plus price improvement strategies such as dark liquidity seeking. Client feedback was limited, one Hong Kong-based head of trading at a large asset manager simply stated "we have found Morgan Stanley's algo offering to be among the best in Asia".

MORGAN STANLEY RATINGS FOR ALGORITHMIC PERFORMANCE

Increased trader productivity	Reduced market impact	Execution consistency	Cost	Speed	Anonymity	Price improvement	Customisation
5.95 ▲	5.71 ▲	5.84 ▲	5.78 ▼	5.97 ▲	5.71 ▲	5.57 ▼	5.51 ▲
Ease of use	Order routing logic/analysis	Customer support	Execution consulting	Dark pool access	Flexibility and sophistication of SOR	Algo monitoring	Average score
5.77 ▼	5.69 ▲	5.78 ▲	5.52 ▲	5.82 ▼	5.78 ▲	5.73 ▲	5.74 ▲

KEY STATS

Overall Outperformer: NO

Category Outperformer: ★ X5

5.97
Highest score
(Speed)



5.51
Lowest score
(Customisation)

0.43
Most improved
(Routing logic analysis)



-0.16
Least improved
(Ease of use)

RBC Capital Markets

RBC Capital Markets offers a comprehensive suite of core algorithms across Europe, North America and LATAM. Asset classes covered by the global investment bank include equities, ETFs, FX and listed derivatives, however, the vast majority of responding clients in this year's survey use RBC algo to trade equity markets. RBC received 42 responses this year from long-only managers – down from 54 in 2022 – with roughly one quarter (26%) representing large clients, managing assets of over \$50 billion. Respondents were based in the UK (38%), Europe (31%), North America (26%) and APAC (5%).

RBC Capital Markets achieved an overall average of 5.81 in this year's survey, a decrease from its 2022 average of 5.94, yet right in line with the overall survey average of 5.80. On a category level, RBC outperform the benchmarks across seven key services areas, most notably in price improvement, routing logic analysis and cost, where the bank scores 15, 13 and 12 basis points respectively above the category average. A number of other categories were largely in line with the

survey benchmarks. Year-over-year scores were up in four key categories: execution consulting (+.12), routing logic analysis (+.06), increase trader productivity (+.02), and price improvement (+.01). Whilst decreases from last year were seen most significantly in ease of use (-.47) and customisation (-.44).

By way of measuring algo performance, respondents primarily use implementation shortfall TCA and VWAP TCA. Around 21% of clients responding to RBC state they expect to make use of additional algorithmic trading providers over the next 12 months. Client comments were few, but positive: “really good algos, very good outcomes, good liquidity capture and excellent service” states one UK based trader, “very happy with the support” remarks a European based asset manager. General feedback requested ongoing enhancements to the solution such as enhanced monitoring and venue analysis, increased customisation capabilities, and more dynamic algos that help ensure benchmark outperformance.

RBC CAPITAL MARKETS RATINGS FOR ALGORITHMIC PERFORMANCE

Increased trader productivity	Reduced market impact	Execution consistency	Cost	Speed	Anonymity	Price improvement	Customisation
6.03 ▲	5.80 ▼	5.92 ▼	5.83 ▼	5.91 ▼	5.80 ▼	5.83 ▲	5.60 ▼
Ease of use	Order routing logic/analysis	Customer support	Execution consulting	Dark pool access	Flexibility and sophistication of SOR	Algo monitoring	Average score
5.82 ▼	5.79 ▲	5.89 ▼	5.63 ▲	5.94 ▼	5.74 ▼	5.68 ▼	5.81 ▼

KEY STATS

Overall Outperformer: 🏆

Category Outperformer: ★ X7

6.03
Highest score
(Increase trader productivity)



5.60
Lowest score
(Customisation)

0.12
Most improved
(Execution consulting)



-0.47
Least improved
(Ease of use)

Redburn

Redburn offers a full suite of algorithmic trading solutions, covering equities markets throughout Europe and North America. Over the past year, Redburn received major investment from Rothschild & Co and is now part of their Equities Markets Solutions group. In its provider submission to this year’s survey, the broker noted that these investments allow Redburn to continue responding to increased demand from clients for customised algorithmic solutions and execution consulting. Of Redburn’s 100 buy-side client base, 44 responded to this year’s survey, which is down from last year’s 51. Of these, 39% represent large clients, with more than US\$50 billion AUM.

Redburn’s average score of 5.75 represents a noticeable decrease from last year’s 6.06 and falls five basis points below this year’s survey average of 5.80. Despite this year’s score decrease, the broker achieves outperformer status in four key categories, most notably finishing comfortably above category average in customer support (+.47) and breadth of dark pools (+.11). Redburn’s scores across the 15 service areas surveyed this year represented

a large range, with the lowest score being cost at 5.41, and the highest customer support at 6.45. The largest decreases in scores year-over-year were observed in the categories of cost (-.53), increase trader productivity (-.49), ease of use (-.45), and execution consistency (-.44). Redburn did not record any score increases year-over-year.

Respondents to Redburn were based in the UK (52%), Europe (36%) and North America (12%). The most common performance measurement metrics were VWAP TCA and implementation shortfall TCA. Almost 23% of clients state they expect to make use of additional algorithmic trading providers in the next 12 months. Client feedback talked about strong execution performance and the clarity of the solution offerings. One US based trader said that they “love Redburn Navigator and the new custom close algo in Europe”. Requested enhancements focused on more innovation and differentiation, more venue analysis and pre-trade estimates, and the ability to constantly refine existing functionality as order flow changes.

REDBURN RATINGS FOR ALGORITHMIC PERFORMANCE

Increased trader productivity	Reduced market impact	Execution consistency	Cost	Speed	Anonymity	Price improvement	Customisation
5.74 ▼	5.62 ▼	5.74 ▼	5.41 ▼	5.85 ▼	5.83 ▼	5.53 ▼	5.62 ▼
Ease of use	Order routing logic/analysis	Customer support	Execution consulting	Dark pool access	Flexibility and sophistication of SOR	Algo monitoring	Average score
5.75 ▼	5.52 ▼	6.45 ▼	5.67 ▼	6.05 ▼	5.74 ▼	5.68 ▼	5.75 ▼

KEY STATS

Overall Outperformer: NO

Category Outperformer: ★ X4

6.45
Highest score
(Customer support)



5.41
Lowest score
(Cost)

-0.02
Most improved
(Customer support)



-0.53
Least improved
(Cost)

UBS

UBS continues to invest in electronic trading, building on its equities technology and utilising their expertise to create FX, rates, credit and futures offerings. UBS received 64 responses to its algorithmic trading solutions in this year's survey, the exact same number as in 2022. In terms of regional breakdown, just over half of long-only managers responding to UBS were based in Europe (52%), 34% in the UK, 13% in North America and 1% ROW.

UBS received an overall average of 5.64, a small decrease from their score of 5.68 in last year's survey, yet 16 basis points below the 2023 survey average of 5.80. The bank recorded improvements in seven categories year-over-year, with the largest being in flexibility and sophistication of SOR (+.25), routing logic analysis (+.12) and increase trader productivity (+.09). Perhaps unsurprisingly, the firm's largest decreases were observed in its two lowest scoring categories, i.e. customer support (-.46) and price improvement (-.20).

Compared to the survey's benchmarks, UBS underperformed in all but one category (cost). The most notable of which were customer support (-.57), price improvement (-.29), algo monitoring (-.21) and anonymity (-.20). As expected however, a large proportion (59%) of UBS' long-only clients participating in the survey this year manage US\$50 billion or more in assets and represent some of the top asset managers globally, who tend to be more critical in their scoring than smaller buy-side firms.

The most commonly used performance measurement metrics were implementation shortfall TCA and VWAP TCA. Additional features requested by respondents were in line with broader feedback: enhanced monitoring, additional liquidity sources, reduced cost and real time routing and venue analysis tools. Finally, one quarter of clients state that they expect to make use of additional algorithmic trading providers within the next 12 months.

UBS RATINGS FOR ALGORITHMIC PERFORMANCE

Increased trader productivity	Reduced market impact	Execution consistency	Cost	Speed	Anonymity	Price improvement	Customisation
5.85 ▲	5.70 ▼	5.71 ▲	5.75 ▼	5.85 ▲	5.64 ▼	5.39 ▼	5.49 ▲
Ease of use	Order routing logic/analysis	Customer support	Execution consulting	Dark pool access	Flexibility and sophistication of SOR	Algo monitoring	Average score
5.83 ▼	5.55 ▲	5.41 ▼	5.50 ▲	5.78 ▼	5.72 ▲	5.48 ▼	5.64 ▼

KEY STATS

Overall Outperformer: NO

Category Outperformer: ★ X1

5.85
Highest score
(Increase trader productivity)



5.39
Lowest score
(Price improvement)

0.25
Most improved
(Flexibility and sophistication of SOR)



-0.46
Least improved
(Customer support)

Virtu Financial

Virtu Financial offers a comprehensive suite of algorithms, covering equities markets and ETFs across all regions. Virtu Frontier algos are used by over 500 buy-side clients, 49 of which are long-only managers who responded to this year’s survey, up from 47 in 2022. Of these, one in five (20%) were clients managing more than US\$50 billion in assets, this compares to 36% of clients from the larger AUM bracket in 2022.

Virtu received an overall average score of 5.85, an increase from last year’s score of 5.73 and 5 basis points above the survey average of 5.80. Virtu recorded improved scores across 12 of the 15 categories under review. The largest year-over-year increases were achieved in the areas of execution consistency (+.37), algo monitoring (+.33), reduced market impact (+.31) and price improvement (+.30). The most significant decrease from last year was in the all-important category of cost, which landed 31 basis points behind its 2022 score.

Compared to the category averages, Virtu

outperformed the benchmarks in nine key aspects of service. The firm received the top score for access to dark pools (+.44) across all 21 providers featured in this year’s long only results, it also landed within the top three for increase trader productivity (+.21) and speed (+.21). On the flip side, customisation features and execution consulting underperform by -33 and -25 basis points respectively.

Long-only managers responding to this year’s survey were based in Europe (47%), the UK (37%), North America (12%) and APAC (4%). Only 16% of clients responding to Virtu state they expect to make use of additional algorithmic trading providers over the next 12 months. The most commonly used performance measurement metrics were implementation shortfall TCA and VWAP TCA. Feedback from respondents using Virtu’s algos requested more customisation capabilities, more spread capture, plus more conditional trading and increased pre-trade analytics.

VIRTU FINANCIAL RATINGS FOR ALGORITHMIC PERFORMANCE

Increased trader productivity	Reduced market impact	Execution consistency	Cost	Speed	Anonymity	Price improvement	Customisation
6.16 ▲	6.00 ▲	6.08 ▲	5.68 ▼	6.13 ▲	5.95 ▼	5.95 ▲	5.28 ▲
Ease of use	Order routing logic/analysis	Customer support	Execution consulting	Dark pool access	Flexibility and sophistication of SOR	Algo monitoring	Average score
5.93 ▲	5.62 ▲	5.84 ▲	5.37 ▲	6.37 ▲	5.85 ▼	5.61 ▲	5.85 ▲

KEY STATS

Overall Outperformer: 🏆

Category Outperformer: ★ X9

6.37
Highest score
(Dark pool access)



5.28
Lowest score
(Customisation)

0.37
Most improved
(Execution consistency)



-0.31
Least improved
(Cost)

Others

BMO CAPITAL MARKETS* RATINGS FOR ALGORITHMIC PERFORMANCE

*2022 scores not comparable due to limited sample size

Increased trader productivity	Reduced market impact	Execution consistency	Cost	Speed	Anonymity	Price improvement	Customisation
6.15	6.15	6.24	5.37	5.85	6.16	6.18	6.04
Ease of use	Order routing logic/analysis	Customer support	Execution consulting	Dark pool access	Flexibility and sophistication of SOR	Algo monitoring	Average score
5.82	6.15	6.72	6.20	6.36	6.18	6.17	6.12

CITI RATINGS FOR ALGORITHMIC PERFORMANCE

Increased trader productivity	Reduced market impact	Execution consistency	Cost	Speed	Anonymity	Price improvement	Customisation
5.59	5.43	5.29	5.40	5.57	5.48	5.25	5.42
Ease of use	Order routing logic/analysis	Customer support	Execution consulting	Dark pool access	Flexibility and sophistication of SOR	Algo monitoring	Average score
5.68	5.25	5.66	5.32	5.43	5.44	5.19	5.43

COWEN INC. RATINGS FOR ALGORITHMIC PERFORMANCE

Increased trader productivity	Reduced market impact	Execution consistency	Cost	Speed	Anonymity	Price improvement	Customisation
5.87	6.11	5.99	5.60	5.88	5.83	5.91	5.99
Ease of use	Order routing logic/analysis	Customer support	Execution consulting	Dark pool access	Flexibility and sophistication of SOR	Algo monitoring	Average score
5.83	5.72	6.04	5.63	6.12	5.82	5.85	5.88

CREDIT SUISSE RATINGS FOR ALGORITHMIC PERFORMANCE

Increased trader productivity	Reduced market impact	Execution consistency	Cost	Speed	Anonymity	Price improvement	Customisation
5.60	5.49	5.39	5.54	5.56	5.47	5.34	5.23
Ease of use	Order routing logic/analysis	Customer support	Execution consulting	Dark pool access	Flexibility and sophistication of SOR	Algo monitoring	Average score
5.45	5.39	5.25	5.15	5.44	5.40	5.36	5.40

STIFEL EUROPE RATINGS FOR ALGORITHMIC PERFORMANCE

Increased trader productivity	Reduced market impact	Execution consistency	Cost	Speed	Anonymity	Price improvement	Customisation
6.09	6.11	6.30	5.97	6.09	6.08	6.09	5.47
Ease of use	Order routing logic/analysis	Customer support	Execution consulting	Dark pool access	Flexibility and sophistication of SOR	Algo monitoring	Average score
6.09	5.97	6.22	5.68	6.34	6.02	5.98	6.03