DATA-FIRST THINKING

HOW ASIA-PACIFIC FINANCIAL FIRMS HAVE EMBRACED AI AND MACHINE LEARNING

Three trends the global financial community needs to watch

REFINITIV®

DATA IS JUST THE BEGINNING®

FOREWORD

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Asia

As the world focuses on recovering from the COVID-19 pandemic, it is encouraging to see that Asia-Pacific has the right drivers in place to turbocharge the adoption of AI and Machine Learning (AI/ML) applications in the financial services industry.

During the challenging market conditions of 2020, we witnessed how established models which used trusted data were tested by the unprecedented impact of COVID-19. However, our report reveals an increasingly positive picture: financial firms across Asia-Pacific could turn this ubiquitous disruption into a clear advantage going forward.

These financial firms have matured their AI/ML lifecycles and we see significant investments made to take AI/ML into production and, more importantly, to scale.

What's equally important is that Asia-Pacific has the data to build AI/ML models better and faster, even beyond COVID-19. **There has been a rapid rise in the use of alternative data sources. In fact, the number companies that use commodities (34%), supply chain (31%) and shipping data (23%) outpaces similar financial services firms in other regions, our research shows.**

Asia-Pacific financial firms have made massive strides in their use of unstructured data. By developing expertise in advanced techniques, such as deep learning, this dynamic region has positioned itself as a global leader in emerging themes including sustainable investing, private markets and real-time trading analytics.

Our research also highlights that Asia-Pacific is set to capitalize on AI/ML investment research, idea generation and green finance. **A progressive 40% of financial firms report they have deployed AI/ML for investment research and idea generation. Nearly 44% of firms in Asia-Pacific use ESG data for AI/ML as the shift to sustainable finance picks up pace, with China setting the beat for change.**

Emerging technology experts from AI/ML companies and financial services firms form a crucial driver that powers AI/ML in the region. The talent gap is shrinking as more data science professionals become finance-savvy as their tenure in the industry stretches from months to years and mainstream finance professionals gravitate to data science-centric roles. The result is a meeting of minds that generates ripples of innovation across the field.

Markets in Asia-Pacific are confirming their role as reliable growth engines for large financial institutions and we're seeing a rise in global demand for more Asia-Pacific insights. There hasn't been a better opportunity for the region to drive demand – and deliver production-grade AI/ML data and tech capabilities globally.

CONTENTS

DEFINITIONS

Artificial intelligence (AI): Machines performing cognitive functions we associate with humans, such as perceiving, learning and problem-solving.

Machine learning (ML): Machine learning algorithms are mathematical models based on sample data, known as “training data”, in order to make predictions or decisions without being explicitly programmed to do so.

Data science: A multi-disciplinary field that uses scientific methods, statistical data analysis, computer science and domain expertise to generate data insights and build machine learning models.

Deep learning: A family of machine learning approaches that uses artificial neural networks, with several layers that abstract the data so that features can be identified and complex classification tasks can be performed.

Natural language processing (NLP): NLP is a field dedicated to the harnessing of human language in programmatic ways, using linguistics, computer science and machine learning.

METHODOLOGY

Objectives

The 2020 AI/ML survey was designed to examine the current market landscape for AI and ML, including:

- Level of AI/ML adoption in financial services, including key use cases, triggers and barriers to adoption
- What shapes financial firms' AI/ML strategy, and the impact of COVID-19
- Companies' data strategy, including how they search for data, make decisions about what to purchase, and what content they actually use
- The changing role and influence of data scientists in financial firms
- Platforms and tools used by the data science community
- A comparison with the findings of our 2018 AI/ML survey

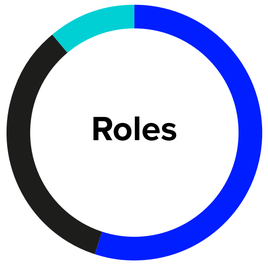
Global Approach[1]

The survey took place between June 29 and August 14, 2020, based on 423 phone interviews, including 147 in Asia-Pacific.

Respondents included:

- Data scientists, quants, technology and data decision-makers
- A combination of sell-side and buy-side firms with revenue in excess of $1 billion
- A mix of geographies across the Americas, EMEA and the Asia-Pacific regions
- Quants and wealth management as new job and organizational types added to the 2018 sample

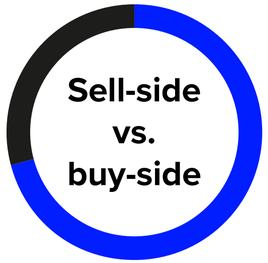
Breakdown of survey respondents



81 (55%)
Data scientists
Data engineer
Data analyst
Head of innovation
Head of AI/ML
Innovation manager

50 (34%)
Quants
Quant analyst
Quant developer
Quant researcher

16 (11%)
C-level
Data officer
Information officer
Technology officer



104 (71%)
Sell-side
Commercial or retail bank
Investment bank
Broker-dealer
Exchange

43 (29%)
Buy-side
Asset manager
Hedge fund
Wealth management
Private equity/venture capital

147
Asia-Pacific
India (30)
Singapore (20)
Australia (20)
New Zealand (15)
Korea (14)
China (23)
Japan (25)

1 Percentages in the charts drawn from the survey results may not sum up to 100% because of rounding.

KEY FINDINGS

1 Asia-Pacific has the data to build AI/ML models better and faster beyond COVID-19

- More companies in Asia-Pacific use commodities (34%), supply chain (31%) and shipping data (23%)

2 Asia-Pacific is set to capitalize on AI/ML investment research, idea generation and green finance

- 40% of respondents in Asia-Pacific deployed AI/ML for investment research and idea generation – significantly higher than counterparts in EMEA (19%) and the Americas (35%)
- 44% of firms in Asia-Pacific use ESG data for AI/ML

3 Asia-Pacific is nurturing financial data science talent

- Over one-third (39%) of respondents expect an increase in the number of data science roles in 2021
- 71% of data practitioners in Asia-Pacific are using deep learning

ASIA-PACIFIC HAS THE DATA TO BUILD AI/ML MODELS BETTER AND FASTER POST-COVID-19

How alternative data has risen in importance

Tried-and-tested traditional models that use trusted data faltered in 2020 due to systemic economic shifts caused by the COVID-19 pandemic. That's why demand for alternative data grew as firms reset their strategies and were looking for new resources to increase signal accuracy and generate an edge. Attention shifted to the quality of available data and less importance was placed on historical data.

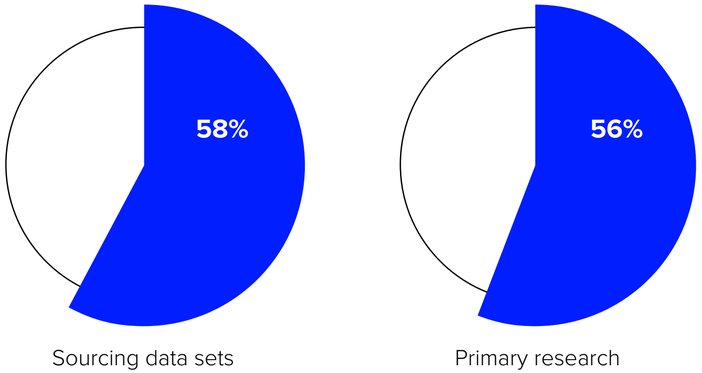
Popular data sets

Social media, web scraping and credit card data are the most popular alternative data sets for AI/ML in Asia-Pacific thanks to their potential to deliver leading indicators for a post-COVID-19 economy. Credit card transaction data, for example, pre-dates quarterly economic reports and can indicate early changes in consumer sentiment and spending.

Once a signal is generated from alternative data, traditional techniques and data can be used to dig deeper into a specific use case. Alternative data offers opportunities across Asia-Pacific to explore market inefficiencies, lower levels of technical sophistication among local traders, and ambiguous or entirely unavailable data. Figure 1 shows the most popular ways to work with alternative data based on responses from our research.

"We had to quickly turn around the data that was coming in," says a quant at a commercial bank in India. "With the inflowing micro-economic data that we saw, we reworked models in the changing environment."

Figure 1: How are you working with alternative data?



Source: The rise of the data scientist: Machine learning models for the future, Refinitiv, 2020.

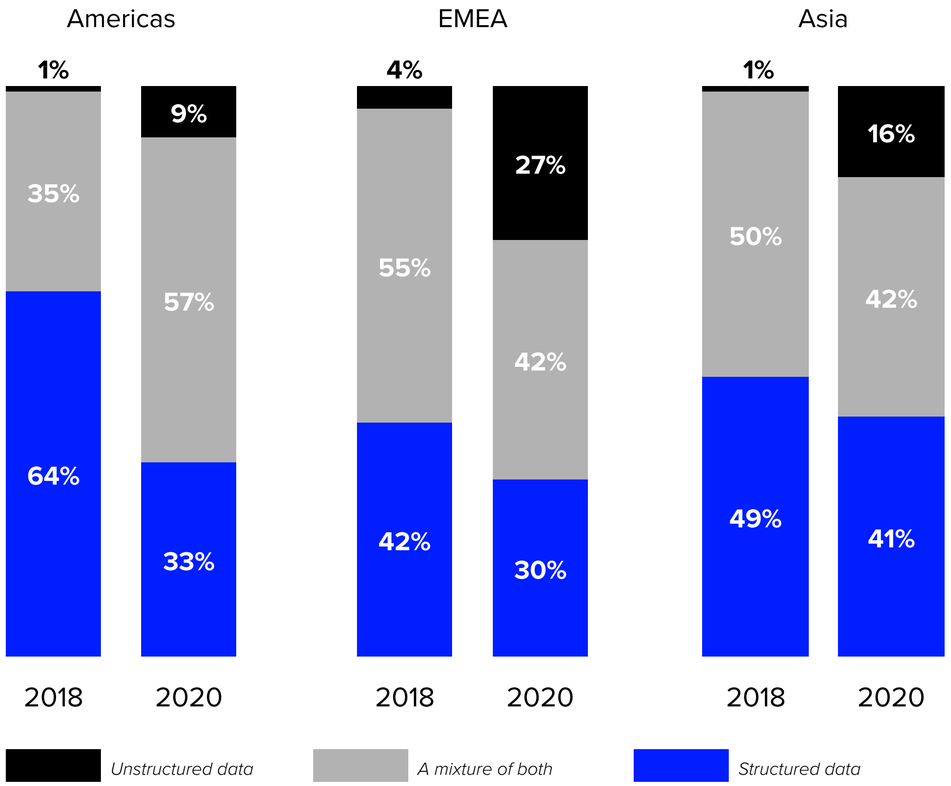
Asia-Pacific champions alternative and unstructured data

Since the region has never had a supply of historical data like the West has relied on to build and train models, Asia-Pacific has become an unstructured data leader.

Figure 2 shows the growth in unstructured data use between 2018 and 2020 in Asia-Pacific.

As the COVID-19 pandemic took hold, trading models were tested: they had never seen comparable fluctuations in price, volume and volatility. There was such an unchartered disconnect between very weak fundamental macro-economic data and global stock markets rallying. Going forward, firms will be required to become keen users of alternative data to develop and maintain an edge in the markets.

Figure 2: Structured vs. unstructured data growth (2018-2020)



Source: The rise of the data scientist: Machine learning models for the future, Refinitiv, 2020.

Shaping Asia-Pacific's future supply chain insights with AI/ML

As post-COVID-19 global supply chains must build resilience against future shocks, AI/ML can help financial institutions spot and even predict impactful external events. Spotting specific company-level breaks or weaknesses will be particularly useful in Asia-Pacific, where many broken supply chains in manufacturing hubs are located.

Commodities, supply chain and shipping data use is higher in Asia-Pacific for AI/ML compared to other regions, as Figure 3 shows. Asia-Pacific is uniquely positioned to take advantage of both structured and unstructured logistics data for AI/ML.

"Usage has increased for AI/ML applications and we are developing new models to handle the organizational changes that we see with production and economic effects post-COVID," says a Wealth Manager in Australia.

More companies in Asia-Pacific use commodities, supply chain and shipping data

Quants and data scientists report similar uses of data by their companies except for ESG and geo-location data.

Figure 3: Current usage of Alternative Data

	Asia	Americas	EMEA
Social media	**65%**	61%	71%
Web scraping	**54%**	49%	59%
Credit card data	**50%**	54%	55%
ESG	**44%**	52%	49%
Geo-location	**43%**	40%	26%
Commodities & Energy	**34%**	21%	21%
App installs	**28%**	21%	26%
Supply chain	**31%**	25%	19%
Web traffic	**21%**	26%	16%
Satellite imagery	**16%**	21%	13%
Shipping	**23%**	17%	9%
Job listing	**10%**	19%	14%
Senior data	**8%**	15%	6%

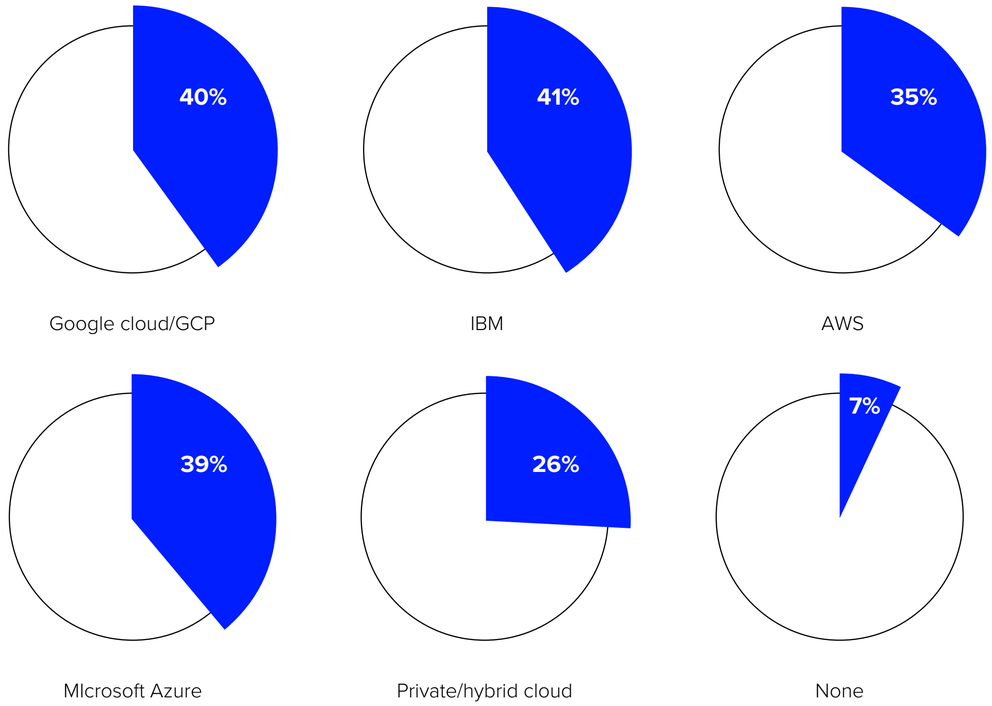
Source: The rise of the data scientist: Machine learning models for the future, Refinitiv, 2020.

Asia-Pacific's alternative, unstructured and supply chain data advantages could help the region's financial institutions build new AI/ML models, better and faster than other firms around the world.

More than one-third (35%) of financial firms in Asia-Pacific anticipate increased investment in AI/ML and 31% say that AI/ML has become more important in their organization as a result of COVID-19.

A key part of the COVID-19 acceleration is a rapid move to the cloud – suggesting API-based data sets will become the norm for AI/ML.

Figure 4: Which, if any, cloud providers do you use to run models?



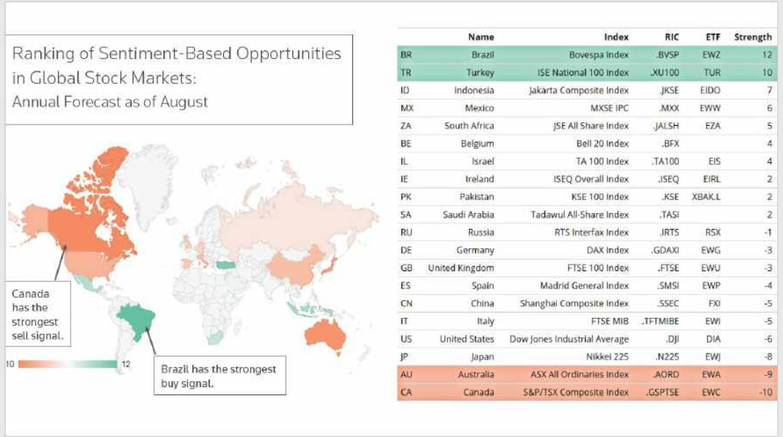
Source: The rise of the data scientist: Machine learning models for the future, Refinitiv, 2020.

News feeds and analytics powering AI/ML use cases

Our unique Machine Readable News service transforms unstructured, real-time news into a machine-readable feed. News Analytics applies advanced natural language processing within milliseconds to inform your firm's research and trading activities.

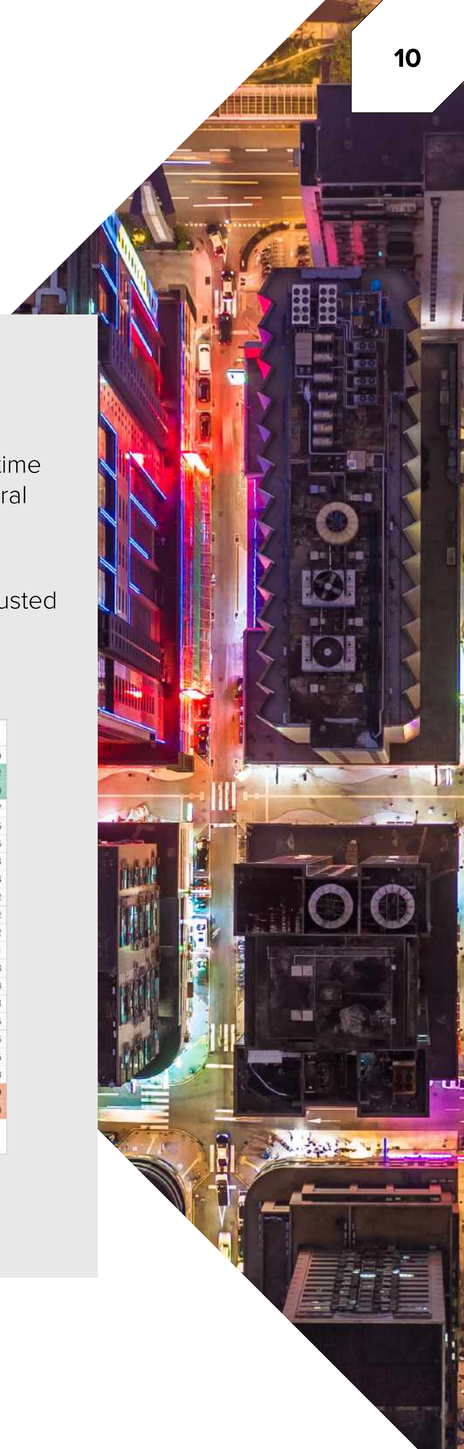
The service also provides scores and analytics based on our proven and trusted algorithms, together with all the metadata, to better inform your decisions.

Find out more: Machine Readable News



	Name	Index	RIC	ETF	Strength
BR	Brazil	Bovespa Index	.BVSP	EWZ	12
TR	Turkey	ISE National 100 Index	.XU100	TUR	10
ID	Indonesia	Jakarta Composite Index	.JKSE	EIDO	7
MX	Mexico	MXSE IPC	.MXX	EWW	6
ZA	South Africa	JSE All Share Index	.JALSH	EZA	5
BE	Belgium	Bell 20 Index	.BFX		4
IL	Israel	TA 100 Index	.TA100	EIS	4
IE	Ireland	ISEQ Overall Index	.ISEQ	EIRL	2
PK	Pakistan	KSE 100 Index	.KSE	XBAK.L	2
SA	Saudi Arabia	Tadawul All-Share Index	.TASI		2
RU	Russia	RTS Interfax Index	.IRTS	RSX	-1
DE	Germany	DAX Index	.GDAXI	EWG	-3
GB	United Kingdom	FTSE 100 Index	.FTSE	EWU	-3
ES	Spain	Madrid General Index	.SMSI	EWP	-4
CN	China	Shanghai Composite Index	.SSEC	FXI	-5
IT	Italy	FTSE MIB	.TFTMIBE	EWI	-5
US	United States	Dow Jones Industrial Average	.DJI	DIA	-6
JP	Japan	Nikkei 225	.N225	EWJ	-8
AU	Australia	ASX All Ordinaries Index	.AORD	EWA	-9
CA	Canada	S&P/TSX Composite Index	.GSPTSE	EWC	-10

Heat maps and dashboards: Quickly summarize important information using the TRMI in dashboards and heat maps



ASIA-PACIFIC TO CAPITALIZE ON AI/ML INVESTMENT RESEARCH, IDEA GENERATION AND GREEN FINANCE

Feeding an appetite for alpha

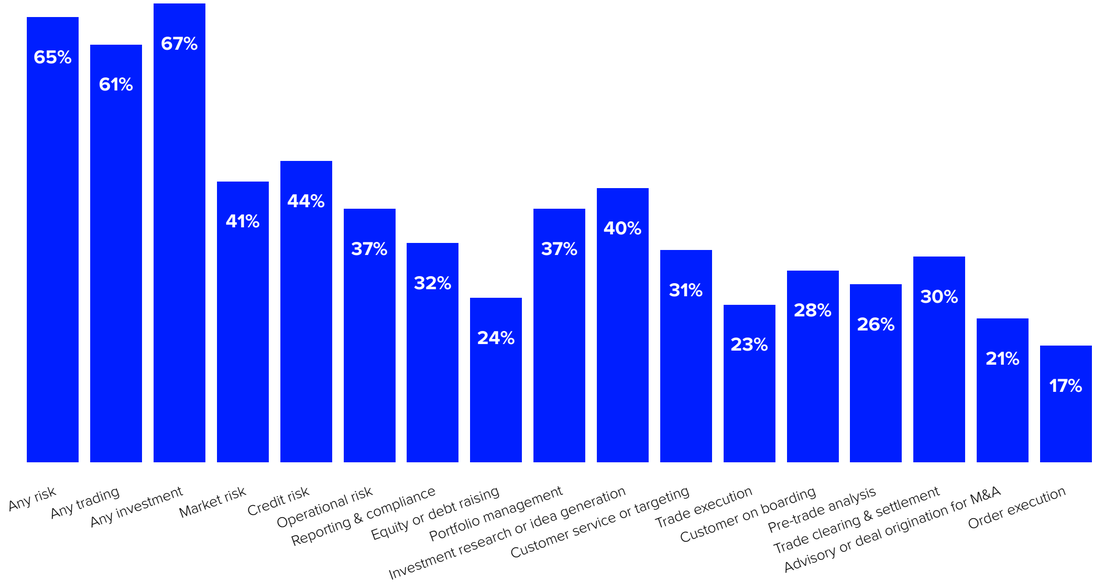
In our global survey, 40% of respondents in Asia-Pacific say they deploy AI/ML for investment research and idea generation (see Figure 5) – that's double the level of their counterparts in EMEA (19%) and ahead of the Americas (35%). Asia-Pacific clearly has much more scope to explore market efficiencies in hopes of generating alpha.

Buy-side firms spend millions of hours reading unstructured text to develop investment ideas. One buy-side analyst whose portfolio includes Amazon will read as many as 200 reports per quarter, some 60 pages long, in addition to company transcripts and filings, news stories and emails.

Refinitiv Labs recently built AI/ML prototype SentiMine - an advanced discoverability tool for unstructured content to identify key drivers of equity performance and outlook changes over time.

SentiMine helps users quickly understand and extract insights from text-heavy unstructured content – and identify potential drivers of equity performance.

Figure 5: Key areas of focus for AI/ML deployment in Asia-Pacific



Source: The rise of the data scientist: Machine learning models for the future, Refinitiv, 2020.

New regulations drive the ESG race

With new ESG regulation coming into effect in China, financial firms are keen to secure ESG data about local and international entities with China exposure in order to manage risk in their investment and credit portfolios. Our research shows that 44% of firms in Asia-Pacific use ESG data for AI/ML (Figure 3).

The China Securities Regulatory Commission and China's Ministry of Environmental Protection have introduced rules that require all listed companies and bond issuers to disclose ESG risks associated with their operations. Hong Kong also requires local-listed companies to disclose their board's views of ESG their risks.

ESG data innovators to watch include Chinascope which offers a comprehensive supply chain taxonomy that is 13 layers deep. And MioTech which pulls together diverse data sets across government and web data, using AI/ML to generate meaningful ESG data.

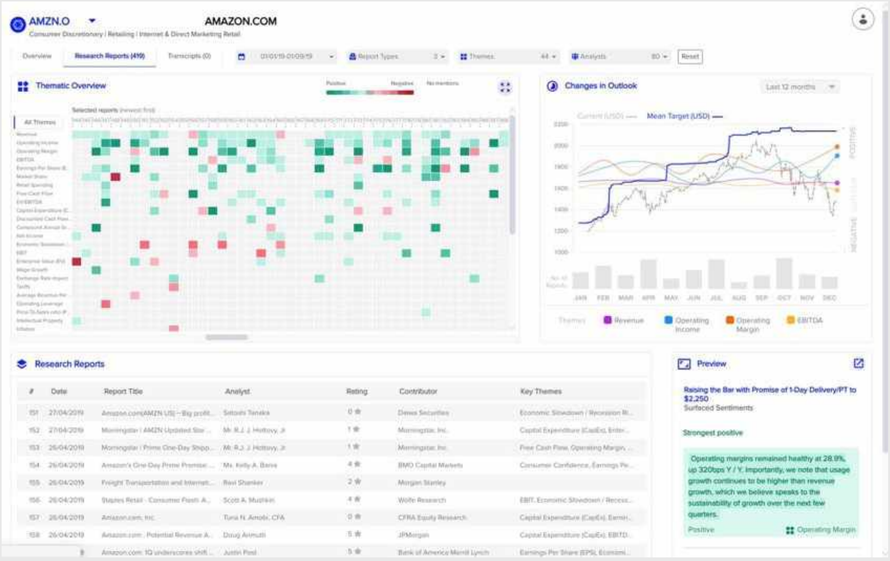
Project SentiMine: Surfacing equity performance themes in unstructured content

SentiMine is a recent investment research AI/ML success story – it's a prototype built by the Refinitiv Labs team in Singapore.

By combining deep learning, sentiment analysis and NLP, SentiMine will save buy-side firms millions of hours combing through unstructured text to drive investment decisions.

Refinitiv Labs is working to deploy SentiMine's unique insights in Refinitiv Workspace in 2021.

Discover the SentiMine prototype: SentiMine



ASIA-PACIFIC IS NURTURING FINANCIAL DATA SCIENCE TALENT

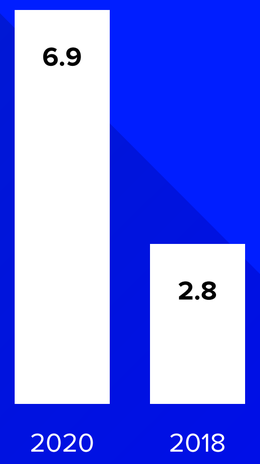
Financial data scientists rise to prominent roles

Data scientists in Asia-Pacific have transitioned from responding to business team requests to develop and implement models to leading the underlying technology and data strategy required to achieve business objectives.

There has been a greater appreciation of what's possible with AI/ML and what deep domain expertise is required to make the right decisions from data and tech strategy perspectives. Most importantly, it is clear that business and data/tech strategy go hand in hand.

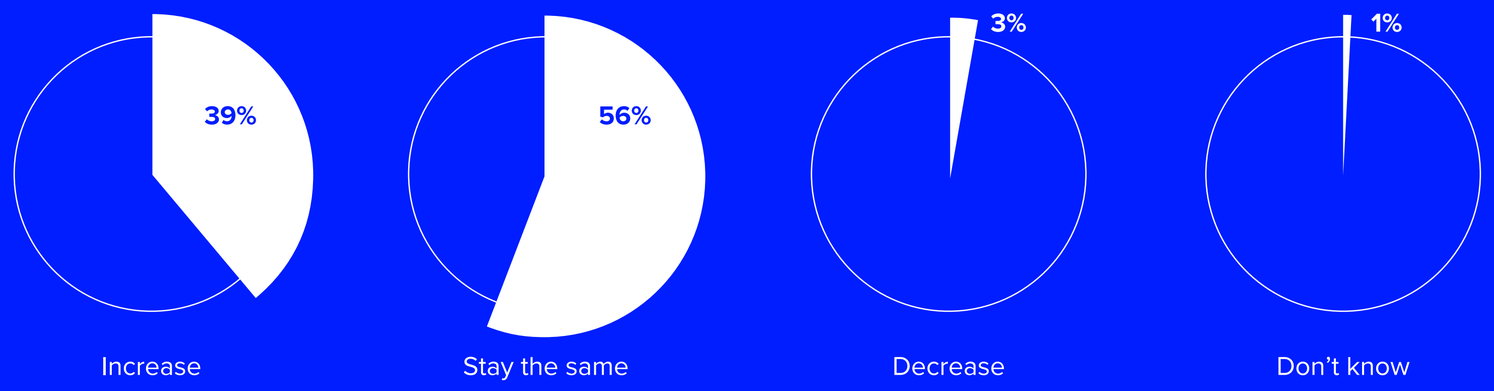
There has been a distinct growth in the number of data scientists. The average count of data scientist teams in each firm in Asia-Pacific is 6.9 in 2020, up from 2.8 in 2018 (see Figure 6). And more than one-third (39%) of survey respondents say they will see more data scientists going forward (see Figure 7).

Figure 6: Number of data scientists at financial firms in Asia-Pacific



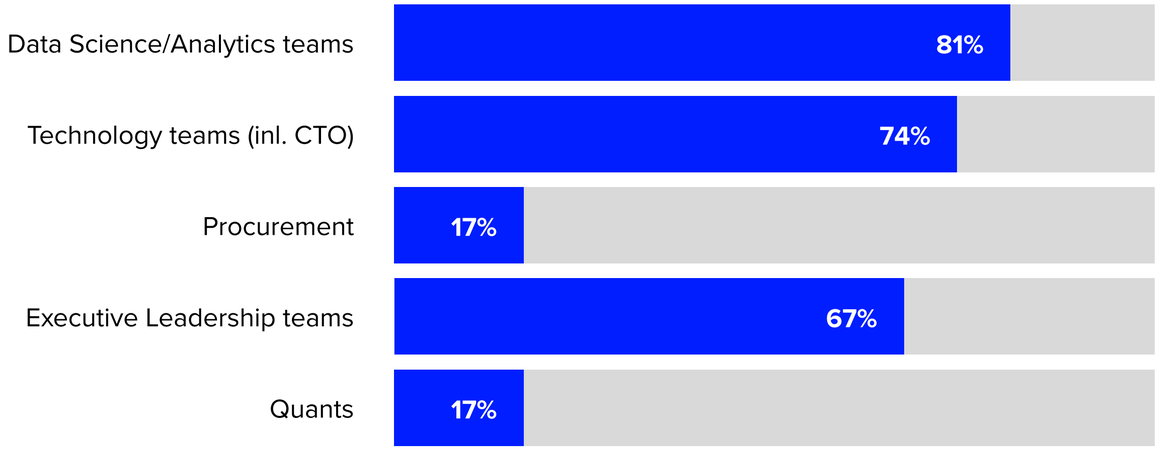
Source: The rise of the data scientist: Machine learning models for the future, Refinitiv, 2020.

Figure 7: Will the data scientist role continue to grow in Asia-Pacific?



Source: The rise of the data scientist: Machine learning models for the future, Refinitiv, 2020.

Figure 8: Which teams are involved in the decision to trial data sets for AI/ML in Asia-Pacific?



Source: The rise of the data scientist: Machine learning models for the future, Refinitiv, 2020.

Data scientists get a seat at the table

While data science teams used to sit under the technology function, the technical execution team of the business teams, they now increasingly report directly to the CEO or COO as part of the innovation or strategy team and influence technology-enabled business decision making.

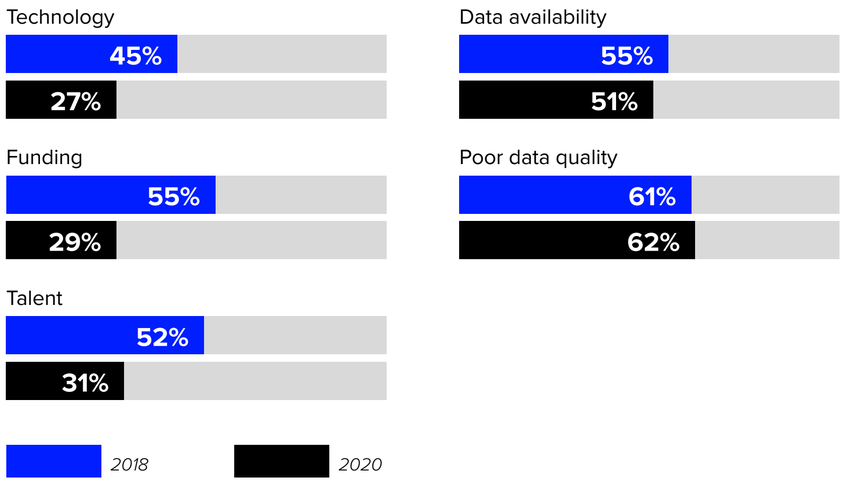
The supply of qualified data scientists has been boosted by the return of skilled professionals from leading U.S. universities and China's willingness to welcome back many data scientists. The region's big tech companies have benefited from this redistribution of top global talent.

Data scientists have graduated to advanced work, with nearly three-quarters (71%) of data practitioners in Asia-Pacific using deep learning. As much as there has been a positive acceleration in the regional data science space as technology funding and talent challenges have largely faded (Figure 9), data availability and poor data quality continue to be especially high barriers.

A respondent at a commercial bank in Singapore echoes this point: “Bad data quality of the past has impacted our finalization and usage of neural networks.” A hedge fund professional in Japan says poor data can have a ripple effect: “One small error can cascade, and more errors occur.”

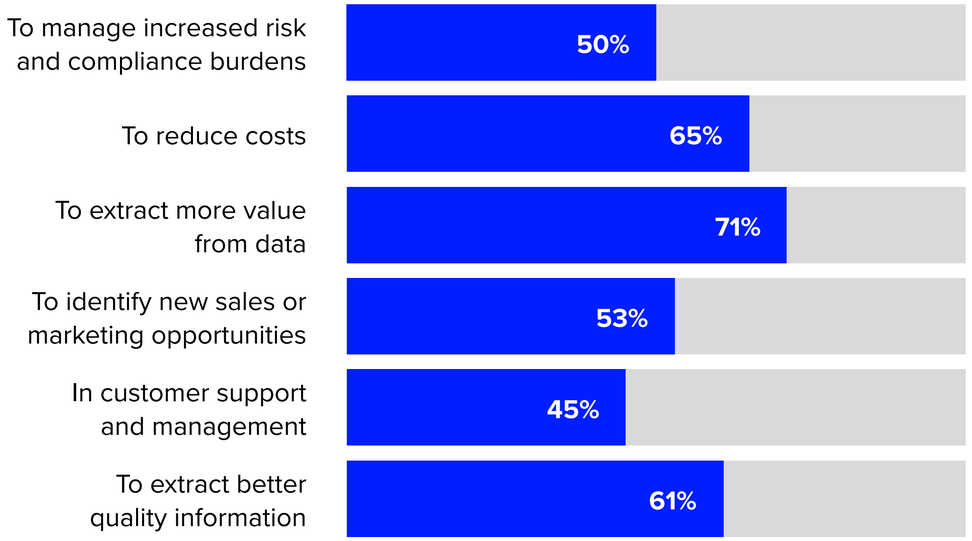
Value extraction from data and cost reduction in data processing are set to become more important in Asia-Pacific. 65% of Asia- Pacific respondents said reducing costs would become an important driver over the next 1-2 years (Figure 10), compared to 40% of respondents in the Americas and only 25% in EMEA. Data value extraction requires an investment in smart, expensive data science talent (see Figure 10). Top talent data scientists can identify opportunities for exponential alpha generation and systemic cost cutting. Therefore, cutting costs in the medium-long term will mean an initial increase in talent costs.

Figure 9: What are the main barriers to AI/ML in Asia-Pacific?



Source: The rise of the data scientist: Machine learning models for the future, Refinitiv, 2020.

Figure 10: What will be the most important AI/ML drivers in Asia-Pacific Pacific over the next 1 to 2 years?

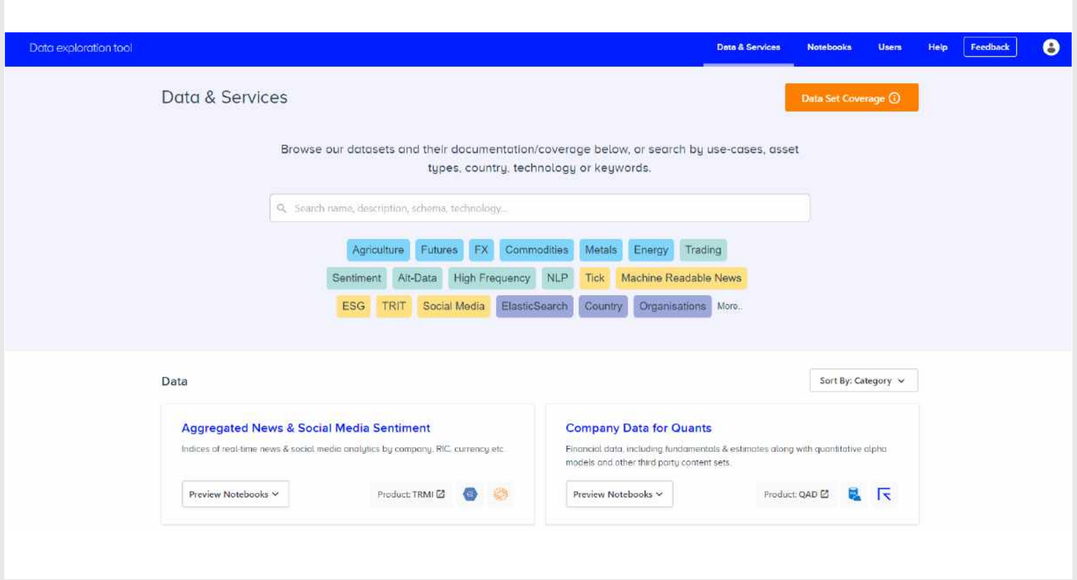


Source: The rise of the data scientist: Machine learning models for the future, Refinitiv, 2020.

Meeting data scientists' need for speed – and quality

Refinitiv Labs is working in collaboration with data practitioners to solve the challenge of AI/ML data quality and availability with solutions such as the data exploration tool.

The new tool gives data scientists free, easy and intuitive access to sample Refinitiv data sets and notebooks, so they can discover, explore and validate Refinitiv's production-grade data, and ultimately, build and deploy AI/ML models faster.



PREDICTIONS

AI/ML is a horizontal capability

This year's survey demonstrates growing maturity in AI/ML, and the ability to scale across business units. Additional use cases will have a head start if foundations, such as cloud deployment and investment in technology and teams, have been implemented.

AI/ML data strategies are now more important than technology strategies

This requires new approaches to data sourcing, data management, data governance and data quality. Having confidence in high-quality, production-grade data for AI/ML will enable firms to use more sophisticated techniques, like deep learning and NLP, to extract new value from existing and untapped data and new data combinations.

MLOps puts scale into production

Moving forward, the next target is ML Operations (MLOps), which will scale AI/ML for the enterprise. Lots of data science teams currently find themselves using PowerPoint® to present new insights, but MLOps will soon help these teams drive real change by operationalizing AI/ML models and replacing manual steps for data preparation and model evaluation, among others, with an automatic pipeline.

Financial data scientists and ML engineers will drive change

We predict financial data scientists will drive this strategic change. The year 2021 could also see the rise of a new role – the MLOps Engineer – as robust data pipelines handling petabytes of data become critical. With data at the heart of AI/ML, the role of the data scientist will evolve.

The ability to discover more unique and significant content will mean greater responsibility in the business, which will continue to increase as the business better understands the capabilities of its data. Then, perhaps, data scientists will join business and banking teams at the tipping point of modeling the future of finance.

PRODUCTION-GRADE DATA FOR AI/ML-FIRST FIRMS

Trusted data to help you scale AI/ML and deep learning

Refinitiv's production-grade data is carefully aggregated, cleaned, normalized and managed to help you train models that achieve quality and precision.

9.6 million

peak message rates distributed per second to financial markets for up to 90 million instruments

8.3 million

private companies covered

+1 million

research documents contributed per quarter from over 1,300 research contributors

68,000

public companies covered – 99% of global market cap

Reuters news

from 2,500 journalists and 110 bureaus in 72 countries

+1,200

content partners and over 1,000 outbound partners

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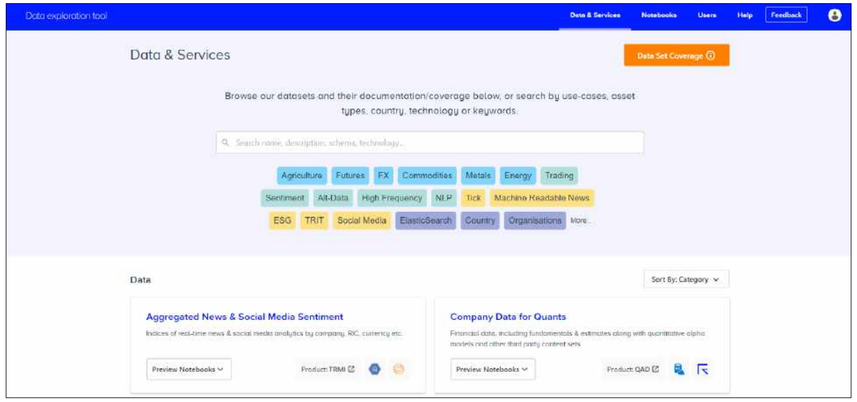

Data experimentation with fewer hurdles

Refinitiv's data exploration tool gives data scientists, quants and developers free, easy and intuitive access to sample Refinitiv data sets and notebooks.

Refinitiv is one of the world's largest providers of financial markets data and infrastructure, serving over 40,000 institutions in approximately 190 countries. It provides leading data and insights, trading platforms, and open data and technology platforms that connect a thriving global financial markets community – driving performance in trading, investment, wealth management, regulatory compliance, market data management, enterprise risk and fighting financial crime.

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