

ESMA Consultation paper on the Use of Big Data by Financial Institutions

Comments from Nasdaq

The Nasdaq Group delivers trading, exchange technology and public company services across six continents. Nasdaq offers multiple capital raising solutions to companies around the globe, including its U.S. listings market, Nasdaq Nordic, Nasdaq Baltic, and Nasdaq First North. The company offers trading across multiple asset classes including equities, derivatives, debt, commodities, structured products and exchange-traded funds. Nasdaq technology supports the operations of over 70 exchanges, clearing organizations and central securities depositories in more than 50 countries. Nasdaq Nordic and Nasdaq Baltic are not legal entities but describe the common offering from Nasdaq exchanges in Helsinki, Copenhagen, Stockholm, Iceland, Tallinn, Riga, and Vilnius.

Introduction

Nasdaq welcomes the opportunity to comment on the Consultation paper on the Use of Big Data by Financial Institutions. We acknowledge that our response will be published.

Nasdaq provides comments from the perspective of an operator of securities exchanges in multiple jurisdictions in the US and Europe as well as provider of technology to exchanges worldwide.

General comments

Today there is a vast amount of data available, and computing technology (Big Data product suite) has matured to the extent where we can gain significant insight from it. In the not too distant future, artificial intelligence will become ubiquitous in the financial industry. From a technical and a business perspective, it will be used to tie together different inputs so market infrastructure providers, regulators, and supervisors can react much more dynamically and learn from experience.

In Nasdaq, we currently use MapR Big Data Ecosystem for finding anomalies in Netflow data using Machine Learning Algorithms. This enabled us to have better insights into our environment to protect our customer data.

Answers to specific questions of relevance to Nasdaq

Q1: Do you agree with the above description of the Big Data phenomenon? If not, please explain why. Please also mention whether you consider that other characteristics are relevant to understanding the use of Big Data.

We agree with the above description of the Big Data phenomenon. The characteristics are relevant since they cover all the aspects of data analysis - descriptive, predictive or prescriptive. Apart from the use of Big Data for high frequency trading; different sets of data (trade data, social data, and mobile data) can be co-related with each other to provide better insights into the economy.

- Sentiment analysis on social media and trade data can help figure out the impacts and pressure points on the market.
- Social media data with financial data can help with forecasting the depression in the economy by analyzing the exploration behavior in the population with their capital expenditure spending history.

We currently co-relate the network data with our assets information to understand the networks anomalies between our different network environments.

Q2: Which financial products/activities are (likely to be) the most impacted by the use of Big Data and which type of entities (e.g. large, small, traditional financial institutions, Fintechs, etc.) are making more use of Big Data technologies? In light of ESAs' objective to contribute to the stability and effectiveness of the financial system, to prevent regulatory arbitrage, do you consider that there is a level playing field between financial institutions using Big Data processes and those not using them (e.g. because they do not have access to data or the (IT) resources needed to implement Big Data processes) or between established financial institutions and potential new entrants (e.g. Fintechs) using Big Data processes? Please explain.

Large and traditional financial institutions are the major companies to be impacted by the use of Big Data technologies because of the volume and variety of data that is generated across the globe by these organizations. Machine learning using Big Data is all about training the models/algorithms with large volume of data to minimize the outlier and thus predict accurately.

In order to thrive in the market, Financial sector companies are primarily focused on improving their operational efficiencies, detect fraud quicker and more accurately, model and manage their risk, reduce customer churn, customer segmentation analysis, customer sentiment analysis, network anomaly detection are few of the many use cases.

There is a level playing field established between financial institutions and potential new entrants (e.g. Fintechs) using Big Data processes primarily because though the new entrants don't have the varied data as that of existing financial institution, they do have the potential to disrupt the market since their primary focus is customer centric with a narrowed scope.

Q3: Do you offer/are you considering using Big Data tools as part of your business model? If so, please briefly describe: i) what type of entity you are, e.g., long established, start-up, a product provider, an intermediary; ii) the service you provide; iii) the nature of your clients; iv) your business model; v) whether the Big Data tools/strategy were developed by an external company or internally and whether you have related agreements with other entities (including non-financial entities); vi) what are the types of data used (personal, anonymised, user data, statistical data etc.) sources of data; and vii) the size of your Big Data related activity and/or forecast activity (e.g. to what extent are business decisions already taken on the basis of Big Data analysis; what other business actions could be based on Big Data in the future)?

Long established as entities, Nasdaq Nordic and Nasdaq Baltic describe the common offering from Nasdaq exchanges in Helsinki, Copenhagen, Stockholm, Iceland, Tallinn, Riga, and Vilnius. Nasdaq provides listing, trading, clearing and information services for financial instruments as well as technology services ranging from corporate services to softwares for running trading and post-trading operations.

The nature of our clients are investors, financial markets participants, corporates and financial infrastructures.

Big Data Strategy was developed using MapR.

The types of data used are network data and log data.

Network Anomaly detection patterns to detect anomalies internally. Big Data will have implication on our efforts to develop technology and use data management project, information security, Cloud outsourcing, Artificial Intelligence, Block chain etc. We consider to use big data strategies developed both by external companies as well as internally developed tools.

Q6: Do you agree with the above short, non-exhaustive, presentation of some of the main applicable requirements? If not, please explain why. Please also mention whether you consider that other legal requirements are essential and should be mentioned.

We agree with the above description of some of the main applicable requirements for the use of Big Data. Already established data protection principles, as well as new requirements in the recently adopted GDPR, mentioned in the description are likely to have impact. In addition, the right in GDPR in regards to automated individual decision-making, including profiling, may impose certain restriction on the use of Big Data tools together with the right to object where personal data are processed for direct marketing purposes.

Q7: Do you consider any of these regulatory requirements as unjustified barriers preventing you from using Big Data technologies? If so, please explain why. Please also explain whether you consider that further regulation (including soft law/guidance, etc. and insofar as it falls within the scope/remit of the ESAs) should be introduced to facilitate the use of Big Data technologies.

The rights provided to the data subjects on how their data is processed by controllers and processors may inhibit the benefits of the decision making process provided by data analysis. However, our view is that no regulatory requirements should be viewed as unjustified barriers preventing the use of Big Data technologies.

While data protection may be challenging in a big data context, the benefits will not be achieved at the expense of data privacy rights. General data principles (e.g. fair and lawful processing of personal data, information to data subjects on the processing) applies to the use of big data technology the same way it applies on other areas, and it is our belief that data protection compliance can be achieved. Meeting data protection requirements will benefit both organisations and individuals, and the benefits of big data and artificial intelligence will be sustained by upholding key data protection principles and safeguards.

Q10: Is the regulatory framework adequately addressing the risks mentioned above? Bearing in mind the constant evolution of technologies/IT developments and that some of the above mentioned regulatory requirements are not specific to the financial services sector (e.g. GDPR), do you think further regulation is needed to preserve the rights of consumers of financial services in a Big Data context? Please explain why.

In regards to data protection, basic principles are already established in the current European Union Directive 95/46/EC. The soon to be enforced GDPR already sets a high standard for customer rights, as well as providing a more tech-adapted and globally suited regulation for personal data. These regulations is in our opinion flexible enough to cover the use of big data technology.

We believe that the risks mentioned above is covered by current legislation. Thus, no further or additional legislation should be required to specifically address Big Data.

Q11: Do you agree that Big Data will have implications on the availability and affordability of financial products and services for some consumers? How could regulatory/supervisory authorities assist those consumers having difficulties to access financial services products?

It is possible that the use of Big Data could in some circumstances lead to restrictive or unfair commercial practices by limiting access to certain services that can be deemed inappropriate for certain customers. Refusal of offer and unfair commercial practices are already possible to challenge in courts.

Q12: Do you believe that Big Data processes may enable financial institutions to predict more accurately (and act accordingly) the behavior of consumers (e.g. predicting which consumers are more likely to shop around, or to lodge a complaint or to accept claims settlement offers) and could therefore compromise the overarching obligations of financial institutions to treat their customers in a fair manner? Please explain your response.

Big Data will definitely help predict more accurately the behaviors of the clients. Customer segmentation, customer sentiment analysis will help with devising applications that can tailor the decision making process for the clients.

We don't think this will compromise the overarching obligations of financial institutions to treat their customers in a fair manner unless the organizations follow the user privacy rules and regulations.

Q13: Do you agree that Big Data increases the exposure of financial institutions to cyber risks? If yes, what type of measures has your institution adopted or is going to adopt to prevent such risks? What could supervisory/regulatory authorities do in this area?

We agree that cyber risks are relevant to consider in relation to Big Data. The NIS Directive requires market operators, including stock exchanges and CCPs, which provide critical infrastructure to comply with the mandatory security breach and incident notification requirement. The implementation of the Directive means that they will need to comply with the requirements under the Directive.

Q15: Do you agree that Big Data may reduce the capacity of consumers to compare between financial products/services? Please explain your response.

We do believe that Big Data may reduce the capacity of consumers to compare between financial products/services in the near future since the organization today are majorly focused on the application of machine learning algorithms and not on the creation of the new algorithms.

Q16: How do you believe that Big Data could impact the provision of advice to consumers of financial products? Please explain your response.

Data analytics with machine learning using Big Data will help the financial organizations to cater to better needs of the clients. It helps with providing better decision making processes into the hands of our clients using real time trade analytics.

Q17: How do you believe Big Data tools will impact the implementation of product governance requirements? Please explain your response.

The Big Data tools will be affected when the rights to perform automated individual decision-making process, including profiling is been provided to the end users since that will inhibit the decision making process of the algorithms.

Q18: How do you believe Big Data tools will impact know-your-customer processes? Please explain your response.

Machine learning algorithms on Big Data will help us to know the decision process of our clients and accordingly deliver the products or services to our customers to better suite their needs.

We also believe that big data will impact the KYC and AML process. Use of big data in these processes will enhance the due diligence process and ease the onboarding process. Hence, the customer experience will be better and the risks of doing business with fraudsters will decrease.

Q19: What are key success factors for a Big Data strategy (i.e. the adaptation of the business model/plan towards Big data driven technologies and methods)?

The opportunity is to identify how the use of Big Data technology can be used to make smarter strategic decisions, manage risk and develop new products, and through this save time and money.

As more activity is conducted online, and technology solutions such as the internet of things further increases the amount of data being collected, the possibilities are likely to increase further on.

Q20: What are the greatest future challenges in the development and implementation of Big Data strategies?

Creating easy access to validated and correct data, and to create transparent methodologies to analyse the data. The world has created a huge amount of data the last years, and this might make it difficult to find the true value from the data. One possible challenge is that imprecise or faulty data are being used to assess certain customers or risks. If these data are not properly erased or cleaned from the assessment method, the conclusion of the assessment may be incorrect. Worst case scenario is that we could end up in a situation where the imprecise and faulty data can damage certain customers.

Q21: This Discussion paper refers to a number of measures and tools meant to ensure compliance with conduct and organisational regulatory requirements as well as data and consumer protection rules in the context of big data analytics. Are other measures and tools needed? If so, what are they and what they should cover?

The EU has implemented far-reaching regulations on these matters.

Q22: How do you see the development of artificial intelligence or blockchain technology in connection with Big Data processes?

A lot of data has been created the last couple of years and big data technology, artificial intelligence etc. is a fast-going and evolving area that has the potential to change a lot of things which we do not have the full overview yet. In order to make the use of big data technology beneficial for other than only big corporations in the future, the development of some kind of centralized or unified data base could be needed.

Q23: Are there any other comments you would like to convey on the topic of use of Big Data by financial institutions? In particular, are there other relevant issues that are not covered by this Discussion Paper?

Some may see proprietary rights on certain data as limiting access to such data. However, our view is that proprietary rights are justified by the fact that entities having those rights invest in the production, development and control of data, making such data reliable and valuable. It is therefore important to recognize the value of data and the proprietary rights attached to it since they incentivize the production of such useful data. Absent the proprietary rights, the commercial value of data will disappear eliminating the willingness and incentives to invest for ensuring the quality and availability of the data concerned.