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The financial services industry has had to weather quite a few headwinds since the 2008 global crisis took its toll on the sector. Since the collapse of Lehman Brothers triggered a domino effect of billion-dollar write-downs, numerous bankruptcies and bail-outs of 'too big to fail' banks, the industry has been increasingly using smart analytics to try to solve its very complex problem.

Big data analytics offers more actionable insights, real-time experience and solutions that saved costs and improved products and services. Share on X

The financial services sector has also started using big data to enhance risk management, detect fraud and track consumer behavior in order to keep up with compliance standards and increase customer satisfaction and revenues.

Big Data in Fraud Detection and Prevention

In fraud detection, financial institutions deploy big data analytics to compare data from various sources – including location, shopping patterns and previous transactions – to flag inconsistencies and take immediate actions. Predictive analytics tools develop world models and patterns to prevent fraud.

Semantic Technology allows text to be analyzed using Big Knowledge Graphs and get linked to them. This allows more comprehensive discovery of suspicious patterns, using information from multiple data sources and combining them with facts extracted from text. Using this technology, financial services industry can be more efficient in fighting fraud.

Such applications can benefit from data sources and resources such as:

- **Linked Open Data –** There are thousands of datasets publicly available in the machine-processable format: DBpedia (all the facts from Wikipedia), Geonames (geographical database of all locations on Earth), statistical and other government data. Altogether, these include billions of facts that can be used as a source of evidence on a broad range of relationships. In the English version of DBpedia alone, we have identified more than 30 thousand direct child-parent organization relationships. If control relationships are traced on more than one step, there are more than 50 thousand child-parent pairs. For instance, there are 94 children organizations of Alphabet Inc., 106

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children of JP Morgan Chase, 63 of General Motors and 48 of Gazprom.

- **Global Legal Entity Identifier data** – "*Legal Entity Identifier (LEI) is a 20-character, alpha-numeric code, to uniquely identify legally distinct entities that engage in financial transactions. … As of end January 2016, over 415,000 entities from 195 countries had obtained LEIs from 29 operational issuers*". LEI data can be downloaded from the Global Markets Entity Identifier (GMEI) Utility portal – a recent dump contains about 2.8 million facts about 211 thousand organizations, including registration addresses, ultimate parents, etc. There are more than 10 thousand statements for ultimate parents – The Goldman Sachs Group Inc. is the champion being the ultimate parent of 1851 organizations!
- **Financial Industry Business Ontology** (FIBO) is a conceptual schema that allows for a unified description of the structure and contractual obligations of financial instruments, legal entities and financial processes. This can be used to layer the proper semantics on top of the data coming from different sources. In other words, it gives you the right lens to look at it.

The Asset Recovery Intelligent System (ARIS) prototype is a prototype asset tracking system, which uses semantic technology to identify fraud. ARIS identifies key terms, summarizes facts and infers new facts to create a holistic knowledge base, including sources from which information has been collected, as well as networks and roles, and relations between all people and parties involved.

Big Data in Regulatory Compliance

Fraud undoubtedly costs the industry a lot of losses, but failure to comply with regulations creates a potential for even greater liabilities in the form of hefty fines from governing authorities. As far as regulatory compliance and risk management are concerned, the financial services industry has been increasingly banking on big data solutions to swiftly and efficiently abide by the rules of the game, which have been changing frequently with the tightened supervisory monitoring in the wake of the 2008 crisis.

Credit Suisse, for instance, launched last month a compliance joint venture to help catch rogue employees before they do any harm. In an interview with Bloomberg, Credit Suisse's head of compliance Lara Warner said that the bank had started working with its JV partner Palantir after another Swiss bank, UBS, incurred in 2011 a $2.3-billion loss from unauthorized

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trading by London-based employee Kweku Adoboli.

Using Big Data to Enhance Consumer Experience and Increase Revenues

Alongside helping with regulatory compliance and fraud prevention, the financial industry is leveraging big data analytics to gain insights on how customer behavior evolves and how patterns of client use may influence retail banking offerings and digital marketing. Lloyds Banking Group, for example, has been partnering with Google to prototype real-time systems to further push into customer-focused offering and digital marketing.

On both sides of the Atlantic, financial services giants like Wells Fargo and BNP Paribas, to name just two, have set up accelerator programs to drive digital innovation and optimization. JPMorgan Chase is using big data analytics for its JPMorgan Chase Institute reports. The reports offer insights into the US consumer income and spending patterns by crunching data from billions of transactions across the country.

A growing number of banks, insurers, wealth management groups and investor firms are expected to start using smarter data in their ways of doing business. According to advisory and market intelligence company, International Data Corporation (IDC), the global financial services industry spent more than 25% of its total IT budget in 2015 on mobility, cloud, and big data & analytics; that is, $114 billion worldwide on these three technologies alone out of a combined IT expenditure of $455 billion. IDC expects the big data & analytics, mobility and cloud to take up almost 30% of the financial industry's IT budgets globally by 2019.

Increasing IT expenditure is aimed at engaging and retaining customers by data-driven offering and pricing, which would ultimately, and ideally, lead to higher returns and lower costs. Parsing big data helps the financial services industry better understand customer preferences and spending habits. Thus, the sector can easily define different customer segments and tailor and promote products and services for the specific consumer groups.

Analytics could also offer insights into how long a customer will stay and which client segment could be sensitive to price or interest rate adjustments. Some smaller non-bank lenders have also started using big data to paint a clearer picture of the credit worthiness

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and scores of individuals and companies. The data include additional sources such as an individual customer's social network activity, or a business's customers and subcontractors, when the latest deals were made or when new products are being launched.

Big Data and Analytics Takeaways

So, big data and analytics – whose use is continuously rising – could be the next milestone in the financial services industry as the sector is getting increasingly digital and is, as always, on a constant pursuit of a higher return on investment (ROI), rising profit margins, and growing incomes.

According to a Capgemini Consulting report:

> 60% of financial institutions in North America believe that big data analytics offers a significant competitive advantage and 90% think that successful big data initiatives will define the winners in the future.

One thing is certain, though: big data analytics is not a one-hit-wonder. It is surely here to stay and alter the way global financial institutions do business.

Upon announcing the setting-up of the JPMorgan Chase Institute, its President and CEO, Diana Farrell, commented on how the industry desperately needed analytics at the height of the 2008 carnage in the financial sector:

> I can't tell you how frightening it was to be in the middle of the debacle of the recession and not have a good understanding of what was happening in the household sector. We were just starving for real-time information.

Hopefully, the financial sector worldwide would use big data wisely, reap the benefits of data analytics in the rapidly-changing regulatory, consumer and risk landscapes, and fare better come the next global financial crisis.

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Wondering how you can use all this information in your business? Learn more about Big Data analytics with Semantic Technology!

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