

BIG DATA ANALYTICS FOR FINANCIAL RISK MANAGEMENT

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TALENT NETWORK



Big Data Reporting Key Risk Elements in Real Time

The amount of available financial information is growing exponentially. Terabytes have turned into Petabytes and then into Exabytes. Big Data differs from classic data processing in three ways; volume, velocity and variety. The advent of newer data collection and transmission capabilities, most significantly IoT (Internet of Things) and 5G wireless technology, has enabled the capture, bundling, transmission and reporting of data (volume) in real time (velocity), and from multiple data types and sources: numbers and pictures (variety). This enables immediate reporting, ultimately increasing decision making capabilities to a new level.

Applications designed for Big Data is today's challenge. Traditional applications, such as remote account access, event logging and reporting, and security are certainly basic blocking and tackling functions in this sector. What other uses of this giant pool of data, both internally and externally sourced, can be ideated to transform financial markets to increase overall company and client value?

One major opportunity exists is **risk management**. Big Data can be deployed to enhance model creation, which can lead to better risk management strategies. These can significantly impact and influence not only instrument pricing, but fraud detection and prevention, systemic modelling, market exchanges, product customization, and audit and compliance practices for regulatory requirements.

Labor Force Takeaway

Associates must be both data and reporting literate to assist businesses as they begin to take full and immediate advantage of data mining opportunities.

CompTIA A+, and Fundamentals certifications, aimed at the IT beginner, are an excellent starting point for associates to gain knowledge in the area. Intermediate associates can delve deeper into the discipline with certifications in Cisco Network Administration (CCNA), CompTIA Server+, IBM Certified Specialist, and others like OCA, OCP, VCP, and MCSA. Advanced certifications like MCSE and CCNP prove valuable for associates running a data shop full time, and expert level certifications like ASE/CSE and OCM render associates fully capable of not only gathering, concatenating and interpreting data, but also managing large network installations as well. In-state major universities, like NJIT and Rutgers, also offer advanced degrees in Big Data Science for intensive practitioners.

Models Used to Anticipate Market Behaviors

Financial risk management has economic value to a firm by using financial instruments to manage risk exposure. Potential risks include: operational, credit, market, foreign exchange, shape, volatility and liquidity. Financial risk management requires identifying risk sources, measuring impact and developing **risk mitigation strategies**.

There are three basic steps involved in gathering and analyzing data for management purposes:

- Collection of internal data to evaluate instrument attributes, and to determine other usable data sources
- Collection of external data to augment attributes for analysis
- Analysis process to determine market movement potential

Obstacles that impact this analysis process include data protection, lack of knowledge, budgetary restrictions, immature technology and lack of standards.

Big Data includes customer specific data, financial filings, employee data, operational data (internally generated), regulatory filings and social media (externally generated).

The use of Big Data for information acquisition and mining promise real time risk management, in particular:

- **Scenario Simulation:** Creating more realistic scenarios, including multiple simultaneous events.
- **Fraud Identification:** Can be conducted faster using Big Data. By taking internal information (account and client information) and comparing to counterpart external data (applications, logs and access attempts) on each account can yield number of fraud attempts. Using geolocation and time of day for establishing origin of fraud attempt can be used to block and even prevent future attempts.
- **Anticipate Market Exchanges:** Using data attributes on instrument pricing, environmental influences and client profiles can be combined and analyzed for patterns.
- **Product Customization:** Client clickstream and search data, on all products across all financial institutions, can be combined and analyzed to determine optimal product mixes for targeted client base.
- **Systemic Risk Modelling:** Estimating the interrelationships between institutions using Big Data is also key to security and privacy initiatives. By gathering and analyzing data trails from multiple financial institutions, it can be determined which sources are more central to traffic, and therefore, more open to contamination threats.
- **Compliance Audit for Risk Assessment:** Ongoing regulatory changes and concomitant audit requirements necessitate regular information reviews – the gathering and parsing of this data is fundamental to this mandatory review. Through reporting engines outliers can be easily identified for isolation and treatment. Big Data makes the capture and analysis of these large volumes of client information both manageable and fast.