Improving Operational Risk Management at Banks with Big Data Analytics

Abstract

As governments across the globe aim to extend banking services to the underserved and unbanked segments, banks and financial services firms are introducing innovative products and services to cater to the needs of these new customer segments. While the need of the hour for banks is to act fast to counter competition, but it is as important to control costs, comply with regulations, and continually adjust business strategies in response to disruptive technology and industry changes. In addition to ensuring a profitable sustenance in such a competitive environment, financial firms have to combat diverse types of risks.

Regulators across the globe have expressed concerns about banks’ awareness of their risk exposures and the efficacy of their risk mitigation measures and controls. This paper discusses how banks and financial services firms can tap into the potential of Big Data and analytics technologies to better manage operational risk.
Big Data can offer Big Solutions

While most global financial institutions have adopted Big Data and analytics solutions in their risk management and compliance functions, many of these firms have not been able to fully tap into the tremendous potential these technologies offer.

A robust and efficient Big Data solution can help banks mitigate the operational risks posed by various processes and lines of business. Effective utilization of Big Data technologies to transform operational risk management will, however, necessitate a careful evaluation of the four key dimensions of Big Data — volume, velocity, variety, and veracity — during strategy formulation and implementation. Such an evaluation will help control future operational loss events in a timely manner, and drive long-term growth.

Volume: Managing the Vast and Ever-growing Pool of Data

Every single financial transaction results in a host of data points. With zetabytes and petabytes of data coming in from varied sources in structured as well as unstructured formats, financial institutions have a task at hand, as they attempt to gather all of this data for the purpose of analysis, in the anticipation of culling out meaningful and actionable insights. Financial institutions must therefore invest in the right type of tools and solutions that can process the huge amount of data that is generated from different banking channels and processes. In the absence of such tools, a bank may be unable to augment its services as per customer preferences, ultimately risking business loss.

For instance, gathering data through social media may help identify a customer’s traits, preferences, and needs based on his or her life stage. Apart from generic traits, social media activity may also help banks understand a customer’s satisfaction level (and grievances, if any) with a particular banking organization or a particular product or service. Through our experience of working with global banks, we have inferred that quite a few times, instead of raising grievances through formal channels within a bank, customers resort to
raising the issue in a social community or portal. While this behavior could be attributed to a variety of reasons, what is important here is that taking note of such activity well in time can help banks avert any potential operational risks on account of mismanagement within the organizations.

It is no surprise that the amount of data that needs to be processed to cover all the bases is huge, but if financial institutions are not adequately equipped with the required tools and knowledge, critical areas may get neglected, in turn leading to an operational risk going out of hand.

**Velocity: Tackling the Speed of Data Generation**

Data generation is a very quick process. Traditional systems are understandably not equipped to match the ‘lightning speed’ at which data is generated, especially in the financial services space. And, in the absence of a system that can quickly process this fast-moving data and derive actionable insights from it, organizations are often rendered incapable to take timely action, be it to clinch a revenue opportunity or to avert a loss, or to retain a customer. It is therefore vital to have a system that can quickly analyze data to provide efficient, useful, and timely insights.

A careful evaluation of this dimension during strategy formulation can help banks and financial institutions detect frauds in real time and avoid losses. For instance, let’s say a customer wants to make some fraudulent transactions. An efficient detection system can raise an alert or block the transaction almost in real-time. Now consider the number of customers that a large, global bank typically has, and the number of transactions it processes every second. If all such transactions are to be screened and reported (or blocked) instantaneously, traditional batch-based systems are definitely not the right pick. Since batches are generally executed once a day, the response time of such systems will be too long to be useful for risk aversion. Banks must consider using systems based on technologies like Hadoop Distributed File System (HDFS), where multiple processors are applied on different parts of data to provide results at a much faster pace.
Variety: Getting a Grip on Data Diversity

Since data is available from varied sources in fairly different formats, this dimension of data management has to be carefully considered when designing a risk management system. The system should be capable of analyzing all the data, regardless of the format it is in. More importantly, the system should be equipped to adapt to newer formats of data that may evolve, with minimal reconfiguration. Banks and financial institutions typically rely on their internal data sources to make decisions. We believe that firms should consider using data from external sources as well, for e.g., loss event data of other banks, if they want to gain a well-rounded perspective and improve decision-making. Knowledge of internal loss events, combined with similar information from other organizations, can help in predicting future loss events with greater accuracy.

This will necessitate integrating a bank’s existing systems with external data sources. Banks’ internal data from different systems may be structured, and therefore easily integrable, while stitching together the unstructured data from external sources can be a challenge. With regulatory controls tightening further, it is imperative for banks and financial institutions to devise a mechanism that provides a comprehensive and holistic view of customers and transactions. And, this can be achieved only through advanced technology systems that are capable of ingesting and processing data – both structured and unstructured – from internal as well as external sources.

Veracity: Ensuring Data Reliability and Accuracy

Perhaps the most important aspect, the reliability or quality of data merits careful consideration when designing Big Data powered systems for operational risk management for the financial services industry. With data being captured in large volumes from varied sources, the accuracy of data may be questionable. For instance, data for an individual may come from multiple sources and consequently can provide varying information for the same parameter. Suppose a bank customer (who is a vendor for some retail products) has tied up with two e-commerce sites, but supplies products of varying quality to customers of the two sites, the feedback from the sites will differ, even though the product is the same. Banks may therefore find it difficult to judge which feedback should be considered when a loan has to be processed for this customer.
Designing the Right Big Data Powered System for Your Bank

There are, undeniably, several challenges that financial institutions face in the absence of the right tools and techniques for data processing. Despite the challenges, incorporating Big Data technologies into the existing IT landscape of banks does not require a complete overhaul of IT systems. Multiple simpler and smaller transformation projects can be undertaken by the organizations that may not need huge investments in one shot. Such a staggered approach will help financial institutions assess the efficacy of these transformation programs in tandem, thereby providing the base for deciding the fate of similar impending projects.

A pertinent point to note while designing a Big Data system for operational risk management at financial institutions is scalability. The system should be designed in a way that allows for complete adaptability to the evolving regulatory landscape and technological advances. To achieve this, banks and financial institutions must forge strong partnerships and alliances with leading technology companies in addition to cultivating in-house capabilities.

Conclusion

Big Data technologies are effective as well as value-adding. The transition of existing IT systems to Big Data need not be overwhelming – banks and financial institutions can adopt a staggered implementation approach to enable gradual adoption of Big Data and advanced analytics technologies.

Finally, as the current trends indicate, data sets are going to expand substantially and so will the complexity of the systems. Big Data enabled systems may initially look complex as compared to the existing traditional systems, but they can easily outperform the traditional systems. Enterprises should define a strategy to optimally leverage Big Data for operational risk management, which will definitely prove beneficial in the longer run.
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