Exploring Next Generation Financial Services: The Big Data Revolution
Financial services firms are awash in data, both from traditional internal structured sources and, increasingly, from external “unstructured” sources ranging from social media to newly accessible government and third-party databases. Data is no longer measured in terabytes (a thousand gigabytes) but in zettabytes (a billion terabytes).

The velocity of data has changed, as well; rather than inputting data on a fixed frequency (allowing the production and distribution of reports on a monthly basis), firms are now dealing with continuous flows of data that can, if properly harnessed, be used to generate reports in real-time, with live, streaming updates.

The most important change, however, is in how all this data is used. Thanks to the ever-increasing sophistication of analytics and other innovative data-related technologies, data is no longer a massive, indecipherable lump of facts but a vibrant source of useful insights leading to better business decisions. The key task for financial services firms, as it is for companies in other industries, is to separate the “noise” of irrelevant or uninterpretable data from the “signal” of useful, relevant information.
The Financial Services Challenge: Seeking Profitable Growth

Since the global financial crisis of 2008, financial services firms have been trying hard to re-invent themselves and to find new ways to establish sustainable competitive advantages.

While many firms have exited businesses and geographic regions—and nearly all firms have focused on reducing costs—profitability remains below pre-crisis levels. The Big Data revolution, however, offers new opportunities for profitable growth, and financial services firms are responding enthusiastically.

Recent survey research indicates that 71 percent of firms in the financial services industry at a global level are exploring Big Data and predictive analytics, and that 70 percent report that Big Data is critically important to their firms.1 Over half (54 percent) of firms in the industry have appointed a chief data officer.2

Financial services firms are making sizeable investments in Big Data, as well. Firms in the industry spent $6.4 billion on data-related programs in 2015,3 and such spending is expected to increase at an annual rate of 26 percent from now through 2019.4 In the broader financial technology (FinTech) area, financial services firms increased their investment in start-ups and other early stage companies by 201 percent from 2013 to 2014 alone and invested $12 billion in FinTech globally in 2015.5
Data is no longer a scarce resource, closely guarded by the IT function; instead, it is seen as a key element for decision making throughout the firm, to be made readily available to those who can make the best use of it. More and more often, it is the finance function and the chief financial officer (CFO) who take responsibility for obtaining and analyzing data and sharing insights with business teams.

We are now seeing four new big opportunities for CFOs to exploit the Big Data explosion and play a greater role within companies.

**Data-driven decision making**

The timely availability of large amounts (and different types) of data allows decisions to be made on evidence-based analysis rather than intuition. This makes it easier for CFOs and their finance teams to evaluate opportunities based on potential cost reduction and revenue growth.

**Discovery of new business opportunities**

New solutions can facilitate the discovery of new business opportunities (including data monetization) and help the CFO expand his or her role as trusted advisor to the chief executive officer (CEO) in areas such as strategy development and the identification of the best areas for future investment.

**Enhanced productivity and efficiency**

New technologies such as process automation and cloud storage enable firms to handle huge volumes of unstructured data at lower cost. This shifts the focus of decision making from IT (how do we process and store the data) to the CFO and the business units (how do we make the best use of the insights generated from the data).

**Risk and regulatory management**

Financial services firms are facing increased regulatory reporting demands, requiring improved infrastructures and procedures. This is fostering closer collaboration and integration between the CFO and the chief risk officer (CRO) function as well as better capabilities for conducting required activities such as model testing and real-time simulations.
Big Data for Better Decisions

With the advent of the Big Data revolution, CFOs will know more than ever about the dynamics of business environments and have access to real-time insights to improve business decisions.

As seen in Figure 1, an improved Big Data management process (including steps like data storage, elaboration and analysis through advanced technologies and new techniques such as data visualization) allows CFOs to have faster and more direct access to insights generated from Big Data and consequently make better decisions based on the data.

Moreover, thanks to the quicker availability of useful insights, the CFO role should shift from a monitoring and control function—with an emphasis on activities such as budgeting, forecasting and performance monitoring—to a strategic partnership with the business, with proactive involvement in strategic investment choices and the discovery and development of new business opportunities.

Figure 1. Data-driven decision making and discovery of new business opportunities

DATA-DRIVEN DECISION MAKING APPROACH

- **Data Storage**: Huge volume and different types of data
- **Data Elaboration**: Generation of combined information
- **Data Analysis**: Data visualization techniques
- **Decision Making**: Real-time data and insights discovery

BIG DATA MANAGEMENT

Big Data and advanced analytics help improve data management processes through the elaboration and analysis of large amounts of data. They also provide real-time information and useful insights that allow CFOs to make faster and better decisions based on data rather than intuition.

DISCOVERY OF NEW BUSINESS OPPORTUNITIES

CFO Business Role

- **Business Operator**: Monitoring skills, reporting activities
- **Business Advisor**: Strong industry knowledge to act as business leader
- **Strategic Partner**: Analytics capabilities to drive decisions and create new opportunities

Big Data and digital technology help CFOs shift from business operator activities (budgeting, forecasting, performance monitoring) to a C-level advisor role (insights for supporting strategic decisions, analysis of investment choices, new business opportunities).

Source: Accenture, May 2016
Better Information at a Lower Cost

Unlike traditional business intelligence systems, new techniques and technologies used with Big Data allow CFOs to gain useful information at a much lower cost.

This is particularly true in regard to regulatory reporting. As seen in Figure 2, new architectures and the move from data silos to “data lakes” can provide substantial cost advantages, due in part to greater scalability but also due to flexibility in the data analysis. In fact having all data sources in a data lake allows users to pull new reports on relatively new data, while in traditional data warehouses (DWHs) users have to extract, transform and load (ETL) new data into a static data model, which is expensive and costly from a time perspective. By using automated and sophisticated analytical tools that can store and analyze data faster and more easily, CFOs can reduce the overall cost to serve in relation to data elaboration.

Big Data adoption helps organizations simplify and reduce the costs of taking data from the source and converting it into usable information for regulatory reporting, including such data-intensive activities as real-time simulations and scenario analysis that are often required by the regulator.

Figure 2. Enhanced productivity, efficiency and risk and regulatory management

ENHANCED PRODUCTIVITY AND EFFICIENCY

Data Sources

Machine Learning

Data Enrichment

DATA LAKE (BIG DATA PLATFORM)

In-Memory Technologies

Fast Access Database

Big Data Query

Real-time Use (Mobile, Web…)

Analytical Use (Report, Dashboards…)

New architecture, moving from silo solutions to “data lakes” and using Big Data technologies, can help generate important cost advantages due to a higher level of scalability and large volumes of data managed at a lower cost per unit.

RISK AND REGULATORY MANAGEMENT

Each year, banks are confronted with new regulatory requirements and challenges. Big Data allows organizations a simplified and cost effective way to source their data and convert it into “usable information for regulatory reporting.”

Note: A legend describing the acronyms can be found in the References section

Source: Accenture, May 2016
Becoming a Big Data-Driven Financial Services Firm

Banks and other financial services firms undertaking the transformation to a Big Data-driven enterprise should, in our view, address three key strategic imperatives that strengthen the likelihood of positive outcomes while limiting project risks.

Data operating model

First, they should establish a new **data operating model** based on the central role of data in decision-making processes. The new operating model defines roles and responsibilities—along with appropriate taxonomies and standards for data quality—as part of an overall data governance process. Those measures can often be combined with activities required under BCBS 239 (Principles for effective risk data aggregation and risk reporting).

Roles within the data operating model include the data officer as a leader, designing macro data governance processes, assigning roles and responsibilities, and accountable for the reliability of data used for regulatory and financial reporting purposes. The other main roles assigned by the data officer include:

- **Data governance coordinator**, who meets regularly with all players in the governance function, and oversees the reporting process and the use of appropriate data sources, methodology and tools by all involved stakeholders.
- **Data quality steward**, who writes data quality standards for the data management process and defines the data dictionary, while also managing the data quality process for reporting.
- **At the business level**, the data owner defines the business’s data requirements for effective reporting and defines—working with the data steward—the data checkup activities in the reporting process and makes sure that such activities are performed correctly.
- **Data manager**, who guarantees that data required for reporting purposes (both regulatory and managerial) are always available and reliable. The data manager also oversees the quality of data used for reporting purposes and takes action to solve potential issues.

Leading-edge architecture

Second, firms need **leading-edge architecture**, with advanced technologies, new solutions and flexible structures that can store and analyze huge amounts of different types of data to extract useful insights and generate value across the enterprise.

The Big Data IT architecture, as showed in Figure 3, is based on different data layers, which guarantee flexibility, scalability and data exploration.

The architecture’s sources of information are operative with legacy systems that contain transaction and reference data related to core banking activities. They are also the point of origin of the information, allowing for easy verification and auditing.
Cultural change

Third, firms need a cultural change in terms of the innovative mindset, new business roles and advanced skills required throughout the organization—including senior management—to capture and understand the real business value behind the adoption of Big Data. We encourage senior management to keep an open mind to concepts such as innovation diffusion, making decisions based on facts and data rather than intuition, the convergence of data and the sharing of information, and business level accountability for data management.

Firms may need to set up new business roles with the responsibility for defining and executing data strategy, identifying and managing data and designing data quality controls, and managing the traceability and reliability of business data. Accountability for data ownership and management also needs to be established.

Requisite skills and capabilities may not be available in-house, so financial services firms may need to acquire and develop new skills and capabilities in areas such as data science, quantitative analysis, and IT architecture. Professionals with experience specific to Big Data projects may also be needed.
Big Data: High Stakes for the CFO

At financial services firms today, the finance function and the CFO are called upon to deliver operating improvements and enhanced profitability while responding to ever-greater regulatory requirements.

Compounding the problem, CFOs often confront poor data quality, outdated technologies and misalignment in data processing, leading to inconsistent information and difficulty in addressing strategic information. Our experience and analysis would indicate that these inefficiencies impose a "cost" of as much as 50 percent on the traditional finance function (see Figure 4).

The data-driven finance function, led by a CFO comfortable with the opportunities provided by Big Data, can benefit from important and tangible reduction in costs (up to 35 percent by our estimate) along with significant strategic upside. A new operating model to manage data—incorporating the alignment of data processes, high standards for data quality, new technologies, harmonized regulatory and management reporting, and new analytics capabilities—can also contribute significantly to a firm's overall profitability and return on equity.

Chief financial officers are uniquely positioned to take on the role and capitalize on the opportunities presented by Big Data. In most organizations, the CFO sits on large troves of data that are essential to the effective operation of the firm. This is a natural starting point for CFOs to explore the potential of Big Data as it pertains to new business opportunities, to potential investments, and to meeting the reporting requirements of regulators, shareholders and other key stakeholders.

Figure 4. The value at stake for the CFO

FROM ISSUE
Traditional CFO Department

Tangible Costs

Cost of Inefficiency

Poor Data Quality and Technology Inefficiency +30%
Non-Harmonized Reporting +15%
Non-Aligned Processes +5%

TO OUTCOME
The Data-Driven CFO Organization

Intangible Benefits

Tangible Cost Reductions

Centralized Data Sources -20%
Harmonized Reporting -10%
Cost Reductions -5%
Data-Driven Decision Making -35%

Further Up-Side

Discovery of New Business Opportunities

Issue
The impact of growing business constraints and regulatory requirements often result in greater inefficiency and costs. Poor data quality, outdated technology and misaligned data processing can lead to inconsistent information and greater difficulty in executing strategy. Based on our experience, such a situation could lead to significant cost increases (up to 50%).

Outcome
Our experience indicates that high-performance CFO organizations can benefit from significant and tangible cost reductions (up to 35%) and potential intangible up-side. A new operating model to manage data (based on the alignment of data processes, high standards in data quality, new technologies, harmonized reporting and new analytics capabilities) can help sustain profitability and return on equity.

Source: Accenture, May 2016
References


2 Ibid


Legend for Figure 2

236: Internal control systems for Italian banks
236 (8): Information security for Italian banks
AML IV: Anti-Money Laundering IV
AnaCredit: Analytical Credit Datasets project
CCD: Consumer Credit Directive
CRS: Common Reporting Standards
EMIR: European Market Infrastructure Regulation
FRTB: Fundamental Review of Trading Book
Liikanen: Liikanen Report
MAD II: Market Abuse Directive II
MIFID: Markets in Financial Instruments Directive
PRIPs: Packaged Retail Investment Products
PSD II: Payment Services Directive II
Reg. EU Privacy: Protection of personal data
RDARR: Risk Data Aggregation and Risk Reporting
SREP: Supervisory Review and Evaluation Process
SRM: Single Resolution Mechanism
SSM: Single Supervisory Mechanism
Supervisory Reporting EBA (European Banking Authority): New technical standards for regulatory reporting
Transparency Bankit: Transparency exercise on RWA composition

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