

# Top 10 Trends in Capital Markets 2018

What You Need to Know





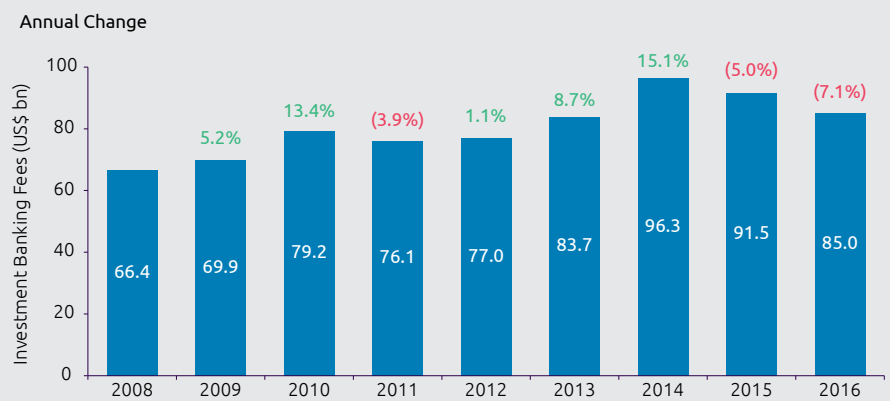
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# Introduction

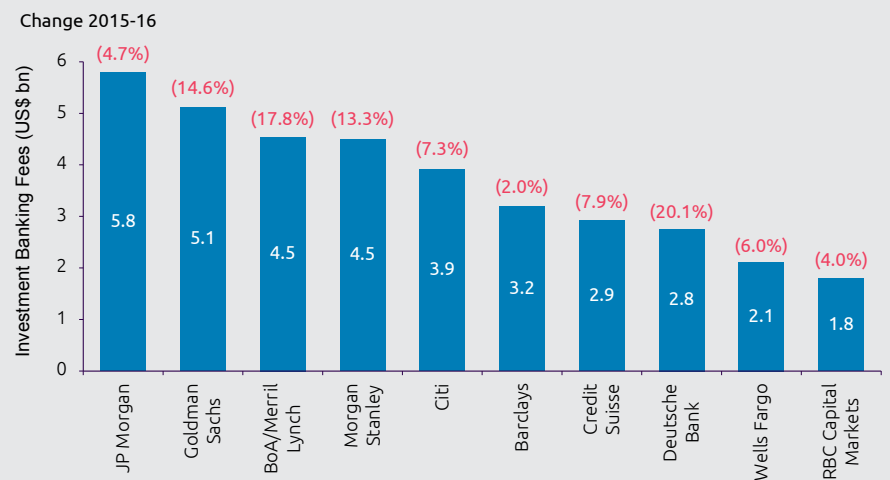
Global capital markets witnessed another year of declining revenues in 2016. In fact, investment banking fees fell 7.1% compared to a 5.0% drop in 2015 (Exhibit 1). Each of the world's top-10 investment banks experienced fee decreases, though some managed to improve market share amid industry headwinds. (Exhibit 2).

**Exhibit 1: Global Investment Banking Fee Trend (US\$ Billion), 2016**



Source: Capgemini Financial Services Analysis, 2017; Thomson Reuters Global Investment Banking Review 4Q2016

**Exhibit 2: Fees Collected by Top 10 Global Investment Banks (US\$ Billion), 2016**



Source: Capgemini Financial Services Analysis, 2017; Thomson Reuters Global Investment Banking Review 4Q2016



In a highly-competitive market with rapidly-evolving regulations, it is particularly incumbent upon banks to push for digital transformation of the business. With **emerging technologies** disrupting various aspects of the ecosystem, banks must leverage innovations such as Distributed Ledger Technology (DLT), Robotic Process Automation (RPA), and Artificial Intelligence (AI). DLT especially has disrupted the industry and is expected to drive efficiencies and replace market intermediaries such as clearing houses and securities depositories.

Cost pressures and an evolving regulatory-compliance landscape make **data management** increasingly critical. Complying with regulations such as the Fundamental Review of the Trading Book (FRTB)<sup>1</sup> now require extensive data management and data processing, which means firms can leverage these new architecture upgrades to build strong Machine Learning (ML) and AI capabilities to enable long-term benefits. Data Quality and Data Governance are becoming critical business functions as firms look to explore the massive troves of historical and real-time data gather to gain strategic and actionable insights into markets and customers to improve consumer centricity and customer experience besides accurate business decisions and improved returns.

Cost efficiency is top of mind for most firms, hence **cloud-based platforms** and software-as-a-service (SaaS) models are gaining ground. These are becoming widely-used operational models to improve cost-income ratios while enabling operational flexibility. Banks can efficiently utilize advances in cloud technology and Application Programming Interfaces (API) to build economies of scale for themselves as well as for their clients.

Digital transformation does not come without risk and, increasingly, **cybersecurity** has become an area of strategic importance. Banks are concerned about the current, and future impact of innovation as emerging technologies become mainstream. As banks look to monetize data either directly and indirectly, they must consider potential threats that could sidetrack their technological changes. The path may not be smooth, but capital market participants can look forward to becoming more lean, agile and competitive organizations.

<sup>1</sup> FRTB is loosely defined as a set of proposals by the Basel Committee on Banking Supervision (BCBS) as framework for the next generation market risk regulatory capital rules for large, internationally active banks. BCBS is a committee of banking supervisory authorities that was established by the central bank governors of the Group of Ten countries in 1974.

# Trend 01: Rise of FinTech, RegTech, and Adoption of Distributed Ledger Technology (DLT)

*Inefficient capital market systems are ripe for disruption and give visionary firms an immense opportunity to innovate using emerging technologies.*

## Background



- Capital markets can use DLT as platforms for issuing and transferring securities.
- DLT could eliminate the need for intermediaries that provide settlement and depository functions.
- Small and nimble financial services startups (FinTechs) are using DLT and other technologies to disrupt a host of capital markets services, catching incumbents off guard.
- Typically, emerging-technology solutions help standardize global market systems and make capital markets transactions faster, more secure, and highly efficient.

## Key Drivers



- With multiple intermediaries handling system-information flows, there are bound to be reconciliation errors, settlement delays, and data duplication that trigger inefficient capital usage and erroneous risk assessment.
- DLT is a logical efficient alternative to allow seamless and secure data transmission throughout the capital markets ecosystem.
- The possibility of lower costs and better customer experience (Exhibit 3) is driving the rapid pace of innovation by FinTechs and incumbents.
- The scope of solutions to scale up and make systems more efficient is immense as even the most significant FinTech market, China, is also small compared with the size of existing intermediaries.
- In response to an ever-evolving regulatory landscape, there has been a proliferation of RegTech<sup>2</sup> firms looking to ease regulatory compliance, risk management, and surveillance challenges.
  - RegTech momentum can be gauged by the fact that these companies have raised about US\$2.3 billion in venture capital funding from 2012 – 2016.<sup>3</sup>

## Trend Overview



- DLT can bring significant efficiency to current post-trade processes and can potentially shorten the settlement cycle.
- For example, firms such as EquiChain<sup>4</sup> have come up with a blockchain prototype for capital markets, which allows the direct interaction and the exchange of value between market participants, doing away with multiple touch points and inefficiencies.

<sup>2</sup> RegTechs are companies that use technology to help businesses efficiently and affordably comply with governmental regulations.

<sup>3</sup> 'Regtech' startups see more business in Trump era," Reuters, December 22 accessed October 2017 at <https://tinyurl.com/ybpsqtlr>

<sup>4</sup> "EquiChain to launch DLT platform for capital market", FinTech Innovation, March 13, 2017 accessed October, 2017 at <https://tinyurl.com/ygy682es>

- Preferably, FinTech solutions for capital markets would be more like utilities that help establish common standards built on one operating model and an underlying technology platform. Standardization would help reduce the cost and complexity of projects by eliminating the need for different FinTech implementations at different intermediaries.

### Exhibit 3: Key Drivers Behind Adoption of Emerging Technologies



Source: Capgemini Financial Services Analysis, 2017

### Implications

- By using DLT, capital markets would not require data normalization, reconciliation of internal systems, or agreement on exposures and obligations.
- The industry would run on standardized processes and services, shared reference data, near real-time data, and better risk assessment.
- Given the decentralized nature of DLT platforms, regulatory supervision would be less complicated as asset holdings would be transparent across the system leading to low chances of fraud.
- DLT will enable developing markets to efficiently transition to systems with greater liquidity, ease of access, and security. They would not have to go through the evolutionary cycle of current systems but would leapfrog into the future via blockchain-based systems.
- We will see FinTechs transform established business processes for market intermediaries as incumbent firms dive deep into emerging technologies such as AI and machine learning to create robust, efficient, and standardized operating models for a flexible and compliant capital market ecosystem.



## Trend 02: New Data Architectures Emerge

*Regulatory mandates and need for data-intensive analytics require enhanced data management capabilities, while helping firms be future-ready and stay ahead of the competition.*

### Background



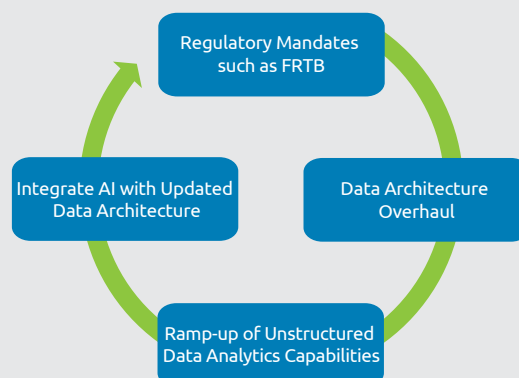
- Globally, capital markets generate and consume huge quantities of high-quality market data, which when processed by advanced analytical tools including machine learning and AI, can uncover insights that may not have been humanly possible.
- With unstructured data being generated on social and professional networks and platforms around the world, there is great value to be gained by moving from structured to unstructured data analysis and incorporating the resultant insights into financial models and trading strategies.

### Key Drivers



- Automated analysis is increasingly in demand in the buy-side, including in research functions and trade selection, which requires robust data collection and analytical frameworks (Exhibit 4).
- Regulations such as Fundamental Review of the Trading Book (FRTB) require frequent extensive historical and real-time market data analysis, mandates thorough reporting practices, which need data architecture overhauls at an institutional level:
  - An enormous amount of data is required for the internal model compared to the standard model, which means that an equally robust infrastructure must be built to maintain all the required data.

### Exhibit 4: Key Drivers for Better Data Management



Source: Capgemini Financial Services Analysis, 2017





## Trend Overview

- Market participants are collecting structured and unstructured data from ever-increasing non-traditional data sources and using them to enhance trading and risk models, resulting in better regulatory compliance and enhanced profitability.
- With FRTB compliance to require extensive data-management practices, strong data modeling and storage capabilities will be needed along with integration between front office and risk.
- Firms need to adopt flexible, scalable, and integrated platforms to be prepared for changes to FRTB regulations that may occur after feedback from market participants.



## Implications

- Firms need market data and reference data to meet requirements around risk factors and to gain regulatory approval for an Internal Model Approach (IMA).
- Firms need to establish central repositories for all risk sensitivities, gathering data from different sources followed by categorized storage.
- The massive number of calculations required to be done on a significantly large amount of data for Expected Shortfall calculations will mean the use of newer and faster data processing architectures, such as in-memory analytics capabilities:
  - This approach helps analyze data across multiple dimensions and generates faster and better insights regarding risk profiles.

# Trend 03: Machine Learning (ML) and Natural Language Processing (NLP) Gain Prominence

*The application of Machine Learning and NLP technologies in capital markets is helping firms reduce costs and increase efficiency.*



## Background

- Capital market firms are leveraging machine learning to improve productivity across functions ranging from risk management and trading to fraud detection and automating back-office procedures.
- The capital market industry is also moving towards conversational economy by using chatbots, advanced analytics and NLP combinations which are helping them lower down the operating cost for some important functions.



## Key Drivers

- The burgeoning structured and unstructured data with banks and easy availability of new technologies such as cloud have created the perfect conditions for the use of machine learning in capital market industry.
- The growth of machine learning has also been accelerated by the growth in regulatory scrutiny forcing banks to improve their data management capabilities.
- Cost savings form another driver, with Goldman Sachs<sup>5</sup> reporting that machine learning and artificial intelligence will US\$34 billion to US\$43 billion in annual savings and revenue opportunities within the financial sector by 2025.



## Trend Overview

- Companies are leveraging machine learning and NLP to transform customer touch points, by using chat bots and personal assistant applications.
- Machine learning solutions, on the other hand, are also addressing everything from anti-money laundering/know-your-customer (AML/KYC) needs to fraud monitoring and surveillance, to order modification predictions and transaction cost analysis.
- Leading companies in the capital markets industry are already using machine learning, NLP, and predictive analytics to gain new insights into customer behavior:
  - JPMorgan launched its Machine Learning 'Emerging Opportunities Engine' in 2016 which identifies clients who could be best suited for follow-on equity offerings.<sup>6</sup> Post the success of that, it is expanding into other areas like Debt Capital Markets.

<sup>5</sup> "How AI can deliver a personalized banking experience that drives customer devotion", Community Banking Brief, April 4, 2017 accessed October, 2017 at <https://tinyurl.com/y8tq28sk>

<sup>6</sup> "Machine learning is now used in Wall Street deal making, and bankers should probably be worried", Business Insider, April 5, 2017 accessed October, 2017 at <https://tinyurl.com/ydcl9kzz>

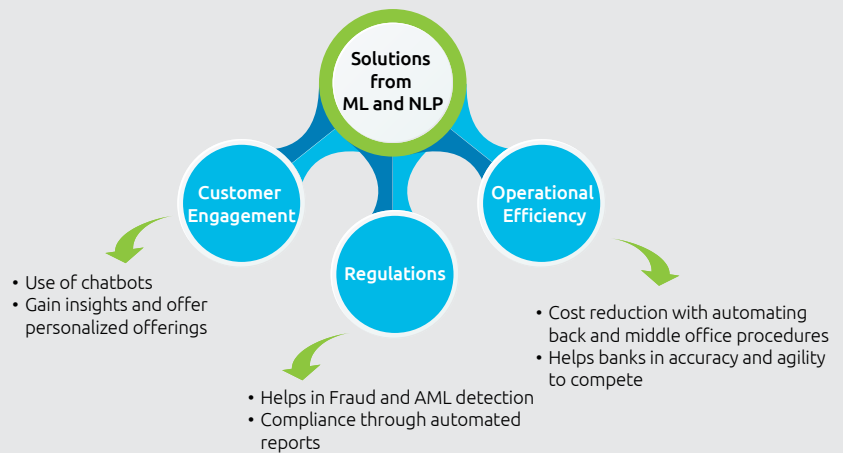
- BlackRock also intends to focus on machines and algorithms, in response to investors shifting towards lower cost passive funds.<sup>7</sup>
- Royal Bank of Canada has set up a machine learning research lab and is collaborating with world-class researchers and programmers to help Canada’s biggest bank move from the era of electronic trading to the age of machine learning.<sup>8</sup>

## Implications



- By using Machine Learning across operational planning and execution, firms can predict issues and mitigate them timely (Exhibit 5).
- Through predictive analytics with machine learning and natural language processing, firms can ensure customer service quality and personalized client services at a cheaper cost, which further will improve operating margins.
- Transaction processing and servicing can also be made error-free and more efficient by use of machine learning.
- Machine learning and NLP-based applications can be witnessed across capital markets in areas such as the deployment of chatbots, transaction cost analysis, advanced predictions on order modifications, and other complex areas of trading like currencies.

### Exhibit 5: Solutions from Machine Learning and NLP



Source: Capgemini Financial Services Analysis, 2017

<sup>7</sup> “Blackrock To Upgrade Funds With AI, Machine Learning”, Mondaq, April 24, 2017 accessed October, 2017 at <https://tinyurl.com/y8jlx73>

<sup>8</sup> “How RBC Capital Markets is using Machine Learning Trading”, CNBC, March 29, 2017 accessed October, 2017 at <https://tinyurl.com/y8qne6ag>

# Trend 04: Robotic Process Automation (RPA) Adoption Up

*RPA is gaining increased adoption in capital market firms, helping enhance front and back end operations.*

## Background



- There is an emerging need for capital markets to solve complex operational inefficiencies and transform businesses to offset the squeeze on bank profitability caused by reduced margins and increased regulatory costs.
- Firms are investing heavily in robotic process automation (RPA), a virtual workforce of software robots that efficiently can deliver major control, speed and cost benefits.
- More and more capital market firms are adopting RPA coupled with AI techniques, resulting into Intelligent Process Automation (IPA) that offers the potential for significant cost-, effort- and time savings.

## Key Drivers



- Capital markets are being driven to automate middle- and back-office operations by increasing volumes of data and difficulty in integrating different legacy systems with new technologies.
- RPA can help increase efficiency and reduce costs by 25-50% in some organizations (with robotic applications costing only 20% of an onshore resource and 30% of offshore resource).<sup>9</sup>
- RPAs can offer up to 40% cost savings for F&A services during a time of increased regulatory scrutiny, rising costs and the drive for better profitability.<sup>10</sup>
- By creating a full audit trail, RPA reduces organizational compliance risks with little human error and improved quality and efficiency.

## Trend Overview



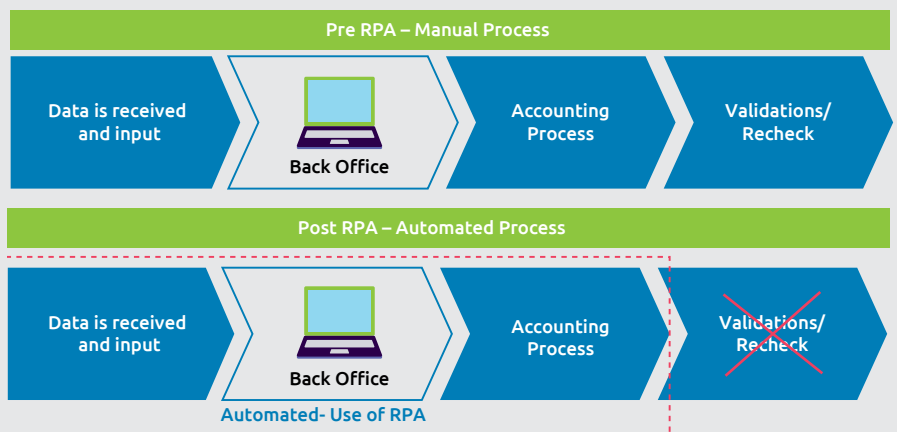
- Capital markets handle a high volume of data across multiple systems prone to human errors. However, the industry is moving toward standardized and rule-based processes and is ripe for RPA application.
- To overcome the challenges of increased regulatory scrutiny coupled with firms' legacy systems, RPA is being used to automate middle- and back-office operations (Exhibit 6).
- RPA use cases are helping firms across areas such as client onboarding, revenue recognition, expense validation, accounting processes, operational and financial reconciliation, and reporting:
  - For example, London-based reconciliations specialist SmartStream has been integrating elements of RPA into its technology portfolio since 2016, as industry skepticism regarding robot-led automation fades.

<sup>9</sup> "Flawless accuracy, incredible efficiency, shrinking costs", Customer Think, June 14, 2016 accessed October, 2017 at <https://tinyurl.com/yag4qre6>

<sup>10</sup> "Here is how RPA can offer up to 40% cost savings for F&A services," Nasscom, June, 2016 accessed October, 2017 at <https://tinyurl.com/yaxvud2h>

- While there are some sell-side firms currently using RPA for Know Your Customer (KYC) purposes and other basic automation functions, more institutions on both buy and sell sides have started investing in the technology.
- In April 2017, Nomura Research Institute launched its Prime Settlement Service (PSS), Japan's first utility service for investment banks, which will incorporate Robotic Process Automation (RPA) to automate the manual payment record processing phase of post-trade operations.<sup>11</sup>

### Exhibit 6: Advantages of RPA for Capital Market Firms



Source: Capgemini Financial Services Analysis, 2017

### Implications



- RPA is helping firms benefit in various ways beyond cost savings, helping drive efficiency, productivity, and reliability of back-end processes along with improvements in quality and accuracy:
  - RPA could help firms increase staff productivity, service levels, and capacity by 35-50% and is expected to provide cost benefits via task automation at a fraction of the cost of human resources.<sup>12</sup>
  - RPA adoption also helps slash processing times up to 90% (30-50% for an average process).
- With RPA adoption helping capital firms to digitally transform cost effectively, there is an aggressive push in this area with a 60.5% growth expected between 2014 and 2020.<sup>13</sup>
- If leveraged strategically, both revenue and margins can go up for the firms:
  - RPA implementation can help banks to create triple-digit ROI in the first year of operations.<sup>14</sup>

<sup>11</sup> "NRI Automates Post Trade Operations with New Robotic Process Automation Technology", Nomura Research Institute, April, 2017 accessed October, 2017 at <https://tinyurl.com/yadzq4hp>

<sup>12</sup> "How Financial Institutions Are Improving Operations", Kofax, September 1, 2017, accessed October, 2017 at <https://tinyurl.com/y9rqcqn>

<sup>13</sup> "Robotic Automation Market to Reach US\$ 4.98 Bn by 2020", GlobeNewsWire, March, 2015, accessed October, 2017 at <https://tinyurl.com/y84c7tbw>

<sup>14</sup> "RPA for the Banking industry," UiPath, accessed October, 2017 at <https://tinyurl.com/yaf5ahjr>

# Trend 05: Capital Market Firms Open Up to Public Cloud-Based Applications

*While hybrid cloud is the preferred model at present, public cloud is rapidly gaining prominence.*

## Background



- There is tremendous pressure on capital market firms to reduce cost structures within a business environment that is more and more challenging.
- In the background are a rapidly-changing technological cycle and innovative new business models, which have left the industry in flux.
- Firms are now outsourcing functions that do not add differentiating capabilities.

## Key Drivers



- The need to address evolving regulations (MiFID II, Dodd-Frank), cost pressures, and macroeconomic uncertainty are leading big firms to consider the cloud.
- FinTech firms are looking to revamp the old architecture while striving to create a more robust financial value chain, and the cloud is enabling this disruption by providing a low-cost and scalable infrastructure.
- The regulatory shift from an asset-class-based approach to a risk factor-based approach necessitates transparency, better reporting, and communication.
- Public cloud, in particular, is starting to find acceptance as the cloud matures and firms look to focus on core strengths while shifting the responsibility for non-core services to others.

## Trend Overview



- There is a secular shift towards more flexible infrastructure, as the volume of structured and unstructured data continues to explode.
- Stakeholders from across the capital markets industry are exploring new models including on-premise clouds, off-site clouds, and a variety of hybrid combinations.
- The level of adoption varies for different market participants (Exhibit 7):
  - Complicated legacy infrastructure at large broker-dealers and investment banks understandably see a slow rate of adoption.
  - Smaller dealers are looking at outsourced infrastructure models, to avoid the burden of managing an internal cloud and to take advantage of higher cost savings.
  - Big buy-side participants such as hedge funds want to assess feasibility and move toward implementation.
  - Growing demand for cloud-based solutions has made incumbent technology providers offer their software and services via the cloud.

### Exhibit 7: Salient Features of Cloud Adoption

Market Participants	Public Cloud Adoption Rate	Preferred Cloud Model		
		IaaS	PaaS	SaaS
Broker Dealer				
Tier 1	Low	✓	✓	✓
Tier 2, 3	Low	✓	✗	✓
Buy-side				
Tier 1	Moderate	✗	✓	✓
Tier 2, 3	High	✓	✗	✗
Market Infrastructure				
Mature (market asset class)	High	✓	✓	✗
Emerging (market asset class)	Moderate	✓	✗	✓
Technology Providers				
Incumbent Players	Moderate	✓	✗	✓
Upcoming FinTech Players	High	✗	✓	✓

● Low   
 ● Moderate   
 ● High

Source: Capgemini Financial Services Analysis, 2017

### Implications



- Cloud facilitates implementation of agile innovations helping firms implement a more customer-centric approach.
- For FinTechs, the cloud is the best way to achieve scale at a very low cost and reach a wide audience in quick time.
- As per Celent, public cloud is expected to account for 7% of capital market IT budgets in five years.<sup>15</sup>

<sup>15</sup> "The Cloud Comes of Age in Capital Markets: All Clear for More Cloud", Celent Research, December 11, 2016 accessed October, 2017 at <https://tinyurl.com/yc5uu2ny>

# Trend 06: Major Financial Institutions Look to Combat Evolving Cyber Threats

*Interconnected global markets and adoption of new technologies necessitate continual assessment of current and future cyber threats.*



## Background

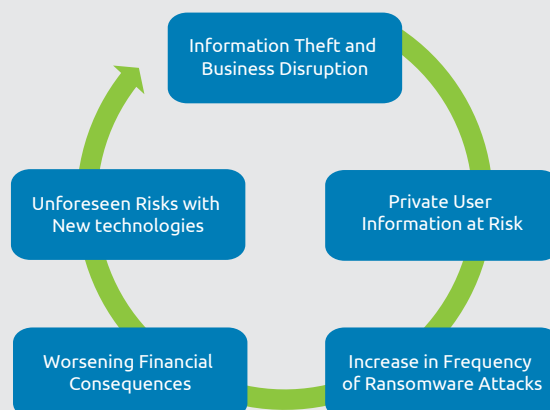
- Information security spending is expected to reach US\$90 billion globally in 2017, a 7.6% rise over 2016, and is expected to reach US\$113 billion by 2020.<sup>16</sup>
- The threat to cyber assets is particularly severe in the financial services industry, owing to the interdependence of global financial markets.

## Key Drivers

- Regulators have started to harmonize the rules to come up with a common framework for banks to work under.
- The risks for banks are multifold when it comes to cyber threats (Exhibit 8):
  - Breaches have high financial consequences such as with Equifax whose share fell 12% when the news of appropriation of 143 million U.S. customer records came to light.<sup>17</sup>
  - Ransomwares attacks have increased in frequency and take longer to resolve and hence are more costly, as seen with WannaCry and Petya, which disrupted large corporations and affected thousands of people across the globe.<sup>18</sup>
  - With the implementation of FinTech innovations, such as blockchain and cloud solutions, firms must assess and prepare against existing and future threats.



## Exhibit 8: Cyber Security Risks



Source: Capgemini Financial Services Analysis, 2017

<sup>16</sup> "Gartner, Press Release, March 14, 2017, "Gartner Says Detection and Response is Top Security Priority for Organizations in 2017", <https://tinyurl.com/y76ubtjy>

<sup>17</sup> "Credit reporting firm Equifax says data breach could potentially affect 143 million US consumers", CNBC, September 7, 2017 accessed October, 2017 at <https://tinyurl.com/yc9r565f>

<sup>18</sup> "'Petya' ransomware attack: what is it and how can it be stopped?", The Guardian, June 28, 2017 accessed October 2017 at <https://tinyurl.com/yb4jqc4j>





## Trend Overview

- As per DTCC Systemic Risk barometer, 34% of respondents marked cyber risk as the top overall risk and 71% of respondents included it in the top 5 risks.<sup>19</sup>
- Even as financial services firms continue to make significant investments in cyber security, the global financial services sector was the worst hit.



## Implications

- Threat sharing is gaining momentum as a cornerstone of cyber defense programs:
  - For example, eight leading U.S. banks have formed the Financial Services Analysis and Resiliency Center (FSARC), to tackle threats and risks of cyber-attacks.
- RegTech companies will look to fill the value gap using innovative technologies such as machine learning and AI to detect and respond to previously unidentified threats to data security.
- Organizations need better and more efficient allocation of resources on security solutions in an ever changing landscape.

<sup>19</sup> "DTCC's Leibrock Discusses Q1 2017 Systemic Risk Barometer Survey Results", DTCC, June 20, 2017 accessed October, 2017 at <https://tinyurl.com/y9ahqo4d>

# Trend 07: Data Quality and Governance Evolves into a Strategic Function

*There is an increasing focus on data quality/governance initiatives with capital market firms investing more in data-management solutions.*

## Background



- In Capital Markets, data quality is a major agenda which deals with examining the accuracy, completeness, validity, and timeliness of the enterprise data, as it moves from source to reporting.
- Data governance, on the other hand, deals with establishing a foundation for successful data management practices and processes in place.
- Regulatory requirements and needs for improved data quality are making the data governance demand go higher at capital market firms.

## Key Drivers



- Business needs and regulatory oversight are pushing the industry to increasingly consume vast amounts of data which, in turn, need the firms to invest in data management and analytics.
- Inconsistent data management and governance across functional and business units is driving firms to formulate centralized data quality and data governance standards for executing data accountability and mandating data quality verification.
- Increased efficiencies of business processes and reduction of costs also drive the firms to invest in data quality and governance frameworks.

## Trend Overview

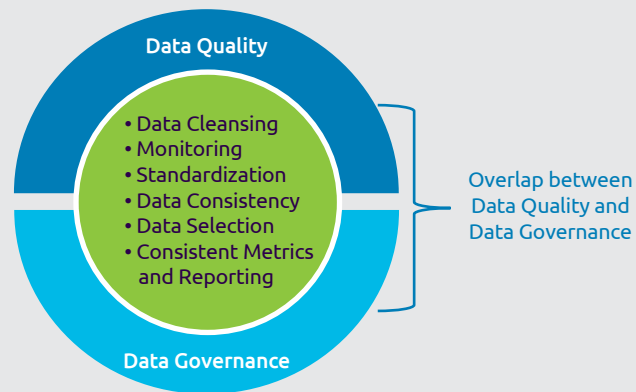


- The increasing granularity of data is driving multiple governance and compliance efforts for capital firms.
- There is a tremendous growth of financial data which has led firms to find effective ways for acquiring, distributing and utilizing it.
- In 2017, a survey among risk, compliance and data specialists at a summit showed increasing attention of capital firms towards data governance issues with about 32% of respondents saying they would devote resources for organizing data or integrating data with regulatory demands.<sup>20</sup>
- Though both data quality and data governance frameworks play an important role in data management activities, they also face certain overlap with each other:
  - Data cleansing involving monitoring and tracking of clean data and Data consistency involving data selection and standardization converge with both the activities (Exhibit 9).

<sup>20</sup> "Data quality supercedes data acquisition priorities", [www.enterpriseinnovation.net](https://tinyurl.com/y879glt4), April 17, 2017 accessed October, 2017 at <https://tinyurl.com/y879glt4>

- Gartner research indicates that the average financial impact of poor data quality on organizations is US\$9.7 million per year.<sup>21</sup>
- Addressing data quality risks should be complemented by tackling data governance issues, else it can also lead to huge compliance costs with penalties for a non-compliant business with the European General Data Protection Regulation (GDPR).

### Exhibit 9: Data Quality and Data Governance Overlap



Source: Capgemini Financial Services Analysis, 2017

### Implications

- A clear data governance framework in place enables the firms to adapt quickly to new regulations without impact to business or need for stop-gap measures.
- With a unified master data management platform having data quality and data governance frameworks in place, it will help financial companies to extend and analyze their data realistically at macro and micro level supporting them in avoiding any big risks.
- Firms are exposed to several effects of data quality and governance issues and face a risk of incurring huge costs for not responding to such issues:
  - With demanding high profile regulatory scrutiny, firms depend on the availability of quality and trusted data.
  - Poor data governance can directly affect business operations and customer service leading to decreased productivity and can also affect the firm's reputation at large.
  - With data quality and data governance issues, firms not only incur increased operating costs, but can also get affected in the overall financial performance by having a hit at revenues and cash flows.



<sup>21</sup> Gartner, Smarter With Gartner, "How to Create a Business Case for Data Quality Improvement", Susan Moore, January 9, 2017

# Trend 08: Move Toward SaaS Solutions Gains Huge Acceptance

*Need for agility to execute strategic business initiatives in capital market firms is driving higher adoption of SaaS solutions.*

## Background



- While the SaaS model has been widely used across other industries for a long while, capital markets have not had that uptake - mainly because of security reasons.
- On-premise applications have also appeared more attractive in the past for short-term as capital market firms were more comfortable having application providers defined within firewall.
- Vertical SaaS, combines the security benefits of application service provider (ASP) delivery model of on-premise applications as well as cost benefits of the SaaS model.

## Key Drivers



- Magnitude and speed of structural and technological change in capital markets is forcing firms that traditionally – particularly on the sell side – were managed internally to outsource their operations through SaaS models, offering reduced time-to-market (Exhibit 10).
- Though cost pressures do not form the lone driver behind firms to move to SaaS solutions, but they give the firms an option of cheaper upgrade solutions.

### Exhibit 10: Drivers for SaaS Adoption in Capital Markets



**Time to Market Pressure:** SaaS models help in reducing time-to-market in an industry where magnitude and speed of structural and technological change is increasing



**Cost Pressures:** Lower total cost of ownership compared to on-premise solutions gives the firms option of cheaper upgrade solutions



**Agile Needs:** SaaS solutions provide scalable and ergonomic solutions that enable easy adoption of new technologies



**Increasing Regulatory Challenges:** SaaS solutions provide flexible solutions in meeting new regulatory challenges like FRTB, MiFID

Source: Capgemini Financial Services Analysis, 2017

- With capital market firms' need to be very agile, they tend to move towards SaaS solutions which provide scalable and ergonomic solutions with easy adoption of changing technology.
- Meeting new regulatory challenges like FRTB, MIFID etc. with on-premise infrastructure might not be realistic and hence many capital market firms are adopting the flexible SaaS solutions to quickly adjust as requirements change.

## Trend Overview



- Initially designed for small businesses, SaaS solutions have gradually extended to multinational firms with its increasing adoption visible in capital market firms:
  - As per Forrester, the Cloud Application market (SaaS) is expected to grow to US\$155 billion by 2020 highlighting the increasing adoption by firms.<sup>22</sup>
- With numerous advantages for firms ranging from easy deployment to cost cutting, SaaS is emerging as the favored model with Cisco forecasting that 74% of all cloud workloads will be in SaaS mode by 2020.<sup>23</sup>
- There is an emergence of 'vertical' SaaS applications, also called Industry Cloud, whereby complete business processes are being outsourced at group or industry level to third party providers which create broad industry value by focusing on specialized processes with tools, technologies and business services tailored to one specific industry, all via pooled information.

## Implications



- Firms are moving the responsibility of non-core services entirely to third parties, thus allowing them to focus more on their client-side strengths and customer experience and to move from being cost centers to innovation centers.
- Besides cost advantages over on-premise frameworks, SaaS models enable high resiliency, availability, and easy scalability for capital firms.
- With no local infrastructures to maintain, SaaS helps firms reduce operating costs by managing infrastructure at central locations, which allows global harmonization with clients.
- Capital market firms will also benefit from being able to run a lean network and leverage security built into the cloud by using 100% cloud services, thus reducing complexity.
- With numerous SaaS solution providers entering the market, vendors targeting the non-financial needs of the capital market firms with compelling technological and business benefits will ultimately survive.

<sup>22</sup> "Benchmark your Enterprise cloud Adoption," Forrester Research, Inc., January 3, 2017

<sup>23</sup> "Cisco Global Cloud Index: Forecast and Methodology, 2015–2020", Cisco, 2016 accessed October, 2017 at <https://tinyurl.com/y8lf98yh>

# Trend 09: Integrated Treasury Management Systems Witness Rapid Adoption

*In the modern hyper-regulated environment, legacy systems are not equipped to handle real-time feeds or providing real-time data to customers.*

## Background



- Post the 2008 financial crisis, new regulations increased banks' need for more sophisticated technology.
- The Dodd-Frank Act in the United States, MiFID II/ MiFIR, EMIR in Europe and other global regulations require more reporting from banks, including additional information that is risk-based and predictive.
- Many banks are using multiple legacy treasury management systems, in a piecemeal approach, which is increasingly ineffective in handling modern real-time business needs.

## Key Drivers



- Since the financial crisis, the treasurer's role has become more strategic, which makes it imperative for them to have immediate access to the fiscal status of their business.
- As banks expand their global footprint, they face increasingly diverse challenges which require sophisticated risk management and reporting.
- By integrating all functions from the front and back-office onto a single platform, banks stand to save money, increase efficiency, reduce errors, increase compliance and risk controls, and generate actionable insights (Exhibit 11).
- Customers are also demanding real-time access and personalized offerings, thereby driving the need for a robust system.
- Straight through processing of back-office functions is critical for regulatory compliance. Therefore, automation of these functions is key to bank survival.

## Trend Overview



- Fast-paced national and international transactions are difficult to handle by legacy treasury management systems:
  - Such systems cannot provide the real-time decision support capabilities to monitor and control risk.
- The role of treasury management is growing to encompass critical enterprise-wide risk functions, such as funding, liquidity, ALM and portfolio management and also handling new asset classes.
- 82% of banks using a Treasury Management System are at least 'somewhat satisfied' with their software's capabilities.<sup>24</sup>

<sup>24</sup> "Bob's guide to treasury management systems", [www.bobsguide.com](http://www.bobsguide.com), July 2017, accessed October, 2017 at <https://tinyurl.com/y7cveaef>

## Exhibit 11: Benefits of Integrated Treasury Management Systems



1

### Single Point of Access:

Single sign-on instead of multiple logins, enables automation of reconciliations and payments



2

### Cost Reduction:

Minimize cross bank transactions, and related fees



3

### Error Reduction:

Minimize human errors by mapping workflow processes and digitizing them accordingly



4

### Data Integration:

Incorporate extensive data handling and analytical capabilities to make better decisions and forecasts

Source: Capgemini Financial Services Analysis, 2017



## Implications

- Integrated Treasury Management Systems will lead to better operational controls and enhance the ability to focus on strategic activities.
- A consolidated treasury system helps firms obtain a consolidated and customizable view of all financial information for better liquidity management.

# Trend 10: Increasing Focus on Data Analytics and Visualization

*It is imperative to enable the transformation of massive amount of data into useful and actionable information through analytics.*

## Background



- Capital market firms are handling petabytes of data through complicated statistical models to test ideas and predict outcomes with an end-goal to create visual workflows based on the data.
- Analytics have matured considerably in recent years, to the point that business intelligence tools are now widely accessible across lines of business.
- The humongous volumes of data can be handled by today's data analytics platforms much more effectively compared to legacy platforms and at a fraction of the cost.

## Key Drivers



- Given the size and complexity of capital market data, regulatory requirements are encumbering banks with increasing time and cost of compliance and reporting.
- Analytics can help firms make sense of the data that drives their governance processes, and build strong risk management frameworks to protect against internal and external risks.
- Analytics and visualization facilitates sharing and collaboration of insights within the organization, thereby delivering much higher value to the organization as a whole.

## Trend Overview



- Regulatory compliance data (customer, transactional, operational, and reference) stored in many different systems present hindrances in data preparation and analysis:
  - This requires firms to organize their data across front, middle, and back offices and enable a central view for analytics functions to work with.
- The lack of established organizational analytics capabilities necessitates easy-to-use platforms, so that ad-hoc insights from circuitous big-company processes may be derived.
- The value of the underlying data can only be fully realized when the insights are used to take decisions on business metrics such as market risk, capital planning, and optimization.



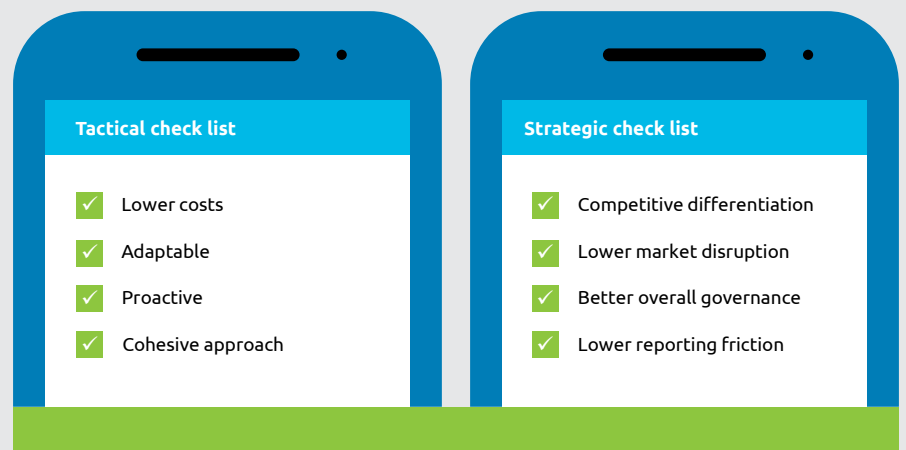


## Implications

- High-performing banks will be able to differentiate themselves by delivering pertinent value to the clients (Exhibit 12).
- Internal governance and compliance will be enhanced as new reporting and aggregation requirements are met with reduced errors.
- Easy to use solutions will shift the focus of employees from testing of hypotheses to working on actionable solutions.
- The need for real-time insights and reporting is likely to bring technologies such as event stream processing (ESP), which helps analyze data even before it is stored, into prominence.

### Exhibit 12: Benefits of Data Analytics

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Source: Capgemini Financial Services Analysis, 2017

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## About the Authors

**Heena Mehta** is a Senior Consultant with the Market Intelligence team in Capgemini Financial Services with over six years of experience specializing in capital markets and wealth management.

**Ashish Pokhriyal** is a Senior Consultant with the Market Intelligence team in Capgemini Financial Services with over five years of experience specializing in capital markets and wealth management.

**Anirban Acharya** is a Senior Consultant with the Market Intelligence team in Capgemini Financial Services with over five years of experience specializing in capital markets and wealth management.

**Priyanka Arora** is a Senior Consultant with the Market Intelligence team in Capgemini Financial Services with about three years of experience specializing in capital markets and wealth management.

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