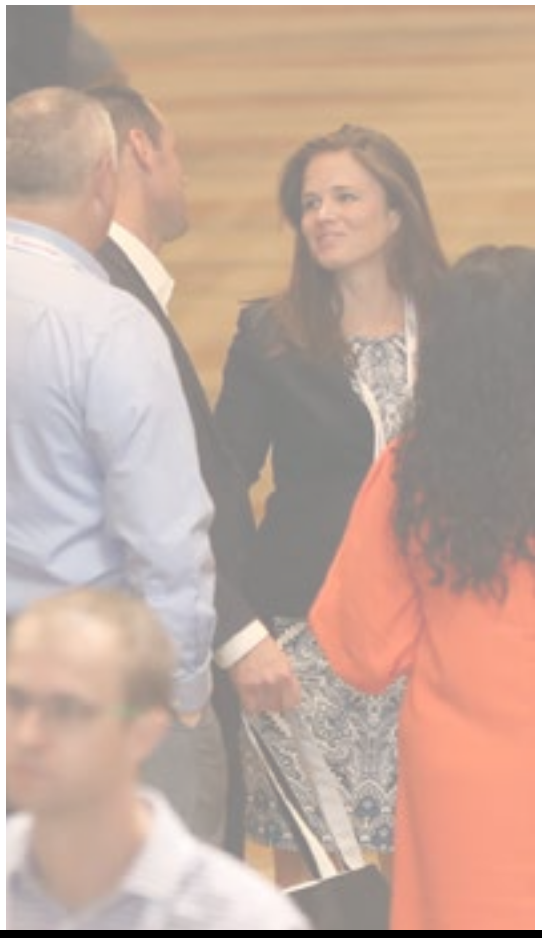




SIFMA Insights

OPS 2018 Debrief

May 16, 2018

sifma®

Contents

SIFMA is the voice of the U.S. securities industry. We represent the broker-dealers, banks and asset managers whose nearly 1 million employees provide access to the capital markets, raising over $2.5 trillion for businesses and municipalities in the U.S., serving clients with over $18.5 trillion in assets and managing more than $67 trillion in assets for individual and institutional clients including mutual funds and retirement plans. SIFMA, with offices in New York and Washington, D.C., is the U.S. regional member of the Global Financial Markets Association (GFMA). For more information, visit: http://www.sifma.org.

Executive Summary

Recently, we hosted our annual Operations Conference & Exhibition. With three days of presentations, events and meetings, and over 900 people in attendance, we gained insights into top-of-mind topics for market participants.

The U.S. capital markets are the largest in the world, with the U.S. equity market nearly two and a half times the next largest, the EU, representing about 38% of the $85 trillion in global equity market cap. The U.S. fixed income markets comprise 43% of the $92 trillion securities outstanding across the globe. Our capital markets are a critical source of capital for business and governments, funding 65% of total economic activity in the U.S. Without the past and ongoing advances in financial services operations – from clearing and settlement to electronic trading – it is unlikely the U.S. could have developed as deep, liquid and resilient capital markets, let alone maintained its lead in this area.

Industry operations are core to resilient and efficient markets that build and maintain investor confidence and drive economic growth. And investment in new technologies and operational efficiencies further drive innovation and growth. The financial services industry is in a regulatory evolutionary process, experiencing the most significant regulatory overhaul since the 1930's. This includes the next phase of the U.S. Treasury Department's holistic review of our financial services regulatory framework, with a fifth report on non-banks and financial innovation expected in the near future.

Concurrently, the industry is at an intersection of financial technologies and traditional business models – technologies that will transform the business and how firms serve clients. Financial institutions are analyzing the use of fintech solutions to increase efficiencies in the back office or meet regulatory reporting requirements. Firms are studying the use of robotic process automation (RPA) to mimic the activity humans manually performing routine and repetitive tasks on a computer, freeing employees up to focus on higher value and more intellectual tasks (please see our note RPA, Not Your Science Fiction Movie Robots).

Inside this note, we recap what was seen and heard at our conference, including: the future of fintech is now; your mission, if you choose to accept it; distributed ledger technology, the Holy Grail; we're only as good as our data; and data and cybersecurity go hand-in-hand.

The Future of Fintech Is Now

The financial services industry has been under siege for the last 10 years. Banks no longer generate the same level of fees in trading or advisory businesses as pre crisis, placing revenues under attack. Margins are also under attack. Financial services firms have experienced increased regulation and expenses, and many firms have exhausted the traditional cost cutting levers. Today's global revenues have essentially halved from around $100 billion six years ago, and expense reduction is failing to outpace revenue reduction. This creates pressure to win clients and gain market share.

The operating environment has shifted as well. Until this year, volatility was at sustained lows across multiple asset classes. Divergence in central bank policy has led to rising interest rates in the U.S., while interest rates in most other developed nations have remained low. From January 2017 through March 2018, long-term mutual fund net new cash flow into equities was negative $175 billion, while ETF net issuance was $533 billion. Today, the 10 most actively traded securities on many days include ETFs. Passive investing continues to grow.

Firms are looking to fintech solutions not just to cut costs, but also in response to changing client demands. The Amazon and Uber effects have changed how people view services. As Lisa Kidd Hunt of Schwab said, "A client's best experience now becomes the minimum requirement for their next experience." Financial services is no different, with clients demanding a better experience. Firms must make it easier to do business by improving the efficiency of processes, including: decreasing the number of clicks, making systems more intuitive, improving service delivery, etc. And the range of client demands varies significantly – particularly in the usage of emerging technologies – meaning firms must build in an array of capabilities for clients to opt into their preferences.

There is also the competition factor, as many fintech firms are now competing in traditional financial services arenas. Financial institutions face a greater number of competitors with differing business models and regulatory constraints. The competitive playbook is not the same as with historical financial services opponents. And as we have seen in the past in other industries, companies choosing not to innovate can become displaced. (Do you remember Blockbuster?)

The pace of change continues to speed up, as technology continues to create fundamental changes to how we work and live. Yet, in the current financial services environment, we still have a large number of human processors working in Excel sheets to gather information from one system and transfer it to another. Core processes need improved, and emerging technologies provide the tools. Firms need to increase data standardization to yield structured data, which increases what manual yet mundane processes can be automated, freeing up human labor to focus on higher-value client interactions or more intellectual tasks. The go forward labor force will blend humans and machines working symbiotically.

Mike Bodson of DTCC said fintech itself is only 20% of the consideration, with 80% in identifying inefficiencies in processes. Process automation becomes key, and one panelist indicated there was an industry consensus around the need to automate and take processes to the next level. But how do you know when you need big project fintech solutions, such as DLT? People can get seduced by technologies and look to roll them out simply because they sound sexy. Instead, panelists stressed firms need to identify a well-defined business case before deciding to use DLT or other emerging technologies. Firms do not buy technology. They buy a solution to a problem (not apply a solution to a problem that does not exist).

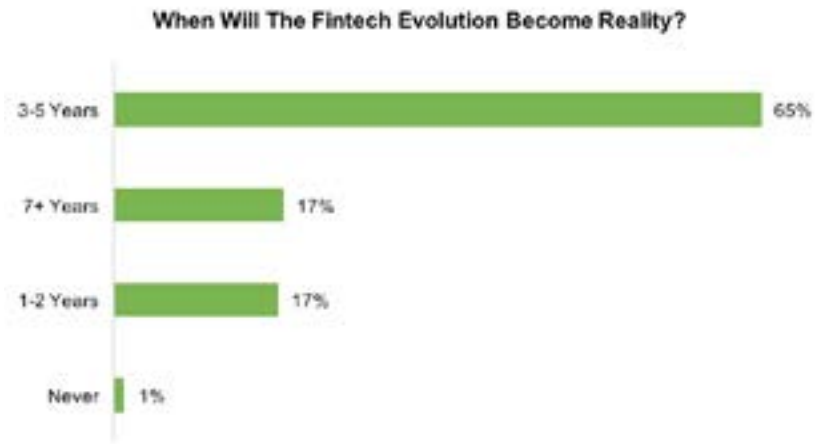
Further, the industry needs to make sure today's solutions meet the requirements of tomorrow, not prioritize quick and easy cost savings opportunities at the risk of designing the future ecosystems. Systems that will need to adapt to the rapidly changing financial services environment.

Your Mission, If You Choose to Accept It

Financial services firms need to enter the world of emerging technologies, and they need to do so as an industry. There is always a fear factor when adopting significant changes into business (or life), as maintaining the status quo provides safety and security. Many people fear embracing emerging technologies. They fear robots will replace white collar jobs (potentially their own job).

Michael Wade of Deloitte & Touche indicated 57% of global jobs across multiple industries are vulnerable to automation. Yet, firms need value judgement, which can only be provided by humans. Technologies like AI cannot replace human thinking. Hans-Juergen Rieder of UBS told a story about a train trip through Switzerland. While the original plan was to switch trains to enable the fastest total route, it was a beautiful day in the Swiss countryside. Therefore, the travelers decided to stay on the longer route and enjoy the scenery and each other's company. While AI can certainly calculate the most efficient route, it would not have noticed the opportunity provided by the beautiful day and tell you to slow down, relax and enjoy your surroundings.

Don't confuse information with knowledge. You need people for idea generation, whereas AI and other fintech solutions allow firms to reduce human time spent on mundane tasks. Yet, the industry has not fully embraced this idea. Firms are adopting fintech at varying rates, and different emerging technologies are coming into force earlier than others. We polled the audience on when they believe the next evolution[1] of operations will be the new reality in the greater financial services industry, and 65% responded within the next three to five years:



Source: Audience polling

We note Deloitte believes the evolution will become reality in the next five to seven years, viewing RPA as the next evolution. Process automation differs from intelligent automation. Process automation computerizes repetitive human tasks, removes potential human error and has been around for a long time. Panelists noted cloud could also have a bigger short-term impact on firms' cost basis and improving processes. AI, which recognizes patterns and can learn from them, is still in its nascent stage. A Deloitte survey notes market participants expect industry spend on AI to increase 12% over the next three years. DLT is potentially even a longer term implementation cycle on a wide scale basis.

To apply larger scale, fully integrated fintech solutions, the industry must now come together and collaborate. For true adoption of emerging technologies, the industry needs collaboration among firms, regulators, service providers and utilities. We are only at the beginning stages of this collaboration.

1 While this current stage of the fintech evolution is unprecedented, it is part of an ongoing evolution of technology over the last 30 years.

Distributed Ledger Technology, the Holy Grail

Panelists estimated ~75% of U.S. financial institutions have tried a type of blockchain, but there are still very few business cases. Why the slow approach? Firms themselves must learn this new technology; they need to get it right, not fast. Slow and steady is warranted, as the primary mission is to keep customer data safe and efficiently complete client transactions. Another challenge is critical mass adoption – for example, the move to T+2 settlement in the U.S. took five years – the industry needs to collaborate to implement on a wide scale.

Lack of interoperability can also be a barrier to industry-wide adoption of DLT. Panelists do not expect one single ledger for the industry. For one, this could be viewed by the bank as a moral hazard with the single vendor that owns it. It is more likely that one ledger will gain a stronghold in one market or process and another ledger will do the same in a different market. This means the various DLT platforms will need interoperability – the DLT platform interacting with a bank's back office; banks speaking with each other; and market infrastructures working across platforms. Several industry groups, such as Hyperledger, are working to build standards to enable interoperability.

Finally, the U.S. financial services industry has multiple regulators who are not harmonized on the subject, and there is not a universal sandbox as seen in other countries (UK, Singapore, Canada, or Sweden). Panelists indicated U.S. regulators are focused on cloud, machine learning and other technologies that are impacting customers now, but they do want to be up to speed on blockchain (the CFTC has a working group, FINRA does as well). Currently there is a lot of confusion on what the technology is and is not – confusion worsened by negative news on ICOs, which are different from the technology itself. A panelist indicated the single thing that can halt full scale adoption of DLT (and other emerging technologies) is regulation based on lack of knowledge. Panelists noted the industry needs to engage regulators early on.

An Active Systemic DLT Case Study

As a top ten global exchange and with CHESS operating as the core, national infrastructure of the Australian securities market (like DTCC in the U.S.), this is a systemic use case of DLT. ASX developed CHESS over 25 years ago. As it looked to upgrade the system in 2015, management decided to explore fintech options, as well as a more traditional systems upgrade. As noted by Chris Church of Digital Asset, when building a DLT solution for ASX, they had to work through multiple challenges, including how to: maintain confidentiality of client transactions; deal with data; work with regulators; and roll out on day one without alienating market participants.

The journey continues and has been thorough in testing (albeit Chris Church indicated the timeline would be similar with any major replacement to a systemic market infrastructure like this). In January 2016, ASX selected Digital Asset to develop a working prototype to replace CHESS. The initial phase of work was completed in mid-2016, and by December 2017 ASX completed its own assessment of the technology, including: functional testing (clearing and settlement functions); non-functional testing (scalability and security); industry engagement on desired functionality (market participants, regulators and the government); and third party security reviews of Digital Asset. ASX expects the new system go live between 4Q20 and 1Q21 (calendar years, not ASX fiscal quarters), subject to system completion, stakeholder readiness and regulatory approval. It will roll out the system in a dual path for market participants, with firms not comfortable with the technology able to choose not to opt in.[2]

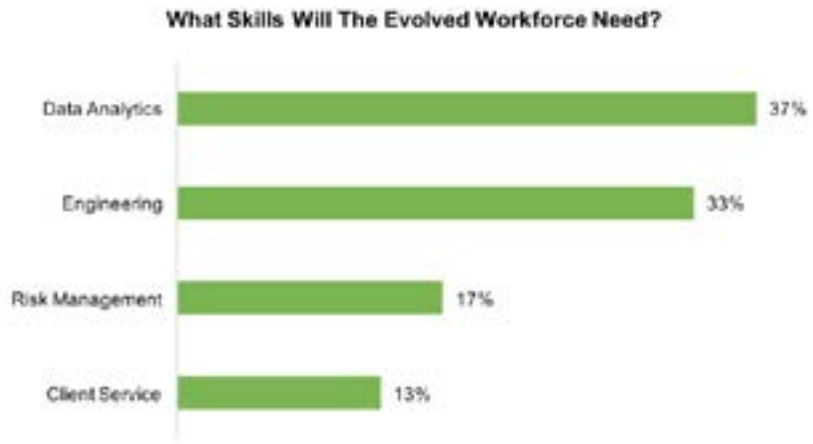
ASX's new system will not only have a compelling value proposition for clients – reduce costs, make processes more efficient – it also provides revenue generating opportunities down the road. This could be an incentive for more firms to adopt DLT. That said, ASX's transaction volumes are smaller than that of the U.S. ASX's CHESS maintains custody value of A$1.8 trillion ($1.4 trillion), versus $54 trillion at DTCC, which processes 1.5 million settlement-related transactions per day. As noted earlier, the scalability is not quite there with DLT in its current state.

2 The roll out will not be without disruption. ASX is moving away from its proprietary messaging system to the international standard (ISO 20022 messaging). Even the firms not opting into DLT will have to give up the old messaging process.

We’re Only As Good As Our Data…

Data is the new oil, and it is imperative the industry gets its static data right. (After all, garbage in becomes garbage out.) Firms need quality data to make good business decisions. Yet, as one panelist noted, some firms are drowning in data but starving for insights. DLT provides an “immutable, shared source of truth,” and the addition of smart contracts enables structured data to feed to AI, machine learning, etc.

As data continues to grow in importance, data skills will become part of the future for financial services. For example, in fraud assessment, an employee must analyze a large amount of financial transactions data and identify outliers, or red flags for potential fraud. We polled our audience as to what skills will be most important as the operations workforce evolves, and 37% indicated skills in data analytics:



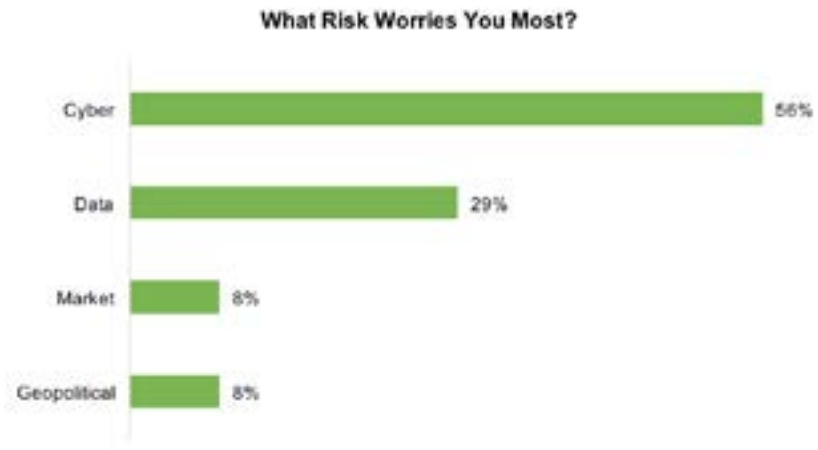
Source: Audience polling

… Data and Cybersecurity Go Hand In Hand

One panelist indicated only 25% of total universal data is currently scalable or searchable. While this leaves the majority out of scope for process automation, it does protect it from cyber hacks. Every day thousands of companies experience a minor breach, often by relatively unsophisticated hackers capturing a minimal amount of PII and demanding a small ransom. Former Assistant AG for the U.S. Department of Justice's National Security Division, John Carlin, indicated around 40% of companies actually pay this ransomware.

As the world made the transformation to digital, Carlin noted we did not initially invest in the risk of going digital. Should everything even be on line? How do we invest in systems to protect operations and client data? How do we protect ourselves? For example, a hacker got into a Chrysler Jeep via the entertainment system and gained control of the braking and steering systems. This was the first cyber recall for automobiles. Carlin noted we need more government funding on cybersecurity, and we need incentives for the private sector to invest in cyber protection.

We polled the audience on what risk they worry about most, and 56% responded cyber (albeit our panelists indicated they really do not look at these risks independently):



Source: Audience polling
Note: Figures may not add to 100% due to rounding

Like management teams of financial institutions, financial services regulators have moved up cybersecurity on their list of concerns. Regulators perform cybersecurity exams on firms, including: penetration testing, incident response, vulnerability scans and more. They also monitor how firms protect against insider threats, which, as noted by a panelist, are estimated to represent 25% of all breaches. Panelists stated it is important for firms of all sizes to invest in cybersecurity protections. If a firm, no matter what size, has a website, it is vulnerable.

Appendix: Terms to Know

AI	Artificial Intelligence
AR	Augmented Reality
Bot	Computer programs that speak like humans
Chatbot	Software engaging in natural language dialogues with users
Cloud	Internet-based computing (servers, storage, applications, etc.)
DLT	Distributed Ledger Technology*
Fintech	Financial Technology
IT	Information Technology
ICO	Initial Coin Offering
IoT	Internet of Things
Machine Learning	Computer algorithms learn from data without specifically being programmed
NLG	Natural Language Generation
NLP	Natural Language Processing
OCR	Optical Character Recognition
PII	Personally Identifiable Information
RPA	Robotic Process Automation
Robotics	Use of robots to substitute for humans or replicate human actions
VR	Virtual Reality

* Blockchain is one type of DLT

SIFMA Insights

Katie Kolchin, CFA
Senior Industry Analyst

Technology and Operations

Tom Price
Group Head

sifma

120 Broadway, 35 floor, New York, NY 10271 | 1101 New York Avenue NW, 8 floor, Washington, DC 20005
www.sifma.org