

Getting with the Programmed

THE BETTER YOU UNDERSTAND FINTECH, THE MORE COMPETITIVE YOU WILL BE

By Sherree DeCovny

Financial technology, or fintech, has become so pervasive that some banks, broker/dealers, exchanges, and asset managers think of themselves as technology companies. They rely heavily on technology internally, and some generate revenue by selling it to customers and non-competitors. Technology has increasingly enabled new business models and become a source of competitive advantage. To this end, it is also having significant career implications for investment professionals.

The big push toward automation dates back to the 1990s, when financial services firms started to implement straight-through processing to increase efficiency, reduce errors, and save costs. Two decades later, most trading floors have disappeared, and advancements in technology, combined with changes in market structure, have enabled an arms race for lower latency and the growth of algorithmic and high-frequency trading.

Today, front-office salespeople and traders would be lost without their order-management systems and trade-analytics platforms. Middle-office staff rely heavily on an array of tools for research, risk management, and compliance purposes. Back-office processes, such as client presentations, reporting, statements, confirmations, clearing, and settlement, have been streamlined through automation. Internet and mobile applications that allow workers to perform their duties remotely have exploded, and as a result, governance and cybersecurity are among the top issues financial services firms face today.

Fintech covers a massive range of systems and solutions. In addition to being critical to workers, it has become a hot area for investment. It has totally transformed the financial markets and will continue to do so for the foreseeable future, allowing for the creation of new business models and revenue streams that will deliver better customer service and produce opportunities.

BLURRING THE LINES

To some extent, financial firms have morphed into fintech companies or have at least become defined by their technology. NASDAQ is a prime example. The company not only

develops technology for its own marketplaces but also sells it to others. Currently, Nasdaq systems power more than 80 of the world's market operators in 50 countries, and NASDAQ also provides an array of corporate solutions to listed companies. NASDAQ's fourth-quarter and full-year 2015 results show that technology solutions account for 27% of its total net revenues.

The big investment banks are major technology players, too. Goldman Sachs acquired software from NYSE specialist Spear, Leeds & Kellogg in 2000 and developed REDI, a trade-management platform. In 2013, it sold most of its stake to a consortium comprising Bank of America Merrill Lynch, Barclays, BNP Paribas, Citadel, and Lightyear Capital. Lehman Brothers bought Townsend Analytics' RealTick execution management platform in 2005, which was then acquired by Barclays in 2008, only to be bought by ConvergEx in 2010. Deutsche Bank continues to hold on to its Autobahn platform, which enables customers to trade equities and foreign exchange, conduct global transaction banking business, and utilize post-trade services.

Market participants route their orders electronically to exchanges and dark pools run by investment banks and broker/dealers. For example, Goldman Sachs operates Sigma X, Credit Suisse operates Crossfinder, and UBS operates a multilateral trading facility in Europe. Direct market access platforms such as ITG enable participants to access liquidity at lower cost. Those who need to trade in larger sizes can route their orders to block-trading venues, such as Liquidnet.

The next generation of fintech is now enabling disruptive peer-to-peer networks to fundamentally change the way organizations engage in commerce and share value and risk. Advanced modeling and analytics tools are allowing anyone to model data very quickly, not just programmers, and fewer people are needed to do it. Moreover, routine investment decisions are being fully automated and pushing traditional advisers to specialize.

The impact on incumbent firms and individuals in the industry is mixed. They are trying to come to grips with change and balance excitement about the opportunities with the threat of disintermediation and redundancy. Both types of stakeholders are being forced to shift their thinking, re-tool their skillsets, and redefine their value propositions to survive in a world of "creative destruction."

PEER-TO-PEER NETWORKS

Peer-to-peer (P2P) networks comprise computers that are configured to allow certain files and folders to be shared with every other computer in the network. Ultimately, that means financial transactions can occur without having to

KEY POINTS

Fintech is transforming financial markets by creating new business models, revenue streams, and investment opportunities.

Disruptive technology is leading to a shift in thinking, re-tooling of skillsets, and redefinition of value propositions.

Embracing technology is critical to the survival of firms and individual professionals.

go through an intermediary. This approach is getting traction in two key areas: marketplace lending and blockchain (or distributed ledger) technology.

Marketplace lending is becoming a disruptive force in the credit markets. Borrowers go onto Lending Club, OnDeck, or one of the many other online P2P platforms where they can be matched directly with investors. These investors, in turn, purchase notes or securities issued by the platforms. Borrowers benefit from this arrangement because the application process is relatively simple and fast, the origination fees are generally lower, and they may be able to obtain attractive loan rates. According to Lending Club's website, for example, borrowers on average lowered their interest rate by 35% when they used a personal loan to consolidate debt or pay off credit cards. Investors benefit because they can invest in fractions of loans in \$25 increments, gain exposure to loans of different maturities and at different rates, reduce volatility of returns, and potentially earn attractive, risk-adjusted yields.

Some observers believe a much broader range of loans will be arranged in this way in the future. So far, banks have not been disintermediated because the platforms partner with them to fund loans to the borrowers. But as marketplace lending expands, it could impact the traditional lending and securitization business.

In addition, marketplace lending platforms take a different approach to estimating credit risk, representing a significant shift in mindset for lenders and investors. In particular, their algorithms leverage big data to consider many characteristics about each borrower, not just standard ones such as credit score and debt-to-income ratios. Some investors remain cautious because of the short performance history and the fact that the loans have not been tested in a market downturn yet. Another source of uncertainty is the new regulations being developed to govern marketplace lending.

Blockchain, the technology used to mine Bitcoin, is an immutable record of title that describes the ownership of any type of asset. It uses computer protocols known as smart contracts, which automatically execute contractual clauses in a very precise way—that is, if A happens then B follows. Distributed ledger systems are blockchain-like, but the technology is separated from Bitcoin itself.

Proponents maintain that this technology could substantially increase efficiency and reduce costs by eliminating intermediaries while enhancing security. Major financial firms have been putting together teams to analyze how it is going to impact their business, and there has already been a beta test of a security issuance on the blockchain.

There are hundreds of startups in this area exploring applications in payments, trade finance, trading, clearing and settlement, physical property title transfers, and more. For example, Symbiont is a company that is “bridging the gap between the emerging blockchain ecosystem and Wall Street.” Symbiont has developed technology that allows financial instruments to be modeled in an easy-to-understand programming language and fully digitized onto a distributed ledger.

Decades ago, investors used to receive physical certificates for the shares they bought. Over time, brokerage firms

began to hold electronic records of ownership. The blockchain goes one step further. Theoretically, shares can be issued directly to the investor, the transaction is validated in a distributed ledger, and a community validates the true owner of the securities. Huge efficiencies can be gained in areas such as corporate actions processing.

Many early stage companies do private placements, and new investors want to look at the cap table, which lists the company's shareholders and how many shares each one owns. Entrepreneurs typically put this data on spreadsheets, and it takes a significant amount of effort to ensure it is correct.

“Cap table management is messy, it's rife with mistakes, and there's a lot of legal consequences to not getting it right,” says Kyle Zasky, founding partner at SenaHill Partners, investors in early stage fintech companies. “If you have issuances on the blockchain, you can mitigate a lot of that risk.”

Blockchain is already having a significant impact on the capital markets, but it will be decades before it becomes the standard in the industry. Currently, it does not scale or offer sufficient throughput to immediately replace the databases and systems firms have in place today. In addition, regulations have been built around the existing technologies, and it will take time to amend or replace them. Like in marketplace lending, blockchain has yet to disintermediate the incumbents, but that could change over the long run.

DEMOCRATIZING BIG DATA

Every Google search, customer contact, report, email, order, amendment, cancellation, and execution generates structured and/or unstructured data. Billions of messages and petabytes (10^{15} bytes, or 1,000,000 gigabytes) of data pass through financial firms' systems daily. Regulations require them to retain a significant amount of the data and be able to access it quickly upon request. To this end, firms are increasingly utilizing flexible, cost-effective cloud applications and storage, along with the open-source framework Hadoop as a data-processing platform. They are leveraging all this data to predict trends, detect fraud, free up capital, and track investments.

The ability to derive value from millions of rows of data quickly and efficiently is a source of competitive advantage. Yet sifting through it all in a way that makes it actionable is a huge challenge. Too often, firms spend more time reshaping data than analyzing it and making data-driven decisions. However, self-service data preparation tools have made it possible for anybody to use and analyze data. Essentially, data is being democratized: Information that was once available only to a select few is now available to everyone.

“Organizations are harnessing data to improve sales results, client relationships, and service; reduce costs; comply with complex regulations; and manage fraud and risk,” says Ellie Fields, vice president of product marketing at Tableau Software. “They are also better understanding risk, visually communicating risk policy and receiving far better insight into their operations.”

Fields explains how two Tableau clients are leveraging big-data analytics. To detect and prevent fraud, Ernst & Young creates customized data sets and puts them into

dashboards where users can drill down and identify outliers instantly, ultimately saving clients millions of dollars. Rosenblatt Securities performs derived analytics on thousands of different fields to obtain and act on insights, using this information to determine when to suggest buying or selling certain securities and identify the high probability entry or exit points. A team of five people can do this quickly using Tableau; using spreadsheet analysis, it would take a team of 50 people much longer. *(For more information on Tableau and analyzing big data, see the feature “Up Scope” by Ed McCarthy on page 44 of this issue.)*

Another company, Tradelegs, has developed an optimization platform that enables users to model huge volumes of options data quickly. Derivatives are a growing asset class, and investors recognize that they can play an important role in a portfolio in terms of hedging, expressing a directional view, or creating alpha. Traditionally, derivatives strategists relied on spreadsheets to do calculations, modeling, and analysis, but that could take weeks because there are so many strike prices, expiration dates, and what-if scenarios. Tradelegs’ platform filters through every permutation of strike price, option, and expiration to devise a provably optimal solution within defined parameters.

No human could ever do this, says Zasky, whose company has invested in Tradelegs. Tools like this can help deliver better performance and mitigate risk more precisely. Across trillions of assets, the value proposition is enormous to those who embrace it.

CHANGING SERVICE MODELS

Asset managers and financial advisers provide value by managing their clients’ financial health and allocating assets to create alpha. Automation helps them do their jobs better. The latest example is the robo-adviser phenomenon, and most financial institutions worldwide are jumping on the bandwagon. The technology allows them to deliver more products, services, and advice at a lower cost and at a higher level than they can do with their limited number of trained advisers. Such robo-adviser firms as Wealthfront and Betterment have garnered a significant amount of attention and assets under management recently.

“The venture community is backing hundreds of startups in this area because they’re offering some interesting new value propositions to clients,” says Zasky. “There are over 70 million millennials coming of age, and they are very receptive to having their assets managed with new technologies and automation.”

According to Andrew Rudd, chairman and CEO of Advisor Software, automation is having the same impact on the investment profession that it has had on tax preparation and travel. It is making the industry more transparent, because investors can view opportunities, prices, and fees online. It is also redefining the role of the adviser.

Rudd says two variables come into play when constructing portfolios: the cost of getting it wrong and complexity.

Consider the analogy of booking a flight online versus using a travel agent. There is little chance of getting it wrong because one simply needs to enter the airport codes and then choose the time and price; furthermore, if one were to get it wrong, the cost is unlikely to be significant. In this instance, there is no real advantage to using a travel agent. However, the situation might be entirely different if that individual were trying to book a safari in Africa, where using the wrong tour operator could be extremely costly in monetary and other terms.

Similarly, trained financial advisers provide value in more complex situations, such as FATCA compliance for US citizens, estate tax planning, inflation hedging, and risk assessment. Other instances include when individuals participate in hedge funds, private equity funds, and structured products. Here, the cost of making a bad decision is high.

Some advisers are afraid of being replaced by technology. But automated travel platforms and tax software have not replaced all travel agents and tax accountants, and robo-adviser platforms are not going to replace all financial advisers.

It’s undeniable that the business has changed, however. “Paying for investment management and throwing other services in for free is not going to be a strategy that’s going to work in the future,” says Rudd. “People will pay for certain specialties, and they will probably do most of their simple asset management themselves.”

Technology can solve the investment problems of 80% of the people in 80% of the situations, Rudd adds. The good news for traditional advisers is that the robo-advisers only cover very basic situations. A common robo situation would be a small investment in a new, separate account managed in a broadly diversified portfolio with little acknowledgement of the investor’s existing investments or lifetime goals. Since most investors have an existing set of investment accounts managed according to an existing investment plan, the current robo-advisers are not very useful to them. But that scenario could soon change.

“These automated platforms will be as ubiquitous in five years as ATM machines are for the banking industry,” says Rudd. “In the future, an investor won’t consider opening an account at an advisory firm unless they have good technology that enables a client to do these relatively simple things online quickly, efficiently, and at low cost.”

In the next five years, robo-advisers could get smarter by incorporating machine learning. For example, in the event of a market downturn, they will be able to automatically adapt the strategy to prevent putting individuals’ retirement savings at risk. In addition, the technology will evolve to provide guidance on an investor’s total portfolio, with specific reference to an investor’s lifetime goals. Work will be done to make financial planning more robust. The resulting financial plan will be dynamically integrated with the investment plan.

“There will be a resurgence of new approaches to risk

management and portfolio management to better control outcomes,” he says. “That way, people can understand the likelihood and the dangers of any particular strategy of investing for retirement.”

IMPLICATIONS FOR CAREER PLANNING

Firms today are looking to gain a competitive advantage by leveraging innovations and new business models that did not exist a decade ago. Technology is both displacing and empowering people who work in financial services. On balance, those who embrace it can do a better job for their clients and their firms and acquire skills that will benefit their careers in the long run.

Investment professionals do not have to be technologists, although it does not hurt because there are many job opportunities in this space. Data warehousing and front-end development require certain expertise, and demand exists for machine-learning experts who know how to train computers to understand how people talk. Financial advisers will need to specialize,

but there are many generalist roles (such as product managers, project managers, and customer relationship managers) in which professionals can add value.

At a minimum, individuals should have a broad understanding of how the markets work and the types of applications being used in the industry. They should have perspective on the problems their clients face and how technology can help to solve them. A good starting point is finding out which systems and tools progressive companies are using. Many are intuitive and easy to learn, and those who have this knowledge may be more attractive as job candidates because they require less training.

“Not everybody should be a programmer, but understanding how these technologies work will put you at an edge over people who are slower to embrace it,” Zasky concludes. “You’d be surprised how quickly your business can go to your competitor because they’re doing things five times more efficiently than you are.”

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KEEP GOING

"A Look Ahead," *CFA Institute Magazine* (November/December 2015) [www.cfapubs.org]

"Chips Off the Old Blockchain," *CFA Institute Magazine* (November/December 2015) [www.cfapubs.org]

"Droidonomics," *CFA Institute Magazine* (September/October 2015) [www.cfapubs.org]

ASK A CAREER QUESTION

In this installment, we'll explore some frequently asked questions about resumes or CVs that financial professionals use to apply for non-academic positions.

How long should my resume be?

The length of your resume will depend on what sorts of opportunities you intend to pursue. Remember that your resume is first and foremost a marketing tool that needs to demonstrate why someone would want to have a further conversation with you about how you can meet their needs. To this end, you need to capture an employer's attention within the top third of the first page of your resume.

If you have less than 15 years of experience and are applying for non-academic jobs, recruiters and hiring managers in most markets will expect your resume to be no longer than two pages. Professionals with a significantly longer work history or who are applying for very senior positions can go to three pages. Unless it's customary in your market to list publications or individual courses taken, going beyond three pages is not advisable.

Though you should list all positions you have held to demonstrate a solid chronology of being employed, remember that the older or less relevant an experience is, the less detail you should include. For example, unless your experience in a position you held 20 years ago is the *best* demonstration of your value for the role you are seeking, you can simply list the title, company, and dates of employment.

Should I list volunteer work for my church on my resume?

Consider two things when you are deciding whether to include this type of experience on your resume:

(1) Does the experience demonstrate the use or development of a skill that you will be called upon to use in the role you are seeking? Did you lead a committee, communicate complex concepts, manage a complex project, or manage significant financial matters? If so, then it may be worthwhile to include that experience.

(2) Does the experience demonstrate in a very obvious way an alignment of your values or beliefs with those of the organization you are looking to join? Political and religious affiliations can be sensitive matters in some markets, so career coaches and professional resume writers will often suggest that, if you are not extremely confident your target audience will view the affiliation positively, you may want to exclude this from your resume.

Should I send my resume in .doc, .docx, .pdf, .rft, or .txt if I know it is going through an applicant tracking system (ATS)?

Always read carefully and follow any guidance provided about preferred or required file formats for submissions. These are typically detailed on the website where you will submit your resume. If no guidance is provided, a good rule of thumb is to submit in .doc format. Most ATSs can parse multiple formats, but the .doc format is practically a default. As long as you don't incorporate fancy formatting like clip art, borders, ornate bullet point styles, etc. (none of which are advisable for finance or executive resumes), then the .doc format should work well.

We hope you enjoyed this month's installment. If you'd like to submit a question, please contact us at careermanagement@cfainstitute.org.