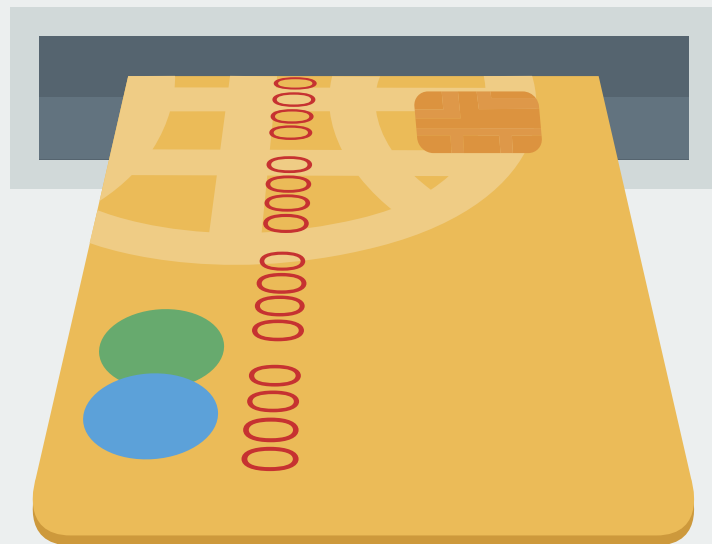
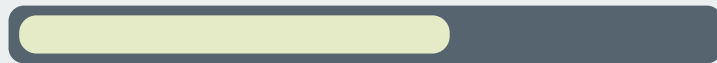




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TRANSACTION



The Future of Financial Services

What will financial services look like in 2035? Only one thing is certain: Banks that fail to embrace new and emerging technology will not survive.

by John Hull

BACK IN THE 1980S, if you wanted to book a flight from New York to London, you would contact a travel agent, who would check availability, present options, receive your instructions, and then finally make a reservation. Today, you are likely to go online and book directly with the airline. What has happened here is a process known as *disintermediation*. The travel agent as an intermediary is no longer needed.

This does not mean that there is no need whatsoever for intermediaries in the travel industry. Online services such as **Expedia** and **Travelocity** have sprung up to assist when customers want to quickly compare prices between airlines or hotels. However, the nature of the intermediaries in the travel business has changed dramatically, and human involvement has largely disappeared. The creation of new technology-based intermediaries like Expedia and Travelocity is referred to as *reintermediation*.

Disintermediation followed by reintermediation is a common pattern in technological change. Like the travel agents of the 1980s, banks and other financial services companies are intermediaries, and they are similarly in danger of having the services they provide disrupted.

In this article I will discuss some of the ways in which financial services will be impacted by finance-related technology or 'fintech' going forward. For interested readers, a fuller discussion of emerging fintech innovations is covered in the recently released fifth edition of my book, *Risk Management and Financial Institutions*.

Disruptions in Payment Systems

Technology has already had a huge effect on the way payments are made. As a society, we have moved from cash and cheques to credit and debit cards to the use of mobile wallets. In some respects, developing countries have progressed even further in this direction than developed ones, in part because traditional payment systems were not as well established. Many fintech start-ups are offering new services, and some — such as **PayPal**, **Apple Pay**, **Google Wallet** and **Alipay** — are now large, well-established companies.

The key attributes of a payment method are speed, convenience, security, simplicity and cost. As a result, services such as PayPal transfer funds almost immediately, and storing credit card-like information in an iPhone or similar device adds to the convenience for many consumers. Indeed, given the dominant position of Apple in the smartphone market, it has been natural for it to expand into payments, and some have speculated that it will not be long before Apple offers a wider range of banking services. One can imagine that wearables such as watches or bracelets — or even implants — may be used in the same way as smartphones to add to the convenience of making payments.

Security is a major issue for all forms of payment. Tens of billions of dollars are lost each year from credit card fraud. Embedding chips as well as magnetic strips in cards helps, but does not eliminate this problem. We are likely to see big changes in the way fraud is avoided in the future. Already, digital wallets

A machine learning algorithm can sort good loans from bad as well as — or better than — a human being.

are considered to be more secure than credit cards, and many payment providers, including banks, are investigating the use of 'biometric authorization'. Retinal scanning, facial recognition, voice authentication, and even heartbeat monitoring are all being considered.

The costs of fraud are usually borne by the payments system provider, and are passed on to merchants in the form of fees. PayPal, for example, charged 2.9 per cent plus \$0.30 per transaction in mid-2017. Of course merchants, in turn, pass the fee on to consumers. Everyone therefore has an interest in reducing fraud, and approaches for making more secure payments should be welcomed.

In India, making more people part of its financial ecosystem is an important objective that is laying the groundwork for a cashless society. Already, the government has issued biometric IDs (involving fingerprints and retinal scans) to over one billion people. These IDs have the advantage that some government benefits can be distributed with less involvement from intermediaries. Of course, some would argue that the provision of biometric information is an unacceptable violation of a person's privacy, and this may slow down its acceptance in developed countries.

Some payment systems allow users to borrow money. The interest rates charged by credit card companies are very high, but it should be remembered that users do get free credit for the period of time between a purchase and the next monthly due date. PayPal competes with this by offering 14 days of free credit. It is likely that more convenient credit facilities, tailored to the needs of users, will be developed. Through its subsidiaries such as Alipay and Mybank, Alibaba is already offering many of the same services as banks.

What other services can be offered to make payment systems attractive? Many individuals remit funds on a regular basis to family members in another country, and the foreign exchange services associated with those transactions are likely to get more convenient and competitive. For businesses, easy-to-use foreign exchange hedging services that compete with those offered by

banks are likely to be developed. Fintechs may also carry out sophisticated analyses of sales to help a company understand its customers better or provide accounting services.

Of course, customers who prefer cash will continue to exist for some time. Some people have bad credit histories and do not qualify for credit cards, while others are too risk averse to give their credit card information to third parties. Amazon has recognized this and allows customers to open an account at selected retailers by depositing cash. When goods are purchased, the account is debited.

Finally, one aspect of the digitization of payments is that it becomes much easier to collect data on a person's spending habits. This could be useful to banks when making credit decisions. Knowing how a potential borrower spends money can be almost as important as knowing how much he or she earns.

Disruptions in Lending

In some large banks, loan officers are already being replaced by systems involving machine learning. Given enough data about a bank's lending experience, it is recognized that a machine learning algorithm can sort good loans from bad as well as — or better than — a human being. In principle, a machine learning program can be more objective and exhibit less bias than a human.

Elsewhere on the lending front, peer to peer lending (P2P) is gaining ground. This is the practice of lending money to an individual or business through an online platform that matches lenders with borrowers. Like the travel industry, peer-to-peer (P2P) lending involves disintermediation followed by reintermediation. Banks are no longer the sole intermediaries, and new intermediaries are being set up to provide services such as:

- Verifying the borrower's identity, bank account, employment, income, and so on;
- Assessing the borrower's credit risk and, if the borrower is approved, determining the appropriate interest rate; and
- Attempting to collect payments from borrowers who are in default.

Many borrowers who use P2P platforms have already been refused by banks, so the interest rates can be quite high compared with conventional loans (but lower than the rates on credit card balances and other sources of credit for moderate- to high-risk borrowers).

P2P lending platforms such as **Prosper** and **Lending Club** assign a credit rating to a borrower in much the same way that a bank does. Lending Club, for example, categorizes borrowers by assigning a letter grade between A and G. The interest rate charged to the less credit-worthy borrowers is higher than to A-grade borrowers, but the expected loss from defaults is also higher. Statistics published by Lending Club in June 2017 show that both interest rates and loan losses are higher than on most loans made by banks; however, the net annual returns that investors receive on average are quite attractive compared with other opportunities.

The fees at P2P lenders can be quite high. At Lending Club, the borrower pays an origination fee typically between 1% and 5% of the amount borrowed. The lender pays a service fee (typically about 1%) on payments received and may also have to pay costs associated with collections on delinquent accounts.

Some lending platforms can be criticized because they have no ‘skin in the game’. If loans do not perform as well as expected, the lender bears the entire cost. One exception is **Upstart** (started by former Google employees in 2014), which has a different model from Lending Club and Prosper. It charges borrowers an origination fee but does not charge lenders a fee. It uses the origination fee to reimburse lenders if a loan defaults, giving it a stake in the performance of the loan. Its credit assessments have proven to be quite accurate, and it has grown quickly.

P2P lending has not been immune to scandal. The founder of Lending Club (which used an IPO to become a public company in 2014) had to step down in 2016 as a result of a governance scandal — but the company seems to have bounced back. And in China, retail investors have lost billions of dollars in incidents where P2P platform operators have simply disappeared with

investors’ cash. This has led to a crackdown on the industry by Chinese regulators.

All financial innovations are liable to have ‘teething troubles’ of this sort. Indeed, banks over their long history have had their fair share of scandals. The real question for P2P lending is whether it will make inroads into traditional bank lending. Will P2P lending become a widely used option for financing the purchase of cars and houses? Will P2P between corporations become more common? Because these platforms are relatively new, it will be interesting to see how they perform in an economic downturn or when interest rates increase.

Disruptions in Wealth Management

Wealth management has traditionally been very profitable for banks. Fees are often in the 1% to 1.5% range of the amount invested per year and can be much more when hidden fees associated with mutual fund investments and trading costs are taken into account. Once a client’s risk appetite has been assessed, wealth management involves finding appropriate investments for the client.

John Bogle took the first step toward reducing the costs of investing with the first index fund in 1975. Index funds have since become very popular, charging fees as low as 0.15% with no human intervention required in the form of a wealth manager. Robo-advisors first appeared in about 2010. In most countries they must register with the authorities and are subject to regulation. Robo advisors like **Wealthfront** and **Betterment** provide digital platforms where investors express their risk preferences. A portfolio is then chosen, and going forward, is automatically rebalanced as necessary. There is very little human intervention, and fees are lower than those charged by traditional wealth managers — typically 0.50% to 0.75% of the amount invested per year. Some banks and other wealth managers are now responding to this competition by offering their own automated wealth management services. Indeed, those that fail to do this are unlikely to survive. Providers of index mutual funds, such as **Vanguard**, are also active in this space.

73 per cent of millennials say they would rather handle their financial needs through Google, Amazon or Apple.

Robo advisors are making investment advice available to a much wider range of individuals. Investors can start with as little as \$500 or \$1,000 — whereas a traditional wealth manager might require a minimum investment of \$50,000. In its early days robo-advising tended to attract young investors with small amounts to invest, but a much wider range of investors, including those classified as ‘high net worth’ and HENRYs (high earners not rich yet) are now using these services. Robo advisors make it easy for clients to add to their funds under management on a regular basis. Arguably they serve an important role in society by encouraging people to save when they might not otherwise do so.

Until now, the main innovation underlying robo-advising has been the delivery of services in a cheaper, novel way that many investors find appealing. The investment strategies underlying the advice given are usually similar to those that have been used by the investment industry for many years. Tax-related strategies (such as tax-loss harvesting) are often incorporated into the advice that is given. There is plenty of scope for these strategies to become more sophisticated: Investments can be better diversified internationally and across sectors; and they can be better targeted to the goals of the investor, taking into account the investor’s age, retirement plans, etc.

In 1992, **Fischer Black** and **Robert Litterman** at **Goldman Sachs** published a widely used way of incorporating the views of investors in the selection of a portfolio. Robo advisors may find ways of expanding the range of alternatives offered to investors using this technology. Alternative sets of views with rationales could be presented, with investors being invited to choose between them. It might even be possible to let the views of the investor be a less structured direct input to the determination of the portfolio.

Human investors are subject to numerous biases: They are reluctant to sell losers, they chase trends, and they get disillusioned and exit equity markets when they should stay for the long term. It is often the ability to avoid these biases that distinguishes a professional investor from an amateur. Robo advisors could try to stop investors from falling victim to these biases by

developing innovative ways of explaining them. Finally, robo-advising could be combined with other financial innovations so that a percentage of a client’s funds is allocated to P2P lending or equity crowdfunding.

Robo advising has already become an important part of the financial landscape and is likely to become more widely used as the millennial generation accumulates wealth. For this generation, it is much cooler to invest with an iPhone than make a trip to the bank. However, it is worth sounding a note of caution: Equity markets performed really well in the years following the start of robo advising in 2010. Its appeal may decline when there is a downturn and the clients of robo advisors — many of whom have never invested before — complain about losing money. It is hoped that these advisors will be able to educate investors on the importance of staying focused on the long term.

How Financial Institutions Should Respond

Banks must carefully evaluate how consumer behaviour is being affected by technological change — and take steps to change their business model accordingly. **Eastman Kodak** is one company that did not survive technological change — even though it was aware of the changes taking place in its industry. Indeed, the first digital camera was created in 1975 by a Kodak engineer, and the company invested billions in the new technology. Where did it go wrong?

While the company understood the new technology, it failed to appreciate *the way it was changing consumer behaviour* until it was too late. Kodak coined the term ‘Kodak moment’, which it used extensively in its promotions to convince people that they should always have a camera on hand loaded with Kodak film, ready to capture important moments. Some would argue that the company could have extrapolated from its sales pitch to recognize the actual business it was in: Kodak was in the imaging or moment-sharing business, *not* the film business. Its implicit belief that demand for hard-copy photographs would continue ultimately doomed it.

The disruption of large financial institutions does not seem to be happening as quickly as that of Kodak, and banks have a

number of competitive advantages: They are well capitalized (although the same is true of Apple, Google and Alibaba); they understand how to deal with the highly regulated environment they operate in (something many fintech start-ups find difficult); and they have a huge customer base that mostly trusts them (although the 2008 financial crisis eroded that trust).

One can speculate that financial institutions are not as vulnerable as Kodak in that many people are less inclined to experiment with the way their money is handled than with the way they take photos. Also, many start-ups need established financial institutions to offer their products. However, there are some important warning signs that banks should respond to. The Millennial Disruption Index survey indicated that 71 per cent of millennials in the U.S. would rather visit the dentist than listen to what banks are saying, while 73 per cent would rather handle their financial needs through Google, Amazon, Apple, PayPal or Square. Millennials also voted four leading U.S. banks among their 'least-loved brands'.

Kodak was ultimately rendered irrelevant by the digital cameras incorporated in smartphones and naturally, financial institutions do not want to become similarly irrelevant. Already, they have recognized the need to offer mobile apps for payments, wealth management and a host of other services; but it is important for them to embrace technological change itself, not just to pay lip service to it. The fact is, technological change in the financial sector will continue at an accelerating rate, and in many cases it will erode the profits banks previously relied upon from their traditional activities (as was the case for Kodak). Being flexible enough to adjust will be a continuing challenge.

The new services developed by banks need to be convenient and designed so that young people classify them as 'cool' while older people find them easy to use. Some financial institutions have developed new services in-house; some have bought start-ups that have already developed the services; and some have entered into partnerships with start-ups. The first alternative — although the least expensive and most appealing to many in the financial sector — can be quite difficult, given the complacent culture that often permeates large companies.

Some (Relatively Safe) Predictions for Financial Services

- Cheques and credit cards will largely disappear. Mobile wallets on smartphones and wearables will become the norm.
- Biometrics will be used to make payments more secure.
- Some central banks will choose to switch from paper to digital currencies, and transacting in digital currencies will become more widespread.
- Machine learning will be able to undertake many tasks such as credit assessment and fraud detection much better than human beings.
- Record keeping will be more secure and faster using blockchains and other distributed ledger technologies (DLTs).
- Crowdfunding and P2P lending will become more widely used. Some of today's large banks will find it necessary to offer these services.

The second and third alternatives can be used as a way of disrupting the culture and accelerating change. Some banks have found it useful to create an organizationally distinct unit that has the ability to bring in outside talent when necessary and can partner with start-ups.

In closing

The banks that survive the disruptive forces described herein will have to cut costs by making big reductions in the number of branches they run and the number of people they employ. To keep the services they offer up to date, they will have no choice but to form partnerships with many different technology firms. In the realm of financial services, one thing is certain: There is no avoiding the growing wave of technological change. **RM**



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Rotman faculty research is ranked in the top 10 worldwide by the *Financial Times*.